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The Functioning of Elderly Persons

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Introduction

The process of aging defies scientific explanations. It is difficult to understand, as are the phenomena of life and death–intrinsically bound up with old age–in which the first leads to the second. Perhaps there is not even much willingness to understand aging; although everyone would like to achieve the qualities inherent in mature age, such as wisdom, no one would want to age. While aging perceived as a generalized demographic phenomenon can be expressed in the form of inexorable statistics, individual aging reflects the reality of each person and thus arouses fear rather than interest. This happens despite the fact that one cannot avoid confronting one's passing any more than one can escape the problems resulting from the aging of the whole society.

The continuing aging of the Polish and global population–related to the growing number of specific problems inherent in healthcare, nursing, leisure time, professional and educational activity or financial constraints–stimulates the taking up of the issues of individual and demographic aging. It is important to stress at this point that the phenomenon we are facing is enormous and ever-increasing. The process of aging societies, observed for several dozen years (defined as an increase in the percentage of elderly people in the total population[1]), is progressing due to medical development and systematic improvement of living conditions. On the one hand, these have led to the extension of the human life span; on the other, paradoxically, to a drop in the birth rate.

As a result of the increase in average life expectancy, it is becoming quite common these days for a person to reach a ripe old age, which is unique in historic terms. Among primitive peoples, for example, the average life expectancy was about 20 years; in ancient Rome, about 23 years; in the 16th century, about 30 years; in the 19th century, it reached 47 years[2]. In Poland, the average life expectancy

1 E. Rosset, Starzenie się społeczeństw – problem demograficzny XX wieku, in: Problemy ludzi starych w Polsce, ed. B. Fruboes, Państwowe Wydawnictwo Ekonomiczne, Warszawa 1974, p. 9–50.

2 A.A. Zych, Słownik gerontologii społecznej, Wydawnictwo Akademickie Żak, Warszawa 2001.

in 2017 was 74 years for men, 82 years for women[3]. Contemporary changes in the age structure of Polish society are also due to a low reproductive rate. A drop in the birth rate below 2.1 children per woman does not guarantee a simple generation replacement rate and the number of deaths exceeds the number of births i.e., more people die than are born and the society, in quantitative terms, shrinks.

Consequentially, the number of elderly people is growing rapidly. The global number of people aged 60+ will rise from 605 million in 2000 to 1.2 billion in 2025, and 1.9 billion by 2050[4]. Europe is also aging remarkably fast and may soon become a truly old continent – the senior population in the European Union will increase from 16% in 2004 to 30% in 2050[5]. The projections for Poland are not optimistic either. According to Eurostat estimates, in 2060 the median age of the Polish population will exceed 54 years, meaning that one half of the nation will be at least 54 years old[6]. In 2060, the percentage of Polish citizens aged 65+ will amount to as much as 35%, and the age group 80+ alone will be as much as 12%[7]. The process of aging of Polish society is additionally stimulated by the emigration of young people. As a result, this is the first time in history that the Polish population is composed of older people, including the long-lived, in such a significant proportion.

The European Commission has recognized the aging of the population as one of the most important political issues of the 21st century. It leads to global, national, family structure and individual transformations, particularly today when the "silver tsunami" is gathering strength. We are experiencing problems in the areas of intergenerational interactions, the growing demand for medical services, social support (care services) and social policies (pension schemes), largely as the consequence of people losing their ability to function independently as they age. Maintaining functional capacity in old age is in the interest of patients, their families and society, burdened with the obligation to provide formal and informal assistance, as well as the whole state bearing the costs of treatment, rehabilitation and care of patients in their advanced age. The fundamental matter is to maintain the old-age autonomy and functional efficiency of the aging generations, which, indeed, is the centerpiece of the current social policy targeting people in their late adulthood.

3 Główny Urząd Statystyczny, Rocznik Demograficzny 2018, Zakład Wydawnictw Statystycznych, Warszawa 2018.

4 A. Davies, Ageing and health in the 21st century: An overview, in: Ageing and health: A global challenge for the 21st century, Proceedings of a WHO symposium, Kobe, Japan, 10–13 November 1998, World Health Organization, Geneva 1999

5 European Commission ed., The social situation in the European Union 2005–2006. The balance between Generations in an Ageing Europe, European Commission 2007, http://ec.europa.eu/employment_social/social_situation/docs/ssr2005_2006_en.pdf (access 20.10.2018).

6 P. Błędowski, Polityka wobec osób starych – cele i zasady, "Studia BAS" 2012, nr 2(30), p. 201–216.

7 Eurostat, Population projections 2010–2060, "Eurostat Newsrelease" 2011, 80, 8 June, https://ec.europa.eu/eurostat/documents/2995521/5039334/3-08062011-BP- -EN.PDF/fad284a6-74eb-4eb6-9e6c-f29331b875f0 (access 20.10.2018).

Appreciating the efforts of medicine to prolong human life, it should be stressed that the current demographic situation makes it imperative to look closely at the quality of life of elderly people, for whom it is essential to be able to function efficiently on a daily basis. In most cases, however, the patients turn to the doctor only when their health problems start to affect their daily lives. Some patients will not be persuaded to undergo treatment even by poor test results, provided they still feel well and function within the limits of the subjectively perceived norm. It is not so much the disease itself as the ailments connected therewith that become a problem. The result of treatment measured in terms of improving the efficiency of everyday functioning, and not only of the relevant medical parameters, is of fundamental importance to the patient. This publication aims to take into account this very perspective and to recognize the efficiency of functioning as the basic criterion for actions taken in the areas of medical, rehabilitation and care services. This approach meets the guidelines of the U.S. Institute of Medicine according to which medical actions aim to improve the health and functioning of the patient, in recognition of the medical practice of the so-called "functional health" concept created by Sidney Katz and his colleagues.

To fully understand the process of individual aging, it needs to be considered in a broader psychosocial and functional perspective, extending far beyond the sphere of biological life. This is because aging does not only concern the body but also affects the entire psycho-physical-social functioning of a person. It is time to abandon the approach that medicalizes the life of an elderly person, whose everyday life is not simply limited to being ill. Contact made with an older person should not be reduced to an interest in his or her health. It is worth noting that a single problem an elderly person is struggling with appears in the broad context of the total changes that progress with age, and his or her functional efficiency is consequential to these changes. Understanding the etiology of disorders of a person's everyday functioning is a difficult and complex task, requiring interdisciplinary knowledge, but it is necessary for planning and implementing effective prevention and intervention. Holistic knowledge of the principles of seniors' functioning may lead to an increase in the effectiveness of actions taken in this population and a real influence on the improvement of their quality of life.

This publication is an attempt to look at the life of the elderly in its bio-psycho-social dimension, in the context of functional capabilities that change with age. It stresses the importance of the quality of life of seniors, whose basic component is the ability to perform daily activities, connected with maintaining personal self-sufficiency and autonomy in life. It consolidates the existing interdisciplinary knowledge on the specifics of human functioning in late adulthood. In this study, the concept of functional efficiency has been considered in connection with age-related, highly individualized changes in biological, psychological and social life, occurring in the course of natural and pathological aging. The analysis of the topic includes, in light of theoretical concepts of human functioning and

aging, the natural bio-psycho-social changes occurring in old age and determining the nature of the functioning of older people, as well as pathological changes leading to a clear disorder of the ability to function on a daily basis (i.e., to disability in old age). The period of old age is stereotypically perceived as inevitably connected with illness and disability. In this publication, a clear distinction is made between natural and pathological changes that progress with age, stressing that illness and disability are not a natural and inherent consequence of old age, but pathological conditions that are subject to prevention, treatment and rehabilitation.

This publication, whose subject matter is the functioning of old age people, is divided into six chapters. The first chapter presents the functioning of older people in the light of gerontological theories, focusing on biological, social, functional and individual aspects. The next two chapters discuss the natural and pathological changes that progress with age. The second chapter describes natural changes occurring within physical functions (age-related external and systemic changes) as well as mental (intelligence, memory, personality, emotions, spirituality and wisdom). The next chapter is devoted to determining the pathological changes occurring with age in the areas of physical and mental functions. Attention has been paid to the great geriatric problems that affect the reduction of functional efficiency in old age i.e., mobility disorders, depression, dementia, sight and hearing disorders, cardiovascular diseases and urinary incontinence. Social functioning in old age is the focal point of chapter four and covers: social relations, work, retirement, leisure time and social support for seniors. The fifth chapter is devoted to the issue of functional efficiency and disability characteristic of late adulthood. It presents the theoretical basis of the above concepts, the effects of old-age disability and the possibilities of improving functional disorders at this age. The last chapter addresses the issue of adaptation to old age in light of the concept of successful and active aging.

The book is based on rich source materials, most of which are English-language publications, as well as some Polish-language sources. The extensive bibliography was intended to provide solid documentation of the quoted facts, necessary when addressing the topic of broadly understood functioning in old age, which is so often subject to the distorting power of stereotypes.

The publication may be used as interdisciplinary didactic material, applicable to classes in social gerontology, geriatrics, education of older people, special pedagogy of older age, rehabilitation, psychology, vocational counseling for people aged 50+, social work or other fields dealing with people of advanced age and interested in the functional dimension of their lives. It is also a comprehensive source of knowledge for specialists currently working with seniors. Often those who work with older people lack expertise in the field of disability; on the other hand, professionals who work with people with disabilities often lack competence in the field of aging and old age. This work provides valuable information for professionals working with older people as well as people with disabilities. Of course, it is also

dedicated to specialists in the field of disability in old age who are increasingly in demand on the "silver market". It is hoped that it will also serve as an inspiration for further scientific research on this subject as well as practical applications.

This publication, which comprehensively addresses the issue of the functioning of people in old age, is therefore intended for a wider audience, including older and aging people themselves, who are interested in a scientific approach to the issue of functional capacity appropriate to this period of life. Old age does not only represent the past but rather points to the future of the younger generation. Knowledge about old age is therefore necessary for all people, who, without exception, are subject to the process of aging.

* * *

On publication of the book so special to me, which was written over many years and accompanied significant events in my and my family's life, I would like to express my special thanks:

- to my Grandmother for showing me how beautiful it is to age;
- to my Mom, who showed me how to truly love;
- to my Children, who teach me how to live well;
- to my Husband, with whom everything becomes possible.

Chapter 1
Functioning in old age in the light of gerontological theories

Gerontology abounds in a variety of theories trying to unravel the mechanisms that guide the process of aging. Part of them is supported by solid empirical evidence, while others are limited to deliberations and hypotheses. Some combine and complement each other, indicating the complexity of aging, while others are mutually exclusive. No universal theory has yet been developed to fully explain the mechanisms of human aging. Each concept covers it in a segmented way, focusing on individual aspects of human life that are subject to biological, mental, social and functional changes. None of the published theories has gained unquestionable and widespread acceptance. Aging proves to be too complex and multidimensional a process for a single theory to embrace it.

Gerontological theories describe aging in the context of certain regularities, explain its causes and consequences on the level of individual and social life. Their knowledge helps to understand older people and aging populations and to better respond to their needs on a micro and macro scale. They show the power to create new approaches to the oldest members of society. They are a source of inspiration and guidance for professional environments working with the elderly. In this sense, it is worth emphasizing the value of translating theoretical knowledge, supported by empirical research, into practical solutions.

Theories of aging are conventionally divided into biological, psychological and social, sometimes into biological, developmental and also broader psycho-social theories. Occasionally, there is a separate category of nursing theories, related to the care of older people. These divisions are not very strict, and many theories share a common set of gerontological theories for the above categories. In this work, which focuses on the functioning of old age people, a distinction is made between biological, psycho-social and functional theories, dedicated to the issue

of functional efficiency of seniors in terms of their ability to perform daily activities, thus their functional competence and autonomy in life.

1.1. Biological theories of aging

A number of scientific theories have been developed to unravel the mystery of the aging process, but most of them use the symptoms of aging to describe its course. Biological theories, on the other hand, using the advantage that the basic and most reliable signs of aging are physical changes, try to investigate why organisms undergo aging processes, so, in other words, to investigate the causes of aging of the human body. They focus on detecting the mechanisms that guide the process of biological aging to prevent, slow down or moderate their occurrence and effects. They explain the causes of physiological aging at the level of cells, tissues and body systems. It is understood that theories addressing the biological basis of human aging are divided into stochastic ones, which consider old age as a result of accidental damage and errors in the body accumulated throughout life, and non-stochastic ones, according to which old age is determined in advance by programmed changes in cells or changes in neuroendocrine or immunological systems.

Referring to genetics, the mechanism of aging is explained by the widely popular Error Catastrophic Theory[8]. It indicates errors and mutations occurring during cell division in the DNA code, the accumulation of which over time causes distortion of information transmitted to their nuclei. Defective copies of genetic material generate abnormalities in cells and organs. Since the repair system is also subject to errors, the anomalies that occur are not corrected. Over time, during successive divisions, a cumulation of damage of breaking DNA strands occurs, and enzymes cannot keep up with their repair. The system of DNA repair becomes less and less efficient with age. As early as 1974, Ronald W. Hart and Richard B. Setlow[9] showed that the ability to repair DNA damage is related to cell life – its weakening leads to various types of damage and genetic defects responsible for the process of aging. The concept assumes, therefore, its fairly uniform course in human life, which contradicts even superficial observation of the regularity of human aging.

According to the Cross Linkage Theory[10], due to the formation of abnormal internal and external chain connections, the DNA becomes structurally rigid and

8 L.E. Orgel, The maintenance of the accuracy of protein synthesis and its relevance to aging, Proceedings of the National Academy of Science USA, 1963, 49, p. 517–521. L.E. Orgel, The maintenance of the accuracy of protein synthesis and its relevance to aging: A correction, Proceedings of the National Academy of Science USA, 1970, 67(3), p. 1476.

9 R.W. Hart, R.B. Setlow, Correlation between deoxyribonucleic acid excision-repair and life-span in a number of mammalian species, Proceedings of the National Academy of Science USA, 1974, 71, p. 2169–2173.

10 J. Bjorksten, The crosslinkage theory of aging,"Journal of American Geriatric Society" 1968, 16(4), p. 408–427. J. Bjorksten, H. Tenhu, The crosslinking theory of aging – added evidence,"Experimental Gerontology" 1990, 25(2), p. 91–95.

consequently deteriorates. These unnecessary connections reduce the efficiency of proteins and other molecules, which makes it difficult for components to enter and leave the cells. The effects of this process can particularly be observed in the connective tissue. Due to cross-linking, its component, collagen, loses its former elasticity. It is suspected that the process causing damage to macromolecules may be responsible for the development of cataract associated with old age, skin roughness and yellowing or kidney problems.

In the above theories, the cause-effect order is not obvious – to what extent genetic errors cause cellular and organ dysfunctions, and to what extent other dysfunctions trigger changes at the genetic level. The Wear and Tear Theory[11] claims that damage at the cellular, tissue and organ level, which increases with age, leads to exhaustion and death, followed by the death of the entire body. As the body ages, it loses its ability to repair itself, and so older people die of diseases that they would have resisted in their youth. The human body is like a machine that wears with time. While this theory dates back a long time and was presented by Dr. August Weismann, a German biologist, in 1882, it is still convincing for many people as it refers to the daily observation of how physical matter wears out. It is difficult to decide, however, whether the wear and tear phenomenon is an effect of aging or the cause of it.

Another example of a theory of damage is the Free Radicals Theory[12], which links aging to the activity of free radicals produced by the human body in the process of oxygen metabolism. These free radicals differ from conventional molecules, where the electrical state is balanced by the fact that they have a free electron, which allows them to react with other molecules in a highly destructive manner. Free radicals are highly toxic and can damage cell structures, disrupt reproduction, self-repair and cell function processes, leading to their dysfunction, aging and death. This type of free radical damage lasts from birth to death. In youth, its effects are insignificant because the body has a strong repair system. Over time, the damage done by free radicals accumulates, resulting in old age and death. Mechanisms that neutralize oxygen radicals are unable to respond to the damage that accelerates with age. However, the production of free radicals may increase with age.

Theories of damage go beyond the damage done at the gene level. The sources of destruction occurring in the body every day can lie in polluted air, food or products of the body's metabolism. To live longer, the recipe is to slow down the process of small but systematic damage during life. As such, aging appears to be a typically pathological process.

11 A. Weismann, Über die Dauer des Lebens, Fischer, Jena 1882

12 D. Harman, Aging: A theory based on free radical and radiation chemistry,"Journal of Gerontology" 1956, 11, p. 298–300.

Different species of plants and animals age at different times, while monozygotic twins show a stronger correlation in life expectancy than dizygotic twins[13]. These observations lead to the hypothesis that there must be a program that determines for each species their life expectancy, a kind of internal biological clock. That raises the question of what drives this development process and where the programmer is placed? Genes are indicated as being responsible for monitoring the growth and aging processes thanks to the instructions encoded in them. But how do these instructions get into the genes, triggering the process of inheritance? How is it possible that different species have instructions that give them different lifespans?

Genetic theories speak of aging as a process that is genetically programmed in every cell of the body. Programming theories recognize that an organism has its own developmental program, which determines the functioning time of individual organs and systems. The programmer was originally thought to be located in the hypothalamus, assuming that it controls the endocrine system, determining the period of life and the moment of termination of supervised functions, and consequently death. The theory has been verified with the development of genetics. It is now known that if aging is programmed, then it is certainly so in the genetic material – each cell has a programmed aging code stored in the DNA.

The Hayflick Limit[14] speaks of a biological clock operating at a genetic level. It has been observed that cells are only able to divide a limited number of times, and this number is genetically programmed. Fetal cells in breeding are capable of 50 divisions after which they die, similarly, adult cells die after fewer divisions. In frozen cells, after thawing, fibroblasts resume the dividing program, which means that there is a "molecular clock" capable of counting the divisions of the nucleus rather than the passage of normal time. It has been calculated that one "doubling" is lost for every 10 years of chronological age. According to the theory of programming, cells cease to divide because of the shortening of the telomeres which are part of the chromosomes. These telomeres are shortened with each subsequent cell division to a state where they are too short to allow further partition. This inability to divide leads to cell death.

The Endocrine Theory[15] recognizes the role of hormones in the regulation of bodily functions at various stages of development as well as in various aspects of physiological functioning. Under the supervision of the hypothalamus located in the brain, various organs, based on a chain reaction, produce hormones that stimulate the secretion of other hormones, which in turn determines a specific reaction

13 M.E. Williams, The American Geriatrics Society's complete guide to aging and health, Harmony Books, New York 1995.

14 L Hayflick, The cell biology of human aging, "New England Journal of Medicine" 1976, 295(23), p. 1302–1308.

15 A. Rodenbeck, G. Hajak, Neuroendocrine dysregulation in primary insomnia, "Reviews of Neurology" 2001, 157(11 Pt. 2), p. 57–61. M. Sherlock, A.A. Toogood, Aging and the growth hormone/insulin like growth factor-I axis, "Pituitary" 2007, 10(2), p. 189–203. D. Gupta, J.E. Morley, Hypothalamic-pituitary-adrenal (HPA) axis and aging, "Comprehensive Physiology" 2014, 4(4), p. 1495–1510.

of the body. The decrease in the secretion of one hormone inhibits the secretion of another. The reduction in the secretion of hormones that progresses with age may result in physical disorders and atrophic changes in the body interpreted as symptoms of aging. The increasingly popular hormone replacement therapy is aimed at delaying the body's aging. Yet it is highly unlikely that hormones are primarily responsible for aging, as organisms without an advanced neuroendocrine system also undergo this process.

The Immunological Theory (Immunological Theory), derived from the work of Herman T. Blumenthal and Aline W. Berns[16] and Roy L. Walford[17], assumes that as the body ages, its immune capacity is weakened, which in turn increases its susceptibility to infections and diseases. This theory places the internal biological clock in the thymus, attributing the management of aging to the immune system. With the quantitative and qualitative loss of the ability to produce antibodies, abnormalities such as the control of own antigens appear in the system. With age, the thymus gland contracts and reduces the secretion of hormones until this function is completely extinguished in old age. The effectiveness of the immune system weakens with age, losing the ability to fight pathogens. Biological theories of aging allow to detect the mechanisms that control this process, and thus to develop therapies that prevent their destructive effect. They respond to the needs generated by the socio-cultural phenomenon of the cult of youth, hence the multitude of hypotheses is not always supported by solid scientific evidence. If it is known that obesity shortens life, we develop nutritious but calorie-deficient diets that delay the process of aging. There are methods of extending life by using certain hormones e.g., the growth hormone and sex hormones. We have specified substances capable of binding free radicals e.g., B6, E, and those leading to the removal of toxic substances from the body. The intake of antioxidants is supposed to protect against damage caused by free radicals. Efforts are underway to select genes of healthy long-life, capable of revitalizing the whole body. Similarly, the longevity enzyme could have the ability to prolong the life of cells and, consequently, human life.

1.2. Psycho-social theories of aging

Individual theories describe the process of normal aging in the broader context of human development throughout the life cycle. They attempt to explain human development and aging at the level of individual changes in mental, personality, behavioral and adaptive functions. They assume that old age is the next stage of human development and maturing and that the growth that occurs in life does so in a predictable way. The observed changes are sequential, heading in

16 H.T. Blumenthal, A.W. Berns, Autoimmunity and aging, in: Advances in gerontological research, ed. B.L. Stretcher, vol.1, Academic Press, New York 1964, p. 289–342.

17 R.L. Walford, The immunologic theory of aging, Williams & Wilkins, Baltimore 1969.

one direction and having a universal character. These theories focus on individual challenges in old age and their general social context. They do not focus, as do biological theories, on exploring the causes of aging, but rather describe the course and characteristics of this process. They do not talk about why people age, but rather how.

The development of the theory of aging is considered to have been significantly influenced by advances in research methodology aimed at distinguishing changes linked with age (measured longitudinally i.e., sequentially over a longer period on the same test sample) from changes concerning age (measured transversely i.e., once at the same time on age-differentiated test samples). Separating the effects of personal development of a human being from cohort differences existing between individual people initiated the emergence of gerontological theories describing the process of individual aging.

The activity theory has gained the broadest acceptance. It is based on the works of Russian psychologists: L. Lev Vygotsky, Alexei N. Leontev and Aleksander R.Łurij, although the theory was adapted to gerontology by Robert J. Havighurst[18] working, as the authors of the opposing disengagement theory, at the same university in Chicago. As he stressed, he was not the creator of the theory itself, he only recorded what many applied and observed in everyday life that life's activity leads to satisfaction from living in old age. The activity theory excludes the existence of differences between middle-aged and old-aged people, excluding biological and health factors. Havighurst proves that people better adapt to old age i.e., they are characterized by a high level of self-esteem, greater satisfaction and a sense of happiness in life, if they maintain a high level of life activity, an extension of activity from middle adulthood. Maintaining maximum activity in old age, appropriate for middle age, is necessary to achieve a rich and satisfying life in old age. A person should continue to follow an already established lifestyle for as long as possible. In this context successful aging is active aging.

The activity theory states that the more active an individual is, the greater their satisfaction with life and longer life. This theory has been subject to empirical research. Much of it ended with the conclusion that active older people are happier and have greater self-esteem (e.g.[19]). In the past, it was believed that every person has a certain amount of vital strength that should be sparingly disposed of to live longer. Nowadays it is known that inactivity shortens life, leading to physical or mental atrophy. Maintaining one's roles and activity by staying healthy is beneficial for the individual, so it is necessary to look for substitutes for the activity that has been subtracted, for alternative activities – work in retirement or friends

18 J.R. Havighurst, R. Albrecht, Older people, Longmans, Green, New York 1953. F.A. Friedman, R.J. Havighurst, The meaning of work and retirement, University of Chicago Press, Chicago 1954. R.J. Havighurst, Successful aging, "The Gerontologist" 1961, 1(1), p. 8–13

19 D.C. Reitzes, E.J. Mutran, L.A. Verrill, Activities and self-esteem. Continuing the development of Activity Theory, " Research on Aging" 1995, 17(3), p. 260–277.

after the death of the spouse. Maintaining activity for a successful old age is also necessary when experiencing limitations in old age.

According to this theory, it is society that creates barriers that isolate senior citizens from forms of engagement, so the isolation of older people that is observed is not their free choice. Society should consistently apply the same standards to seniors as to middle-aged people and not promote the model of limited activity in old age. The activity theory does not apply to all older people. Some seniors are tired of their own life's activities, even if they are diversified, looking for peace of mind and therefore happily expecting opportunities to limit certain activities. The greater the activity, the greater the satisfaction, the theory holds. What should be regarded as an activity, however, if there is also solitary or passive activity, like sleep, and what should be regarded as inactivity? Would it be satisfactory to take up any activity, or should it be something meaningful? Moreover, if internal development is a natural task in old age, as some gerontological theories prove, then activity theory contradicts this need or at least diminishes it. According to this assumption, a person can maintain the same level of activity during their life regardless of natural and pathological psychophysical changes that occur with age. Ultimately, one question remains unanswered: why do some seniors reduce their roles and activities and still feel the satisfaction of life? Many older people voluntarily refuse to engage in available activities. On the other hand, socially engaged people are not necessarily happier than passive individuals. It should also be decided to what extent the popularity of this theory results from the validity of the hypotheses and to what extent it is dictated by ideological compatibility with the currently widespread and still growing phenomenon of the cult of youth.

The disengagement theory[20] is one of the first social gerontology theories to adopt a scientific form, created by Elaine M. Cumming and William E. Henry in the 1960s. At the same time, it is probably the most controversial one. Aging is presented as a process of gradual separation of an individual from society under the assumption that, as they age, older people reduce social interactions, their roles, their activity and living space, consequently withdrawing from social life. This process is gradual, universal, inevitable and irreversible. It is not known whether it is an individual or society that initiates this process, but it takes place on both sides and is mutually satisfactory. Abandoning socially important functions enables seniors to focus on personal matters, to analyze and interpret memories and experiences, both present and past, to resolve conflicts, give new meanings to the past, which in turn becomes a source of their greater life satisfaction. An elderly person, aware of the length of his or her remaining life, wants to free themselves from social obligations and to engage in social matters selectively and voluntarily. Their

20 E.M. Cumming, D.S. Newell, Disengagement – a tentative theory of aging, "Sociometry" 1960, 23(1), p. 23–35. E.M. Cumming, W.E. Henry, Growing old: The process of disengagement, Basic Books, New York 1961. W.E. Henry, Engagement and disengagement: Toward a theory of adult development, in: Contributions to the psychobiology of aging, ed. R. Kastenbaum, Springer, New York 1965, p. 19–36.

gradual alienation is also beneficial for the society, which, after their death, can function normally. Additionally, the withdrawal of seniors opens new opportunities for young individuals. In this respect, old age is a stage that prepares the person and the whole society for their departure, provides social balance and living space for the rest of the population. It serves as a means of transferring knowledge and capital from the older generation to the younger. The disengagement theory stems from the assumption that aging causes a decrease in knowledge and skills on which success in an industrial society largely depends, resulting in the reduction of seniors' professional activity and their retirement. In this perspective, successful aging ensures a gradual decline in social activity. Avoidance and passiveness are here a mechanism for coping with old age, ensuring proper development at this stage of life. The phenomenon of the retreat of the elderly takes place independently of culture, but the forms it takes are shaped by culture.

In the light of the disengagement theory aging cannot be considered in isolation from the social system in which it occurs. A person becomes part of a social order, whose interests are placed before his or her own. For the sake of social benefit, they remove themselves into the shadows of social life, eventually dying. This theory explains the process of an individual's adaptation to his/her old age, focusing more on the needs of the social system in which they live than on their own. Active seniors pose a threat and burden to the social order and can therefore be seen as not correctly adapted to old age. This theory does not explain why many socially isolated seniors, including those with disabilities, experience even lower satisfaction with life. It accepts the voluntariness of social separation, while it is often not so much a choice as a necessity in the absence of opportunities and socially imposed constraints. In a way, it justifies and legitimizes the negative aspects of social exclusion of seniors and in this sense can be seen as ageist. The disengagement theory treats old age in a mono-dimensional way, whereas in reality, this stage of life is more complex e.g., an older person withdrawing from one area of life may become more involved in another. It also excludes social conflicts of interest between an individual and society. It assumes a deterministic character, rejecting the diversity of an individual's perspective on human life, leaving it to the realization of an internal social program. On the other hand, such criticism of the disengagement theory, so common nowadays, ignores the phenomenon of interiorization of life, characteristic in old age and related to the increasing focus on spiritual and philosophical issues, concerning the ultimate issues of human life. Challenging the universality of the process of disengagement in old age has left a void in terms of explaining the mechanisms that prepare the individual and society for their departure. A distinction should also be made between "active" and "engaged". According to Elaine M. Cumming[21], active people may be relatively uninvolved, and

21 E.M. Cumming, Further thoughts on the theory of disengagement, "International Social Science Journal" 1963, 15(3), p. 377–393.

disengaged people may maintain a high level of activity in terms of their roles, albeit few and not very diverse. In light of the criticism of this theory, the difference is also made between disengagement and isolation. Separating these concepts explains the stress experienced by seniors who are forced to reduce their activity, and who are experiencing social isolation rather than voluntary withdrawal.

Despite the criticism that the theory had to confront, it was the first to gain the attention of gerontologists and raised awareness of the need to create theories explaining the mechanisms of aging from an individual and social perspective, which laid the foundations for the development of further theories. Since the presentation of its controversial assumptions, research results indicating the benefits of involvement in old age have emerged. They provided an impulse to create and popularize alternative views on successful and productive old age.

The continuity theory was presented by Betty J. Havens[22], George L. Maddox[23] and developed by Robert C. Atchley[24], who transformed the original concept into a more structured theoretical framework. It emphasizes the continuity of the personal style of coping with life in the face of changing opportunities and obstacles. The concept derives from the observation of the continuity of personality, behavior and relationships of old age people regardless of age-related mental and physical changes or social status. In his theory, Atchley explains why older people maintain their lifestyle in an environment radically different from that in which they grew up. He highlights the unique process of adaptation to old age.

Atchley describes continuity as the permanence of individual patterns. He distinguishes between internal and external continuity. The internal structure of continuity concerns personality, ideas, beliefs – it is based on continuous memory, used to support and preserve oneself in the present time. It enables future decisions to be made based on internal resources from the past. The external structure of continuity refers to a person's social and interpersonal environment. It provides support for maintaining a stable self-awareness and lifestyle. Atchley argues that people seek continuity in both internal and external dimensions. As they age, they maintain a stable temperament, identity, attitudes, prefer similar environments and benefit from long-lasting friendships. Despite experiencing changes in health, functionality and social conditions, older people continue to enjoy stability in their thinking, activities, living conditions and social relationships. People want and pursue continuity. If internal and external continuity is maintained, there is high satisfaction with life.

22 B.J. Havens, An investigation of activity patterns and adjustment in an aging population, "Gerontologist" 1968, 8(3): 201–206.

23 G.L. Maddox, Persistence of life style among the elderly: A longitudinal study of patterns of social activity in relation to life satisfaction, in: Middle age and aging: A reader in social psychology, ed. B.L. Neugarten, University of Chicago Press, Chicago 1968, p. 181–183.

24 R.C. Atchley, Retirement and leisure participation: Continuity or crisis?, "The Gerontologist" 1971, 11(1), p. 13–17. R.C. Atchley, A continuity theory of normal aging, "Gerontologist" 1989, 29(2), p. 183–90. R.C. Atchley, Social forces and aging, Wadsworth, Belmont, CA 1997.

This theory does not maintain that successful aging is conditioned by following the strategy of continuity, but that continuity is the first adaptation strategy for most people. Individuals with low self-esteem or destructive social relationships will continue to follow the patterns they have adopted. The diversity of people's experiences shapes the unique pattern of their adaptation to old age. In the process of aging, people learn from past experiences and reliable strategies – past decisions or behaviors are the basis for finding ways to cope with the current situation. In old age, effective adaptation patterns are preserved. Adapting to the challenges of old age is based on coping strategies developed in earlier periods of life. In this sense, the continuity theory allows us to predict successful aging in the future.

This theory aspires to be a middle ground between contradictory disengagement and activity theories. In this sense, neither activity nor disengagement will ensure successful aging, because in old age a person will remain their own self (maybe even more so), as they have been so far, maintaining their normal lifestyle and level of activity. Old age is not seen here as the final stage of life, but rather as an integral part of the entire human life cycle.

Erik H. Erikson was the first to prove that people in adulthood and old age are still developing. His theory is largely based on the work of Carl G. Jung, who was one of the first psychologists to take an interest in the changes occurring in the second half of life. It had previously been believed that human personality, values and beliefs are formed in childhood and that adulthood is marked by playing parental, professional and other roles.

In a concept called the individuation process, Jung[25] divided the psychological development of a person into two stages: before and after 40 years of age. In the first stage, people are struggling with the demands of the outside world, especially with regard to family and professional work. They are engaged in expanding their ego and adapting to collective norms, building their social status. After the age of 40, a time comes to adapt to the internal reality, to meet their soul. They are introspective, aided by observable physical changes that lead to confrontation with their mortality. People turn to themselves, become more reflective, more self-conscious, more internally integrated. According to Jung, with age, they acquire their individuality, their unique model of life and development.

Individualization is the process of realizing one's own self, discovering and experiencing the meaning and purpose of one's life, a process in which a person finds themselves and becomes who they really are. People seek meaning in their own lives and their role in the world. This may lead to discovering spheres previously unknown within oneself or even redefining one's own goals and values. In the perspective of the approaching death, not only does self-acceptance increase, but also tolerance towards others. In this concept, successful aging means the ability

25 C.G. Jung, The structure and dynamics of the psyche, (Vol. 8 of Collected works), England: Pantheon, Oxford 1960.

to accept the past and adapt to loss and death in the face of a decline in functional possibilities. In this regard, old age is at least as important and psychologically interesting as the first half of life. This theory does not refer specifically to old age, but focuses on the development of personality, being an important component of the psychology of human development in the course of life.

Erikson's well-known theory of psycho-social development draws from Jung's concept[26]. According to Jung, human development continues in a changing form throughout life. Similarly, Erikson argues that human psycho-social development continues throughout life, including old age. He analyzed this development in detail, dividing the life cycle into 8 periods. Each period is attributed to a different psychological conflict that arises as a result of interaction between social and cultural requirements imposed on an individual during any period of life with given current biological and psychological capabilities. In each period the conflict can be resolved positively or negatively, the effects of which accumulate with age, allowing using the acquired strength or weakness. Successful resolution of each conflict leads to development while failure prevents it.

Successful transition through developmental stages in earlier periods of life leads to a synthesis that forms the basis for development in the last stage – old age. Old age is the time for final reflection and review of one's life. During this period there is a conflict between integrity and despair – and wisdom is an expression of its positive solution. The positive solution of the eighth stage takes place when the person gains a sense of experiencing life in the best possible way, evaluates it as satisfactory and accepts past mistakes and failures without excessive regret or guilt. The integrity of the ego is also expressed by the person's ability to accept the vision of imminent death without fear. The alternative is to fall into despair over not accepting the finiteness of one's own life. Achieving integrity may lead to wisdom. In his description of human development, Erikson used a comparison to a fruit ripening in 7 stages to reach full maturity in the last one. In Erikson's posthumous, extended work[27], his wife and co-worker expanded the theory, based on the experience of her own and her husband's old age, recognizing that it is possible to develop beyond the 8 stages mentioned in the primary theory. A new, ninth stage was added, in which previous crises are to be confronted with the experience of old age. Here a person gains a chance to accept their present and past, which affects their current ability to adapt to the challenges of old age. The stages of development go beyond the rigid sequence and age periods, giving hope for the final resolution of conflicts in the context of the challenges of old age. Inspired by the theory of Lars Tornstam, she called this process gerotranscendence. In old age, man is to be especially predisposed to confront the problems of an existential

26 E.H. Erikson, Dzieciństwo i społeczeństwo, REBIS, Poznań 2000. Erikson E.H., Tożsamość a cykl życia, Zysk i S-ka, Poznań 2004. E.H. Erikson, J.M. Erikson, H.Q. Kivnick, Vital Involvement in Old Age, Norton, New York 1986.

27 E.H. Erikson, J.M. Erikson, Dopełniony cykl życia, Wydawnicwo HELION, Gliwice 2012.

nature, through a specific possibility of transcending, called "transcendentalism". It means autonomy and crossing the boundaries of the universe and time (integrating the past with the present and future). The perspective that the time remaining to be lived is shrinking is acceptable to a wise, mature man, exceeding the worldly constraints[28].

Jung's theory of the different meaning of the second half of life was the starting point for the development of Erikson's theory as well as Tornstam's theory of gerotranscendence[29]. Erikson attributed the changes in the second half of life to the concept of integrity, while Tornstam considered them at the cosmic level. He understood turning to oneself, characteristic of old age, as a transcendent change in the definition of reality. The axis of his theory was the claim that the degree of transcendence increases with age. He distinguished three dimensions of gerotranscendence: the cosmic level, the self ("I") and social and individual relations. According to Tornstam, at the cosmic level, there are changes in the perception of time and space e.g., there is a transcendence of borders between the past and the present. The sense of bond with past generations is growing. A new understanding of life and death is born, accompanied by the disappearance of the fear of one's own passing away. The acceptance of the mysterious dimension of life appears, as well as the joy of experiencing the macrocosm. In the dimension of the self, one discovers their hidden aspects: good and bad. As the gerotranscendence progresses, people stop seeing themselves as particularly significant, but rather as part of a larger whole. The transcendence of the body develops – concern for one's own body is preserved, albeit free of the obsession with it. There is a shift from egoism to altruism. Returning to the childhood stage makes it possible to understand that pieces of the jigsaw puzzle of life form a whole and thus integrate one's own "ego".

In terms of social and individual relationships, a person becomes more selective and less interested in superficial acquaintances, feels a growing need for loneliness. There is an understanding of the difference between the self and the social role played, which may be accompanied by a desire to abandon certain roles. There is emancipation of straightforwardness as an expression of maturity. A person frees themselves from the burden of being concerned about their well-being and develops in themselves the freedom of asceticism. Wisdom emerges that prevents judgments, advice and the creation of a schematic duality that separates good and evil.

Gerotranscendence is a natural process of development that can lead to a new perspective. It is a transition from a materialistic and rational view of the world towards a more cosmic and transcendent dimension, usually accompanied by

28 A. Fabiś, Rozwój duchowy jako atrybut dojrzałości w starości, in: Duchowość jako kategoria egzystencji i transcendencji w starości, ed. A. Fabiś, A. Błachnio, "Biblioteka Gerontologii Społecznej Exlibris" 2015, 1(9), p. 11–18.

29 L. Tornstam, Gerotranscendence: A reformulation of the disengagement theory, "Aging Clinical and Experimental Research" 1989, 1(1), p. 55–63. L. Tornstam, Gerotranscendence – a theory about maturing into old age, "Journal of Aging and Identity" 1996, 1(1), p. 37–50. L. Tornstam, Gerotranscendence: A developmental theory of positive aging, Springer Publishing Company, New York 2005.

increased satisfaction in life. The three levels of ontological changes mentioned above allow us to redefine one's own self and the surrounding reality, as well as to understand fundamental existential issues in a new way.

In the concept of gerotranscendence, human development is a life process, and the period of old age is one of its positive stages. It is a time of personal spiritual growth and gaining wisdom. The process of transcendence is instinctive, universal and continuous. It occurs internally but can be slowed down by external factors e.g., cultural conditions that encourage the preservation of values characteristic of the middle period of life, such as activity, productivity, independence, wealth, health, while underestimating the values of spiritual development. The process of gerotranscendence may also be slowed down by one's fears or stereotypes but accelerated by meditation, life crises and serious illnesses which lead to changes in perceiving the meaning of life and the world. For this reason, the degree of gerotranscendence is not directly dependent on the calendar age but is more related to life experiences and external influences.

Tornstam questions the theories of activity, disengagement and continuity. As a professional gerontologist, he claims that in old age people develop towards a qualitatively different state of being. He does not agree that the values of middle life should be transferred to old age. In his opinion, what some theorists call disengagement is a positive development towards gerotranscendence. He believes that the disengagement theory has been unfairly rejected. He supports the unpopular view that the inactivity of older people can be natural and unrelated to their social marginalization. Tornstam starts from the point proposed by the disengagement theory that some older people are satisfied with their own lives although they do not meet the criteria for successful aging defined by the activity theory. For Tornstam, however, disengagement is made in an act of free choice and in this sense can be positive. It is not an escape from society combined with defensive adaptation mechanisms, as disengagement is rather connected with the need for time for meditation and reflection. Tornstam goes even further – gerotranscendence is a process that involves a redefinition of reality and a reorientation towards a new spiritual perspective and experience of life, while the disengagement theory speaks only of social disengagement from mainstream life and an inward turn in old age.

The theory of gerotranscendence provides a positive image of old age and a hope that it is not a time of decline, as one can easily believe in the age of the cult of youth, but of transformation and inner harmony. The transcendent vision of time and space allows us to transform the past, which ceases to be a closed book and a random sequence of events and becomes a meaningful whole of universal significance. The socioemotional selectivity theory[30] describes the motivational forces that shape the size and structure of the social network throughout life. Lau-

30 L.L. Carstensen, Evidence for a life-span theory of socioemotional selectivity, "Current Directions in Psychological Science" 1995, 4(5), p. 151–156. L.L. Carstensen, D.M. Isaacowitz, S.T. Charles, Taking time seriously: A theory of socioemotional selectivity, "American Psychologist" 1999, 54(3), p. 165–181. F.R. Lang,

ra L. Carstensen, the creator of the theory, came from the observation that older people prefer to be accompanied by people who help them settle their emotions and avoid those who disturb their emotional balance. When the time left to live becomes limited, emotional issues become more important, and therefore there is a preference for emotion-oriented rather than problem-oriented coping strategies. Seniors avoid negative states while seeking and intensifying positive ones. The preference for emotionally rewarding social contacts over new relationships is to ensure greater emotional well-being. According to the theory, the perception of the time left to live is related to social motivation. If the time remaining to live is seen as a distant horizon, people are willing to set goals calculated for future benefits and ignore the emotional costs associated with their fulfillment. If, on the other hand, time is seen as limited, a person will be motivated to set goals with benefits for the present rather than for an uncertain future. Future-oriented goals involve a motivation based on the accumulation of knowledge about oneself and society – to prepare for future challenges. Such objectives are best achieved in a larger social network. By contrast, short-term objectives are calculated for the present, have a clear emotional meaning and are implemented more successfully in a small social network. Prioritizing emotional goals reveals itself, among others, in a greater tendency of seniors as compared to young people to remember more emotionally significant material than that with a neutral emotional charge. Similarly, older people tend to reduce the intensity of negative emotions experienced in the past. This mechanism is an expression of positive adaptation to old age and can have a protective function; it has been proven, for example, that increased levels of cortisol in response to experienced stress are associated with accelerated hippocampus atrophy among healthy people and those in early stages of Alzheimer's disease[31].

Older people pay more attention to the emotional implications of social relationships than young people. It has been empirically demonstrated[32] that selectivity in the choice of social partners increases with age, which allows for economical use of decreasing energy resources and investment only in prosperous relationships. People of advanced age do not like to take risks in this area and prefer old, proven, positive acquaintances because new ones require a lot of energy and consuming it in this area will not guarantee satisfactory results. They save time and their strength which is not wasted on potentially fruitless relationships. This selectivity is part of the mechanisms of adapting to old age and enables successful aging. The above motivational changes are caused by a temporal perspective,

L.L. Carstensen, Time counts: Future time perspective, goals, and social relationships, "Psychology and Aging" 2002, 17(1), p. 125–139.

31 S.J. Lupien, M. de Leon, S. De Santi, A. Convit, C. Tarshish, N.P.V. Nair, M. Thakur, B.S. McEwen, R.L. Hauger, M.J. Meaney, Cortisol levels during human aging predict hippocampal atrophy and memory deficits, "Nature Neuroscience" 1998, 1(1), p. 69–73.

32 B.L. Fredrickson, L.L. Carstensen, Choosing social partners: How old age and anticipated endings make people more selective, "Psychology and Aging" 1990, 5(3), p. 335–347.

not chronological age. This mechanism was found to exist among students close to graduation[33]. Similar results were obtained in studies on the regulation of emotions in cases where time is perceived as limited e.g., in the perspective of the imminent return of emigrants to their home country[34], moving house[35] or experiencing a fatal illness[36]. If time is subjectively perceived as limited, people focus on emotions – regardless of age.

The Selection, Optimization and Compensation (SOC)[37] theory proposes to look at the human life cycle from a gains and losses perspective. In this perspective, successful development is based on adequate management of one's resources and suffered losses. Managing resources is important throughout the whole life, but in old age, it becomes particularly significant. As people get older, it becomes more difficult to obtain them whereas the chance of experiencing a loss increases. Paul and Margret Baltes developed a concept that successful aging is a lifelong process of maximizing gains and minimizing losses through three processes: selection, optimization and compensation. Selective optimization with compensation determines successful aging, although SOC is not a successful aging model, rather a theory of optimal development throughout the life cycle. Throughout life, biological, social and personal opportunities and constraints determine the range of available fields of activity. In old age, the loss of resources dominates over their obtaining, which is associated with changes in personal needs and preferences. Selecting the objectives and reorganizing their current hierarchy allows to adapt the dwindling resources to the existing needs thus ensuring positive functioning. In this case, adaptability is about focusing on achievable goals that are consistent with other goals that a person wants to obtain.

To achieve the desired results in the selected areas, adequate resources are needed. Optimization ensures that the resources are suited to the goal i.e., maximizing the remaining resources and capacities to achieve the set goals. It selects the means to promote effective action.

In the face of a loss, an action may be triggered aimed at acquiring new resources or activating existing ones – as alternative means of achieving the set objectives. Compensation, contrary to optimization, has the purpose of neutralizing or

33 K. Pruzan, D.M. Isaacowitz, An attentional application of socioemotional selectivity theory in college students, "Social Development" 2006, 15(2), p. 326–338.

34 H.H. Fung, L.L. Carstensen, A.M. Lutz, Influence of time on social preferences: Implications for life-span development, "Psychology and Aging" 1999, 14(4), p. 595–604.

35 B.L. Fredrickson, L.L. Carstensen, op. cit., p. 335–347.

36 L.L. Carstensen, B.L. Fredrickson, The influence of HIV-status and age on cognitive representations of others, "Health Psychology" 1998, 17(6), p. 494–503.

37 P.B. Baltes, M.M. Baltes, Psychological perspectives on successful aging: The Model of Selective Optimization with Compensation, in: Successful aging: Perspectives from the behavioral sciences, ed. P.B. Baltes, M.M. Baltes, Cambridge University Press, Cambridge 1990, p. 1–34. P.B. Baltes, On the incomplete architecture of human ontogeny: Selection, Optimization, and Compensation as a foundation of developmental theory, "American Psychologist" 1997, 52(4), p. 366–380. A.M. Freund, P.B. Baltes, Selection, Optimization, and Compensation as strategies of life management: Correction to Freund and Baltes (1998), "Psychology and Aging" 1999, 14(4), 700–702.

avoiding losses rather than achieving positive states. It means adapting to the constraints that hinder the achievement of a goal. It is a strategy of regulating losses, consisting of managing them to maintain the current level of functioning.

According to the model of selective optimization with compensation, with age people become more selective in choosing activities or interests. At the same time, they seek opportunities to maximize their chances of achieving the desired goals in the selected area. If a strategy or means to accomplish success is no longer available (e.g. hearing loss), to compensate, seniors use other physical, psychological or technological strategies (e.g. learning new skills, using a hearing aid). Typical examples of compensation include using adaptive equipment and assistive technologies, relying on the help of others, learning new skills, enhancing effort, devoting more time and energy and imitating exemplary behaviors of others. As a result, while a person experiences a reduction of physical or functional abilities, he or she can adapt effectively to their situation through a process of selection, optimization and compensation.

One study[38] showed, for example, that visually impaired participants used selection by abstaining from certain forms of reading, optimization by learning to use reading machines, compensation by using optical and non-optical aids. Baltes gives the example of Arthur Rubenstein, who, at an advanced age, was still successfully performing his profession, but: he chose fewer pieces to play (selection), practiced more (optimization), used various ways to compensate for his shortcomings e.g., he played slower to highlight parts of fast play, although in reality they were played slower than they should.

Everyone makes a selection in certain areas of life, optimizes performance in others and compensates in those areas where they lack competence or motivation. Individuals rich in mental, physical and social resources are more likely to select and optimize. Those with fewer resources show poor selection and optimization, but greater compensation. If compensating for the losses suffered is insufficient, there is a selection of goals. With age, there is a shift in orientation from optimization to compensation.

Some gerontological theories explain old age in its social or psycho-social dimension, taking into account the demographic participation of the oldest citizens in society. They describe human development and aging at the level of changes in the context of social functioning in terms of roles and social relations.

The exchange theory[39] explains the etiology of the change of social position of people entering old age. In this perspective, interactions in old age are part of a comprehensive exchange between the society and its oldest members. This

38 E.B. Ryan, A.P. Anas, M. Beamer, S. Bajorek, Coping with age-related vision loss in everyday reading activities, "Educational Gerontology" 2003, 29(1), p. 37–54.

39 J. Dowd, Aging as exchange: a preface to theory, "Journal of Gerontology" 1975, 30(5), p. 584–594. J.A. Kuypers, V.L. Bengtson, Social breakdown and competence: A model of normal aging, "Human Development" 1973, 16(3), p. 181–201.

concept draws attention to the need to maintain a balance in social interactions, at the micro and macro levels, in formal and informal relations. According to the authors, a relationship develops if both parties believe that there is a balance between costs and benefits i.e., between what people receive and what they contribute. Social interaction requires mutual exchange given the resources available and a rational calculation of gains and losses. People engage in interaction if it is rewarding for them and withdraw if losses prevail. This arrangement depends on sex, social class, education and age. Older people have little opportunity to be socially active, to influence their environment and their potential participation is not highly appreciated. Their contribution to social interest does not compensate for the costs of supporting them in old age. In the spirit of economic rationality, older people have fewer resources to contribute to the process of intergenerational exchange. Consequently, a successful old age depends on the long-term preservation of resources to maintain social commitment and equal exchange.

Elderly people withdraw from social engagement when their ability to participate fully in a two-way exchange begins to shrink. Compared to the younger generations, they have fewer resources at their disposal, such as health, physical capacity and attractiveness, education, professional position, income, which limits their potential to participate in mutual relations. On the other hand, interactions with seniors are becoming increasingly demanding and costly for the younger generations. Older people, in turn, withdraw, feeling uncomfortable in relations in which they benefit disproportionately without the possibility to return the favor.

However, the process of social degradation of the oldest citizens is more complex. There are physical barriers (the inadequacy of the physical environment to the different psycho-physical needs of older people e.g., noise, small print, high stairs) and social barriers (of normative nature, such as forced termination of employment, or informal nature, such as avoiding the company of stereotypically perceived elders), leading to their social exclusion. It is difficult to assess to what extent the elderly withdraw consciously and voluntarily, and to what extent they act under the influence of internalized, social stereotypical beliefs implying that, at a certain age, routine actions leading to withdrawal from the social activity must be taken.

According to the theory of exchange, the social value of older people is measured by their productivity understood in economic terms. The resources prevailing in older age e.g., life experience and wisdom, which can counterbalance decreasing financial resources, are omitted. The elderly have a value that is not economically measurable. Nevertheless, taking into account the natural psycho-social changes that occur with age in assessing the functioning of older people and their social usefulness, as well as appreciating their extra-economic value on the one hand and their full economic, often indirect, contribution on the other (e.g. voluntary work, caring for grandchildren), could make it possible to maintain equality in the social perception of intergenerational exchange.

The Age Stratification Theory of Aging, created by Mathilda W. Riley et al.[40], describes aging in the context of age stratification and elevates it to a macro level in her analyses. It focuses on the role of social structures in the process of aging. In the age stratification theory, there is a shift of attention from the individual in old age to seniors as a group. It makes it necessary to look at society as a whole consisting of different age groups in which certain opportunities, roles, privileges or rights are available or inaccessible due to age. Belonging to a given age group determines what is expected of its members i.e., what is or is not appropriate at that age. In light of this theory, understanding the older generation is only possible with regard to the other age groups and their mutual relationships.

This theory uses the term "cohorts" which, unlike the notion of generation, is not determined at intervals e.g., every 10 or 20 years, but refers to a group of people born at a similar time who are additionally linked by shared historical experiences (war, economic, political) or values that influenced their attitudes and behavior during their lives. According to the age stratification theory, society can be divided into cohorts shaped by a common historical context with similar expectations, beliefs, attitudes and experiences. In this perspective, it is not possible to generalize aging in isolation from the cohorts concerned – older people will differ depending on their membership in different cohorts. You can recognize them by identifying the specifics of their cohorts. Cohort differences influence the aging process of their members. People from different cohorts will have different expectations of aging and this process will take place in different ways.

The subculture theory of aging proposed by Arnold M. Rose[41] in the early 1960s says that the growing group of seniors in society leads to an increased sense of their identity as older people, clearly different from the rest of the society, forming a kind of subculture with different values, interests, experiences, the economy of life, lifestyle, fashion, views and interests, etc. As a group, older people are less integrated with society as a whole and more often interact with people from their age group. Creating a subculture, with its norms and values, can be a reaction to the social alienation, segregation and discrimination of older people. Their social degradation may be related to the loss of their position as determined by their health, mobility, education, income, etc. Subcultures develop through common features and the exclusion, which older people experience. Through a subculture, they retain a sense of identity. They form collective groups thanks to their ability to share common experiences and interests, preserving their status and self-esteem. Successful aging depends on a person's ability to create a subculture with their peers, to share with them certain values, laws and standards. On the other hand,

40 M.W. Riley, M. Johnson, A. Foner, Aging and society, Vol. 3, A Sociology of Age Stratification, Russel Sage, New York 1972. M. Riley, Age integration and the lives of older people, "Gerontologist" 1994, 34(1), p. 110–115.

41 A.M. Rose, W.A. Peterson, Older people and their social world – the subculture of aging, Davis, Philadelphia 1965.

due to their increasing number, seniors create growing social and political pressure. Their social alienation can turn against society. There is also a risk of the disappearance of intergenerational bonds.

The perspective of the population of older people as a subculture presupposes a certain homogeneity. This is contradicted by subsequent studies published by Luis Harris and Associates[42], which state that there is no typical elderly person. People do not suddenly stop being themselves, turning into a stereotypical senior citizen. On the contrary, the psycho-social factors that affect an individual throughout their life shape their uniqueness in a way that greater interpersonal differences exist between older people than between young people. Older people, therefore, appear to be the most internally diverse age group. They may be more likely to form affiliations due to their social class, religious group or family than their age.

The role theory of aging[43], initiated in the 1960s, tries to explain the process of adaptation to old age. In the description of the social order, it focuses on the roles played by its members, assuming certain norms and expectations regarding their behavior. The theory states that society has several guidelines defining appropriate behaviors for a given role. Roles are socially defined, and the behaviors assigned to them are learned. The roles played define the sense of identity and determine behavior. The loss of a role is associated with a loss of social competence and social isolation, followed by a decrease in mental and physical capacity. This theory speaks of old age as a period of loss of role and decline of strength, contrary to Erikson's theory, which presents old age as a stage of development.

Jerzy Halicki[44] associates social isolation of pensioners and incapacity of exploiting their potential with the concept of rites of passage. The rite of passage allows an individual to move from one social position to another. It is a more or less sophisticated ritual that gives the members of society a clear signal about the change in a person's social status and the related necessity to treat them differently. In personal life, when one reaches a moment of discontinuation between the past and the future e.g., reaching adulthood, getting married, giving birth to a child, etc., rites of passage allow, in a symbolic way, for a public change of identity. According to the author, in Western societies the rite of passage is incomplete. After the phase of separation, when an individual is isolated from a social group, then after the marginal phase, which involves the process of a person changing his or her social status, there is no phase of their return to society in a new role, with several appropriate tasks to undertake. For a retired person there is no clear path

42 L. Harris & Associates, The myth and reality of aging in America, The National Council on Aging, Washington 1975.

43 B.J. Biddle, E.J. Thomas, Role Theory: Concepts and research, John Wiley & Sons, New York 1966, p. 67–72. B.J. Biddle, Recent development in Role Theory, "Annual Review of Sociology" 1986, 12(1), 67–92. J. Strean, Role theory, in: Social work treatment: Interlocking theoretical approaches, ed. F. Turner, The Free Press, New York 1979, p. 385–407.

44 J. Halicki, Edukacja seniorów w aspekcie teorii kompetencyjnej. Studium historyczno-porównawcze, Trans Humana, Białystok 2000

to return to society. The role to be played in it has not been defined. No specific social expectations have been set for seniors. However, as they grow older, they are deprived of the roles they have held so far so that in their old age they can play the so-called "roleless roles", unnoticed and generally unacknowledged.

Gordon F. Streib and Clement J. Schneider[45], as well as Zena S. Blau[46] applied this theory to the analysis of widowhood and retirement. The professional role, as one of the most important in life, is a source of identity. It sets the norms of one's behavior, values, relating to other people, communicating, dressing, etc. With retirement, people lose part of their identity. In Blau's opinion, none of the roles proposed for old age can replace those previously performed e.g., the role of widowhood or retirement. These are roles based on absence – they appear when something important ends up: marriage or professional work. Distinguishing between voluntary and involuntary leaving a role, she stresses that while voluntary exit usually involves the hope for a better life, an involuntary exit is more destructive. In this context, whether retirement was wanted or not, will influence the course of adaptation to old age. This adaptation presupposes the need to replace lost roles with new ones to maintain a positive self-image.

In 1972, Donald O. Cowgill and Lowell D. Holmes[47] created the modernization theory of aging. The term "modernization" refers to the processes that took place when societies transformed from agricultural to industrial. This theory shows the change in the social position of older people as industrialization progressed. It is based on the results of previous anthropological studies (e.g.[48]) and the assumption that older people in societies with low industrial development (pre-industrial societies) enjoyed a stronger social position, greater respect and reverence. The transition from tradition to innovation and productivity has led to the marginalization of their position and roles perceived as outdated. As modernization advanced, the status of older people declined – it was inversely proportional to the degree of industrialization of a given society. This theory offers a historical view of the phenomenon of ageism, which appears as a product of modernization.

Industrialization has changed the way goods are produced and distributed, mass education has enabled universal access to new scientific and technological solutions and the achievement of a higher socioeconomic status, changing the shape of families and cultural values. Cowgill[49] identified 4 key aspects of modernization that reduce the status of older people: health technology, economic technology, urbanization and education. Improved health technology and more accessible medical care have improved health and extended human life, which on the other hand has weakened the formerly strong position of the oldest members of society. Older

45 G.F. Streib, C.J. Schneider, Retirement in American society, Cornell University, Ithaca 1971.
46 Z.S. Blau, Old Age in a changing society, New Viewpoints, New York 1973.
47 D.O. Cowgill, L.D. Holmes, eds., Aging and modernization, Appleton-Century- -Crofts, New York 1972.
48 L.W. Simmons, The role of the aged in primitive societies, Yale University Press, New Haven 1945.
49 D.O. Cowgill, Aging and modernization: A revision of the theory, in: Communities and environmental policy, ed. J.F. Gubrium, Charles Thomas, Springfield Ill. 1993, p. 124–146.

people have lost their uniqueness due to the achievement of longevity. Increased life expectancy has intensified competition in the labor market – maintaining a job for a long period of time requires perfecting the necessary innovative skills and knowledge. For this reason, employers prefer younger people, forcing older workers to retire. This in turn means a loss of income and social prestige resulting from being a part of the labor market. The roles of the young and the elderly are reversed – in the traditional model of society or the family, it was the elderly who held the dominant and controlling role. Exclusion from the job market has made them dependent on the young. Older people have lost the ability to perform leadership roles, power and influence.

The degradation of the social position of seniors is deepened by the progressing process of urbanization. Young people are moving to cities to get an education and a job, which contrasts with the heritage of older people remaining in the countryside. The knowledge and experience that once determined the high social position of seniors, become a relic in the era of modernization when it is scientific knowledge that comes highly esteemed. The theory of modernization indicates a linear relationship between the degree of modernization and the position of older people – the more advanced the modernization, the lower the status of the oldest members of society.

The theory is strongly criticized for being overly schematic and for simplifying the impact of modernization on the social position of seniors. The fundamental assumptions for this theory concerning the high status of old-age people in pre-industrial societies are being challenged. The theory ignores cultural differences or social class in assessing the impact of modernization on age.

The phenomenological theory[50] emphasizes the individualized course of the aging process and the individual's view of it. At its core, there is a conviction that to understand someone's behavior, it is first necessary to recognize their views and beliefs. As a starting point, it assumes that people are different, have different experiences, perceive reality and interpret it in different ways. It urges one to consider the subjective nature of human experience, also in the process of aging. Each person gives old age its own meaning, which is only indirectly influenced by external opinions. Objective measurements of aging ignore the subjective perception of this process. The phenomenological theory points out that people experience their aging in different subjective ways and that understanding the individual perspective is the starting point for a more universal comprehension of the process of aging. It is therefore essential to be aware of the different circumstances in which society gives it their meaning. This approach has been reflected in a number of gerontological research studies e.g., in individual case studies and biographies.

50 D. Snygg, The need for a phenomenological system of psychology, "Psychology Review" 1941, 48(5), p. 404–434. A.W. Coombs, D. Snygg, Individual behavior: A perceptual approach to behavior, Harper and Row Publishers, New York 1959. J.T. Russell, The Snygg-Combs Phenomenological Theory of perception and its implications for adult education theory and practice, Indiana University, Bloomington 1969

1.3. Functional theories of aging

A separate group of gerontological theories are the so-called nursing theories of aging which focus on the process of aging in the context of reduced functionality of a person and, because of the name (nursing), on providing care services to functionally impaired seniors. On a semantic level, they suggest a link between reduced functionality and care, which is understandable in nursing but not fully justified given the possibilities of supporting older people's functioning in the process of rehabilitation. Rehabilitation measures aim to improve impaired functioning and regain lost independence or maintain it at the highest possible level. In this respect, the priority is to maintain or increase the state of functional independence, while turning to daily nursing care should be regarded as a last resort and most preferably understood in terms of support in those areas that are no longer subject to improvement or equipment use. In the field of rehabilitation or special pedagogy dedicated to seniors (special geragogy)[51], nursing theories do find application, helping to understand the conditions of the functional capacity of older people. However, it was decided to include them in the group of theories taking a more universal name – gerontological functional theories. While essentially all gerontological theories speak of the functioning of older people on an individual and/or social level, functional theories directly address the subject of functional competence and capacity in old age, understood as the ability to perform daily activities, concerning the requirements of the physical and social environment. In this sense, they refer to the concept of disability and represent a common area of interest for social gerontology and special pedagogy (special geragogy) and rehabilitation.

The functional consequences theory[52] provides a theoretical framework for understanding disability in old age. It talks about the influence of environmental and bio-psycho-social factors on the functioning of people in old age. With age, many changes occur at the level of biological functioning e.g., in vision, hearing, respiratory capacity, muscle strength, etc. Natural changes specific to this period of life are often accompanied by limitations imposed by illnesses. The functional consequences of natural and pathological changes that occur with age negatively affect the ability to perform daily activities and the quality of life of seniors. Autonomy in everyday tasks is associated with healthy aging and high quality of life, while dependence leads to a weakening of health and reduced quality of life. This theory focuses on the assessment of age-related changes and risk factors related

51 M. Kilian, Geragogika specjalna, in: Encyklopedia starości, starzenia się i niepełnosprawności, A-G, ed. A.A. Zych, Stowarzyszenie Thesaurus Silesiae i „Śląsk" Wydawnictwo Naukowe, Katowice 2017, p. 499–501. Kilian M. (2018), Geragogika specjalna w starzejącym się społeczeństwie, in: Kilian M., E. Śmiechowska-Petrovskij (ed.), Niepełnosprawność w okresie późnej dorosłości, Oficyna Wydawnicza Impuls, Warszawa, p. 19–45.

52 Miller C.A., Nursing care of older adults: Theory and practice, Lippincott, Philadelphia 2004. C. Kozak-Campbell, A.M. Hughes, The use of functional consequences theory in acutely confused hospitalized elderly, "Journal of Gerontological Nursing" 1996, 22(1), p. 27–36.

to health and functionality, as well as the design of interventions aimed at reducing the resulting disability. Identifying the potentially negative effects of aging allows to develop strategies for healthy and functional aging as well as to anticipate the needs of seniors and design actions to reduce the risk of losing health and physical capacity. This theory is used to develop tools for assessing the performance of people at an advanced age.

The theory of thriving[53] considers a person's functioning in his or her life cycle in relation to the environment in which they live. It is based on the notion of an inability to develop, which is assumed to result from the disruption of the individual's relationship with the environment. This theory helps to identify and modify the factors that contribute to this disharmony. Assisting seniors is about identifying factors that can interfere with their development and about planning interventions targeting these factors.

The theory of thriving derives from the concept of failure to thrive. These failures are associated with losses attributed to older people in a social context (e.g. lack of communication, inability to give, inability to find the meaning of life, inability to attach to others) and a physical-cognitive one (e.g. constant weight loss, depression, impairment of mental capacity). A thriving person lives a full life. The failure to develop is placed at the end of the chain of successful development.

Barbara K. Haight et al. look at the person's thriving from a holistic and lifelong perspective, taking into account the influence of the environment on the aging process. Optimal thriving is achieved when there is harmony between an individual and their social and physical environment; the thriving is fluent and the nature of factors constantly influencing it is dynamic and changeable. They can contribute to achieving optimum growth or inhibit it. Thriving involves the ability to take care of oneself or maintain the correct bodyweight, keep a good mood and a sense of meaning, commitment and independence. A failure to thrive occurs when there is a mismatch between an individual and their social and physical environment. Thriving runs along the line from total disharmony to total harmony.

The Person-Environment-Occupation (PEO) model[54], used in the field of occupational therapy, describes the functioning of a person in their environment. It is based on three components: the person, the environment and occupations, dynamically interacting with each other during the life cycle. The person represents here an individual, a group of people or an organization. The environment is understood as physical, social, cultural, institutional and socio-economic surroundings.

53 B.K. Haight, B.E. Barba, A.S. Tesh, N.F. Courts, Thriving: A life span theory, "Journal of Gerontological Nursing" 2002, 28(3), p. 14–22. V.B. Newbern, H.V. Krowchuk, Failure to thrive in elderly people: A conceptual analysis, "Journal of Advanced Nursing" 1994, 19(5), p. 840–849.

54 M. Law, B. Cooper, S. Strong, D. Stewart, P. Rigby, L. Letts, The person-environment-occupation model: A transactive approach to occupational performance, "Canadian Journal of Occupational Therapy" 1996, 63(1), p. 9–23. S. Strong, P. Rigby, D. Stewart, M. Law, L. Letts, B. Cooper, Application of the person-environment-occupation model: A practical tool, "Canadian Journal of Occupational Therapy" 1999, 66(3), p. 122–133.

Occupations are a series of activities or tasks undertaken in various environments. Optimal functioning or – occupational performance – is the result of interaction between individuals or groups and the environment and the undertaken activity or tasks (it is a common set of these three overlapping spheres). It is shaped by a dynamic interdependence between the person, the occupations and the environment. The more these three spheres are in line with each other, the greater the harmony and compatibility. Any changes occurring in these spheres result in a reduction or increase in this compatibility. This model is applied on the micro (individual) and macro (social) levels.

If a person experiences an illness with age, there may be a change in their functional state i.e., a disability and a sense of environmental constraints. In this model, disability occurs as a result of poor compatibility between the person and the environment, rather than the impairment itself.

According to the competence theory[55], competence is expressed by the interaction between a person and environmental factors over a given period. A person's behavior, also in old age, is the result of the relations of environmental requirements towards the resources available to him/her enabling them to meet these requirements. A specific environment, age or time also requires specific competences. Therefore, people living in different times, ages and environments will have different competences. Over time, requirements and possibilities to respond to them change. This theory emphasizes the value of lifelong learning, expanding one's knowledge and gathering experience, strengthening one's competence and autonomy.

The competences of old people are considered in the physical (health), cognitive and social dimensions and relate to responsibility for one's own life and the ability to shape it independently. Seniors, however, may be perceived as weak and dependent due to, among other things, loss of health and socially valued roles. Moreover, they can adopt (internalize) this stereotypical view, believe in their own weakness, thus losing real competences, according to the maxim that we are as others see us. Even the kind-hearted social environment usually asks seniors not what could strengthen their position but what they lack e.g., a routine question about health when talking to an older person. Some seniors may even deliberately dispose of their competences and assume a position of weakness to receive love and interest from their relatives. This is the case, for example, when certain gains are made from reduced functional capacity and dependence on others e.g., financial (benefits), emotional (interest, care and emotional support of family, friends and acquaintances). In this situation, disability becomes a way of satisfying needs perceived as superior to life's independence.

55 J. Halicki, Edukacja seniorów w aspekcie teorii kompetencyjnej. Studium historyczno-porównawcze, Trans Humana, Białystok 2000. J. Halicki, Zastosowanie teorii kompetencyjnej do edukacji seniorów, "Edukacja Dorosłych" 1997, nr 2, p. 35–47.

Similarly, the person-environment fit concept[56] pays attention to the interaction between personal and environmental factors. In this context, competence is related to the ability to adapt to environmental requirements. This model allows assessing the extent to which environmental requirements take into account the functional capabilities of a person. This assessment can be made in a subjective manner (opinion of a person functioning in a given environment) and objective i.e., from the point of view of an observer (e.g. therapist, physiotherapist) aware of the functional capacities of a person or group of people.

The models of fitting the person and the environment are derived from the work of Kurt Lewin[57], which is the basis for the theories explaining the interaction between individual aging and the situational environment, among which the competence approach and the congruence approach can be distinguished. In the competence approach, behavior is created by fitting the individual's level of competence with the requirements of the environment. In the congruence approach, on the other hand, behavior is the result of the environment meeting the needs of the individual.

Lewin spoke about the fact that a person interacts with his/her "living space" i.e., with the physical and psychological environment. They perceive the living conditions not only through the current situation but also through future expectations and past experiences. This model was applied to the aging process by M. Powell Lawton and Lucille Nahemow[58], focusing on the interaction between personal competences and physical environmental conditions. In this approach, a person confronts the specific requirements of the environment using his/her own physical or mental resources. When an individual loses their attributes (e.g. mental and physical abilities) as a result of the aging process and the social or physical requirements of the environment increase, it can lead to a disruption of P-E compatibility. The emphasis is on fitting the environment to the needs of an individual (e.g. removing architectural barriers) rather than the individual's characteristics or social resources. It is primarily the environment that is to compensate for the loss of competence of seniors.

According to Lawton, competences are individual qualities such as objective and subjective health, various innate or learned skills. The environment is understood as the physical surroundings (e.g. residential buildings, public interest offices,

56 J.R. Edwards, An examination of competing versions of the person-environment fit approach to stress, "Academy of Management Journal" 1996, 39(2), p. 292–339. J.R. Edwards, R.D. Caplan, R.V. Harrison, Person-environment fit theory: Conceptual foundations, empirical evidence, and directions for future research, in: Theories of organizational stress, ed. C.L. Cooper, Oxford University Press, New York 1998, p. 28–67. J.R. Edwards, D.M. Cable, I.O. Williamson, L.S. Lambert, A.J. Shipp, The phenomenology of fit: Linking the person and environment to the subjective experience of person- -environment fit, "Journal of Applied Psychology" 2006, 91(4), p. 802–827

57 K. Lewin, Field theory in social science, in: Selected theoretical papers, ed. D. Cartwright, Harper & Brothers, New York 1951.

58 M.P. Lawton, L. Nahemow, Ecology and the aging process, in: The psychology of adult development and aging, eds. C. Eisdorfer, M.P. Lawton, American Psychological Association, Washington DC 1973, p. 619–674.

rehabilitation facilities) and social services (access to social activities, formal and informal support). Optimal behavior occurs when there is a correlation between competences and environmental requirements; in turn, this correlation generates personal well-being. When there is no correlation, the competences and/or the environment must be modified, otherwise, the well-being will be compromised. In response to the functional losses experienced in old age the capacity to cope with environmental requirements should be raised, essentially by reducing functional constraints, or the requirements generated by the social and physical environment.

The P-E fit approach is significant in the gerontological theory, especially in the discussion about competences and the ability to maintain autonomy in the area of rehabilitation and functional improvement of seniors. It is also reflected in the concepts of disability e.g., the most widely accepted definition of disability according to the World Health Organization. It has much in common with the social model of disability. Unfortunately, from the gerontological point of view, the P-E model does not explain the phenomenon characteristic of older people i.e., their positive perception of their situation despite their weakened health and functional capacity. This is because the model focuses excessively on objective measurements of the external environment, while the sense of happiness does not depend significantly on external circumstances. The model has also been criticized for focusing too much on negative environmental requirements, the passive role of the person and omitting the positive aspects of the environment and the person's ability to actively transform their surroundings and improve their competence.

Gerontological theories provide a systematic theoretical structure for gathering knowledge about the functioning of older people. The practice based on this conceptual framework acquires a rational and ordered character, so the actions taken are purposeful and justified. Gerontological theories provide practical guidance, although in the case of a variety of theories these can be very different and sometimes contradictory recommendations. The authenticity of a given theory is confirmed by the collected empirical evidence, sometimes very extensive, which verifies the credibility of the theses. Action based on reliable research is particularly important in the field of work with older people as it helps to eliminate initiatives based on stereotypes.

The process of aging of societies observed globally nowadays encourages the development of new gerontological theories, using the latest scientific achievements. According to some researchers, the phenomenon of interdisciplinarity should lead to the creation of an integral theory in social gerontology, while the supporters of critical gerontology doubt that the vast amount of empirical data currently available will lead to a single common theory[59]. There is undoubtedly a lack of a holistic gerontological theory, which may result from the very nature of gerontology,

59 M. Muszyński, Jaka przyszłość teorii starzenia się? W stronę interdyscyplinarności – propozycja integralnej teorii gerontologii społecznej, in: Społeczne wymiary starzenia się, ed. A. Fabiś, M. Muszyński, Biblioteka Gerontologii Społecznej, Bielsko-Biała 2011, p. 233–250.

a theory that derives from many separate scientific disciplines, each of which creates its separate concepts.

However, the interdisciplinary nature of gerontology as a field of science encourages us to shift from a purely biological, demographic, sociological and psychological view of aging. It allows for the creation of an integral theoretical perspective, which brings together many different approaches to the phenomenon of aging and provides its comprehensive picture. Unfortunately, such eclecticism can have an undesirable effect, leading to a combination of theoretical and methodological elements that do not fit together. The task of integral gerontology is not to create metatheories, but rather to combine various scattered perspectives based on the paradigms it has developed. The model of integral gerontology could exceed the unilateral biological, demographic or sociological approach[60]. The tendency nowadays is to take a complementary view of the process of aging in its individual and social dimensions. The interdisciplinary in nature concept of functioning in old age could be an important component of the holistic theory of aging, around which various disciplines could build their explanations.

60 Ibidem

Chapter 2
Natural changes in physical and mental functions in old age

During life, the human body undergoes natural and pathological changes. Natural changes are gradual, inevitable, specific to all people, most probably irreversible, but quite easily compensated. Pathological changes, on the other hand, are not a natural consequence of the aging process and are therefore subject to prevention and treatment. However, it is generally accepted that avoidable pathological changes are an integral part of old age, even an attribute, and as such are considered normal at this stage of life. The stereotype of an older age burdened with inevitable diseases and impairments leads to their silent acceptance as natural in the human life cycle. As a result, older people experiencing illness and disability do not undertake treatment or rehabilitation, thereby reducing their quality of life and premature death, often preceded by years of disability and restricted autonomy in life.

The concepts of successful and pathological aging have been introduced to clearly distinguish between natural and pathological changes that progress with age. Successful (natural) aging is a physiological process without pathological complications, and therefore includes changes resulting solely from the aging process and the related time, unburdened by physical pathogens, adverse environmental conditions or lifestyle. There is now no longer any doubt that the aging process itself does not cause disease, but only facilitates it[1]. Ordinary (normal) aging is associated with minor adverse health and functional changes. It is estimated that normal and positive aging affects about 10% of the population[2]. Pathological aging

1 K. Wieczorkowska-Tobis, A. Stogowski, Związek starzenia z niesprawnością, "Gerontologia Polska" 2014, 3, p. 156–160.

2 K. WieczorowskaTobis, Zmiany narządowe w procesie starzenia, "Polskie Archiwum Medycyny Wewnętrznej" 2008, 118 (Suppl.), p. 63–69.

in turn occurs in the rest of the population and refers to the combined effects of aging in its natural and pathological course, taking into account the adverse effects of environmental conditions and lifestyle, which intensify the negative impact of passing time on the organism. In successful aging without the burden of disease, the maintenance of functional, physical, mental and social capacity until old age is considered natural and death occurs from old age as a result of the gradual termination of body functions. Currently, it is believed that such aging is possible with the minimization of the impact of factors causing diseases.

The above division into successful and pathological aging, although clear in theory, raises numerous difficulties in practical application e.g., a serious issue of the separation of the influence of innate and environmental factors, fundamental to the categorization of the two types of aging. Although the current scientific knowledge excludes combining the concepts of "aging" and "sickness" as synonyms, establishing a precise biological norm in the process of aging to be able to differentiate more precisely between natural and pathological age-related changes remains an unresolved issue and a challenge. Degenerative changes, which deepen with age on the molecular, cellular and organ levels, weaken physiological functions and the body's efficiency, leading, after exceeding the uncertain norm, to the appearance of pathological changes, reduced functional efficiency and, consequently, even premature death.

To distinguish physical changes caused by aging itself from changes caused by adverse external factors (diet, environmental impact, genetic conditions, etc.), Bernard L. Strehler[3] proposed to take into account 4 criteria of the aging process:

- The first is universality, according to which a true age-related change must occur in all members of a given species. Natural aging is therefore a universal process, specific to all people, while diseases affect only some of them.
- The real changes associated with age are innate and controlled internally, with the exception of external factors.
- The real change associated with age is gradual and continuous. People are not aware of the slow deterioration of the condition of their bodies. It is very difficult to measure the physical decline in less than a few years, as well as to determine its beginning. However, dynamic changes may be an indication of their pathological nature.
- Most age-related changes are harmful to the body because they cause a decrease in functional capacity and increase the risk of disability and death. Natural aging is characterized by small changes that do not hinder daily functioning.

Mental or physical development occurs according to the well known and described patterns in children, yet becomes highly individualized in old age. It is difficult to predict well in advance how a given person is going to age, because

3 B.L Strehker, Time, cell and aging, Academic Press, New York 1977.

every senior, with their long and unique history, ages in their unique way, and at a different pace. Mental or physical development, which in the case of children takes place according to precisely known and described patterns, takes on a highly individualized character in old age. It is difficult to predict well in advance how a given person is going to age, because every senior, with a long and unique history of his/her own life, ages differently and at a different pace, in his/her way. Sometimes the biological age is not the same as the chronological age, because the bodies of different people age at different rates, even if time goes by just as fast for all. With age, the differences between people deepen, also in the sphere of psycho-physical life. However, although risky, generalizing about age-related changes is necessary to identify some universal changes and developmental mechanisms common to all people without exception who are subject to the aging process.

Two obstacles can be identified in the study of natural changes: 1) the predominance of less reliable cross-sectional studies over more objective longitudinal studies and 2) the difficulty of recruiting a test sample of healthy aging people in complete isolation from the impact of external pathogens. Longitudinal studies are costly and complex in terms of organization and methodology, therefore cross-sectional studies are more popular. The concept of longitudinal studies involves the study of the same population over a longer period, even over several decades, at selected time intervals e.g., every 5 years. This method allows us to compare the results obtained from the same people over many years and to obtain an image of the occurring changes. In cross-sectional studies, the same variables are measured in different age groups and the results obtained are compared. Differences in the measurement of the variables provide the basis for cause-and-effect conclusions which are burdened with a high risk of error. In this case, the effects of aging are not inferred from the observations of the same people in their life cycle, but by comparing the results obtained in younger and older age categories. However, the results of the aging process should not be concluded by comparing people of different ages without taking into account the environmental context in which they grew.

The theory of age stratification draws attention to the fact that a society is composed of cohorts i.e., age-related social strata that are linked by a community of similar experiences, beliefs, customs or values. It is a matter of agreement to define generations, which can be determined for research purposes, assuming 10- or 20-year intervals. A cohort is formed as a certain age-distinctive community in society. In Poland, the cohort of people born and raised before World War II differs significantly from the cohort that grew in the post-war period, and even more so from the cohort raised after 1989, during the political transformation. Differences in the study of certain characteristics of young and older people may arise not so much from aging itself, usually to the disadvantage of seniors, but from cohort differences. The current population of seniors differs from young people not only

because of their age – in their youth they would also be different due to the political, historical and cultural conditions that shaped them.

This chapter will discuss issues related to natural aging in human psychological and physical spheres. In the light of scientific progress, which continues to provide evidence of the pathological nature of many of the age-related changes that have until now been considered normal, this division should be treated fairly flexibly, nevertheless, it is necessary to separate what is natural and as such requires acceptance from what is pathological and undesirable and therefore requires preventive, therapeutic and rehabilitative action.

2.1. Age-related external changes

External changes that are easy to observe are most often the first noticeable signs of aging and indicators of calendar age. The most common are skin and hair changes. With age, the skin becomes thinner, paler, drier and rougher. Reducing the number of sweat and sebaceous glands can cause flaking, itching, injuries and longer healing. The fat underneath the epidermis gradually disappears along with the muscles. The reduction in collagen and elastin production leads to reduced elasticity. As a result, the skin wrinkles and sags, especially on the cheeks and neck. The nose or ears may become enlarged as soft parts of the body. Not only does the structure of the skin change, but also its tone. Lipofuscin deposits may appear on the outer parts of the hands in the form of brown spots (so-called pigmented spots, liver spots), as well as black and blue spots resulting from weakened blood vessels.

Graying and alopecia are often the first signs of passing time associated with old age. It may be wrong sometimes because they can appear at quite an early age in people in excellent psycho-physical condition. Contrary to the stereotypical belief, hair loss can also affect women, usually in late old age. In both sexes hair on the head, underarms and intimate places thins, whereas it increases on the face in women and on the eyebrows and nose in men.

With age, the shape of the body changes. There is a decrease in height mainly due to a change in posture as a result of a deeper forward slope of the spine, increased knee and hip curvature. The space between the spine discs decreases, leading to a shortening of the body length. The reduction of fat, non-fat, bone tissues and water lead to loss of body mass. This phenomenon should be considered beneficial – maintaining the current weight in old age means that the lost tissue is replaced by fat e.g., in a 25-year-old man who weighs 75 kg, body fat constitutes 13 kg of fat, while at the age of 65 years it will amount to 28 kg[4]. The increased accumulation of fat and the simultaneous atrophy of muscles with age are caused by

4 N. Coni, W. Davison, S. Webster, Starzenie się, Wydawnictwo Naukowe PWN, Warszawa 1994.

hormonal changes. The distribution of fat changes, which is now deposited not so much underneath the skin as it is underneath the internal organs. One of the many negative consequences of fattening is the extended duration of the presence of medications in the body, usually taken in increased amounts in old age.

2.2. Age-related systemic changes

It is not easy to study natural biological changes as they progress with age because of the ambiguity of the term "norm". To find out what natural changes occur in the body over time, it would be necessary to find people who only experience changes unaffected by pathological factors, which is impossible in non-laboratory conditions. Moreover, what criteria of a norm should be adopted in the recruitment process if it were to be the subject of research? In a study on natural lung aging, the authors[5] pointed out how difficult it is to find eligible individuals i.e., who are free from the influence of negative factors such as smoking. They indicated the advantage of longitudinal studies over cross-sectional studies, as it is risky to draw conclusions from studies conducted among people raised in different ways, with different eating habits and the quality of inhaled air. It would be ideal to apply longitudinal studies on a group unaffected by pathogenic factors, to track the age-related changes they undergo and then compare the results with those obtained in the group exposed to various pathological factors. In real conditions, in studies on natural age-related changes conducted longitudinally, to achieve a similar effect, participants who have experienced pathological changes are often excluded over time.

There is currently a tendency to tighten the criteria for the norm in the aging process. It has been repeatedly pointed out that changes once considered normal for older age result from disease processes and as such are pathological. Therefore, they are not consequences of aging itself, but rather of the diseases. A classic example is a change in the definition of hypertension – an increase in blood pressure in old age is no longer accepted as natural once its connection with atherosclerosis has been established. Similarly, the so-called 1% rule, which states that the deterioration of organ function occurs at a rate of about 1% per year, no longer applies, as it has been proven that the rate of natural changes is much slower. Despite the above difficulties in determining the norm for biological aging, it is recognized that it begins between the ages of 30 and 40 within the tissues and organs and continues to progress, as does the risk of pathology. It may be assumed that natural changes, which are non-pathological by nature, predispose

5 M.R. Miller, O.F. Pedersen, Respiratory function in an ageing population, "Reviews in Clinical Gerontology" 2009, 19(3), 149–158.

to the occurrence of diseases, but none are sufficient to cause them. In this sense, aging paves the way for diseases[6].

2.2.1. Nervous system

Numerous studies, both cross-sectional and longitudinal, indicate a decrease in brain volume with age. It is estimated that at the age of 90 the brain loses about 10% of its mass, however, its atrophy progresses unevenly e.g., the temporal and frontal lobes (responsible among other things for thinking, memory, planning, emotions, executive and social functions) are most susceptible to atrophy, which reaches up to 50%[7]. It has been calculated that the brain loses 0.2-0.5% of its volume annually.[8] Until recently, it was thought that this process is caused by the loss of nerve cells. However, modern research techniques have established that the loss of neurons is small – by the age of 80, a person loses only about 3% of their original number of neurons. Brain shrinking is caused more by changes in the structure of nerve cells than by the reduction of their number e.g., loss of water in the cytoplasm, reduction in the number of dendritic branches and synapses[9]. With normal, correct aging, these changes are small and do not lead to clear deviations hindering daily life.

The scientific community cannot agree on the nature of cerebral cell atrophy as a change that is part of natural or pathological aging. There are scientific reports that contradict the common opinion that brain cell atrophy is inevitable with age. When tests were conducted on healthy men aged 52-82 (cognitively stable for at least the last 3 years) and compared with the results of those who experienced a significant decrease in mental capacity during that period, it turned out that no loss in the volume of gray matter in the brain (the so-called cortex) was detected in healthy subjects, as opposed to those who experienced a decrease in mental capacity[10]. The obtained results suggest that the previous studies overestimated the negative impact of aging on the brain, because the adopted methodology of longitudinal studies does not exclude people with a significant decrease in cognitive abilities e.g., dementia, who are in the initial, undetected stage of the disease. In studies on healthy aging, Sliwinski[11] estimated the percentage of participants with dementia

6 K. WieczorowskaTobis, Zmiany narządowe..., op. cit., p. 63–69.

7 W. Kołodziej, Bio-psycho-społeczne funkcjonowanie osób starszych a społeczne stereotypy i uprzedzenia dotyczące starzenia się i starości, in: Wybrane problemy osób starszych, Oficyna Wydawnicza Impuls, Kraków 2006, p. 55–71.

8 A.F. Fotenos, A.Z. Snyder, L.E. Girton, J.C. Morris, R.L. Buckner, Normative estimates of cross-sectional and longitudinal brain volume decline in aging and AD, "Neurology" 2005, 64(6), p. 1032–1039.

9 I. Kołodziejczyk, Neuropsychologia starzenia poznawczego, "Kosmos" 2007, 56(1–2), p. 49–62.

10 S. Burgmans, M.P.J. van Boxtel, E.F.P.M. Vuurman, F. Smeets, E.H.B.M. Gronenschild, H.B.M. Uylings, J. Jolles, The prevalence of cortical gray matter atrophy may be overestimated in the healthy aging brain, "Neuropsychology" 2009, 23(5), p. 541–550.

11 M. Sliwinski, R.B. Lipton, H. Buschke,W. Stewart, The effects of preclinical dementia on estimates of normal cognitive functioning in aging, "Journals of Gerontology. Series B, Psychological Sciences and Social Sciences" 1996, 51(4), p. 217–225.

in the preclinical stage at 20%. It is even suggested that cortical atrophy is a preclinical symptom of as yet undetected neurodegenerative diseases and as such is not a characteristic of natural aging. It has been recognized that the inclusion of patients with early symptoms of neurogenerative changes in the study of normal aging will lead to a distortion of the results, which indicate a much greater adverse effect of aging on cerebral changes and mental functioning than in reality. As a result, results of as yet undetected diseases are wrongly attributed to the natural process of aging.

To verify the above thesis, Susan M. Resnick et al. carried out longitudinal studies which showed a significant reduction in brain volume in its cortical part in a group of completely healthy seniors who did not show any mental changes at the beginning of the study, after 4[12] and after 10 years[13]. The studies show that the brain changes detected were not associated with dementia in the preclinical stage, which brings the argument to the starting point – changes in brain volume occur independently of accompanying degenerative changes of related to dementia, and the correlation between brain and mental changes in old age remains unclear.

Chemicals, the so-called neurotransmitters responsible for transmitting information between neurons, are also subject to quantitative limitation, which is accompanied by a decrease in the rate of transmission of the nerve impulse by 15%, for which brain changes are responsible in 5% and changes in the nervous system in 95%[14]. The weakening of neural transmission may lead to a decline in the ability to adapt to new conditions, to learn and to slow down of thought processes. The speed at which the nervous system perceives, processes and sends signals deteriorates with age, reflexes and reaction time are slowed down, which is why older people perform sensorimotor activities more slowly. The slowing down of reaction time is visible even in simple experiments, such as pressing a button when the light switches on. In the case of complex tasks, the disproportion between older and younger people increases. As people age, it is especially the decision-making time that increases, due to the higher accuracy that is characteristic for older people. Slower response times may not be of much significance when performing everyday activities, which are largely automated but may adversely affect the resolution of new tasks. This increased response time older people show may be perceived as a sign of lower intelligence.

And yet, why, despite such significant losses at the cerebral level, do seniors present a fairly high potential for mental performance? The answer is that there are huge, but as yet not fully scientifically recognized, adaptation possibilities of the body to changes taking place in the aging process. In fact, the brain shows

12 S.M. Resnick, D.L. Pham, M.A. Kraut, A.B. Zonderman, C. Davatzikos, Longitudinal magnetic resonance imaging studies of older adults: A shrinking brain, "Journal of Neuroscience" 2003, 23(8), p. 3295–3301.

13 I. Driscoll, C. Davatzikos, Y. An, X. Wu, D. Shen, M. Kraut, S.M. Resnick, Longitudinal pattern of regional brain volume change differentiates normal aging from MCI, "Neurology" 2009, 72(22), p. 1906–1913.

14 M.E. Williams, The American Geriatrics Society's complete guide to aging and health, Harmony Books, New York 1995.

the ability to expand its functions with age. Although over time the number of synapses in aging people and animals decreases[15] , their size increases[16]. The observed negative correlation between the number and size of synapses in a healthy and demented brain indicates the presence of adaptive mechanisms triggered in response to atrophy. The brain adapts to the experienced quantitative changes also by increasing the number of connections between nerve cells (synapses) and developing branches in the form of dendrites and axons responsible for transmitting signals in the brain[17]. Another adaptation mechanism involves assuming the functions of lost nerve cells by others[18]. The brain's plasticity protects the efficiency of mental functioning despite the gradual loss of structural resources during natural and/or pathological aging.

2.2.2. Sensory analyzers

Human beings interact with the environment through the senses, which provide visual, auditory, olfactory, taste and tactile stimuli as basic channels of the flow of information. With age the reception of sensory information changes, thus the perception of the surrounding world is transformed. Lowering the threshold of sensory sensitivity manifests itself in a lower ability to perceive stimuli, which in practice means that the stimulation must be stronger for the experience of the stimulus to appear. The weakening of sensory acuity makes it more difficult to detect the stimuli and distinguish the nuances associated with them. It is recognized, however, that in the process of successful aging, age-related changes, heading towards the weakening of sensory sensitivity, are subtle, progress gradually, are hardly noticeable in subjective perception and, which should be emphasized, do not disrupt efficient functioning in everyday life.

The constraints on the functioning of the senses translate into a reduced ability to receive information from the environment, and thus into cognitive capabilities. It has been scientifically proven that with age there is an increasing correlation between mental functioning and sensory abilities[19], which shows that mental mech-

15 C. Bertoni-Freddari, E. Mocchegiani, M. Malavolta, T. Casoli, S.G. Di, P. Fattoretti, Synaptic and mitochondrial physiopathologic changes in the aging nervous system and the role of zinc ion homeostasis, "Mechanisms of Ageing and Development" 2006, 127(6), p. 590–596.

16 C. Bertoni-Freddari, P. Fattoretti, M. Pieroni, W. Meier-Ruge, J. Ulrich, Enlargement of synaptic size as a compensative reaction in aging and dementia, "Pathology Research and Practice" 1992, 188(4–5), p. 612–615.

17 J.O. Goha, D.C. Park, Neuroplasticity and cognitive aging: The scaffolding theory of aging and cognition, "Restorative Neurology and Neuroscience" 2009, 27(5), p. 391–403.

18 P.A. Reuter-Lorenz, K.A. Cappell, Neurocognitive aging and the compensation hypothesis, "Current Directions in Psychological Science" 2008, 17(3), p. 177–182.

19 S.A. Valentijn, M.P. van Boxtel, S.A. van Hooren, H. Bosma, H.J. Beckers, R.W. Ponds, J. Jolles, Change in sensory functioning predicts change in cognitive functioning: Results from a 6-year follow-up in the Maastricht Aging Study, "Journal of American Geriatric Society" 2005, 53(3), p. 374–380. P. Baltes, U. Lindenberger, Emergence of a powerful connection between sensory and cognitive functions across the adult life span: A new window to the study of cognitive aging?, "Psychology and Aging"1997, 12(1), p. 12–21

anisms are less specialized and selective in seniors. When damage to the senses increases the likelihood of accompanying mental dysfunctions, changes in visual and auditory acuity can be interpreted as an indicator of changes in mental functioning. There is therefore a need for a vision and hearing test for people suspected of mental disorders.

Sight

With age, the organ of sight and its functions change naturally. The most characteristic of the external changes is the drop of the upper eyelid – the basic plastic surgery procedures among seniors include raising eyelids and eyebrows to "rejuvenate" the patient's appearance. The lower eyelid turns inwards or outwards, which may cause conjunctivitis and combined with limited tear production, dryness of the eyes. When the lower eyelid is detached from the eyeball, the tears are not properly drained, and as a result, they inadvertently flow down the face. The loss of the fat tissue in the eye socket causes the eyeballs to sink, which leads to a limited field of vision with drooping upper eyelids (the eyes do not open as wide as they used to). The blinking reflex is slower, the eyelids are unable to close completely while sleeping, causing dryness and irritation of the cornea.

Anatomical changes in the system of vision are numerous and deep. With age, the cornea becomes flattened, causing astigmatism. Although it usually remains transparent, the number of its cells decreases, making it more susceptible to clouding after surgery or trauma. In old age, the iris fades and stiffens, causing the pupil to shrink, which, on the one hand, improves the depth of field, and on the other hand, limits the amount of light in the eye, impairing its ability to adapt to its different levels.

The lens, one of the elements of the optical system of the eye, loses its transparency and yellows, resulting in a limited amount of light reaching the retina at the fundus of the eye. The increased rigidity of the lens leads to a disturbance in the accommodative capacity of the eye, which consists in obtaining clear images of objects at different distances on the retina. Presbyopia is a natural loss of the eye's accommodative function, usually occurring in the early fourth decade of life. It is one of the most characteristic signs of the aging of the human body and requires the use of additional lenses to support vision at close range. Presbyopia affects short- and far-sighted people, men and women alike. In the case of older short-sighted people, it is sufficient for them to take off their permanent glasses for reading. As we grow older, impaired visual acuity is becoming a problem for an increasing number of people: after appropriate correction, approximately 30% of people in their 70s enjoy full visual acuity, but only 10% past this age[20]. Binaural

20 J.C. Brocklehurst, S.C. Allen, Zarys medycyny geriatrycznej. Podręcznik dla studentów, PZWL, Warszawa 1991.

vision and impaired visual acuity are significant risk factors for recurring falls among seniors.

In old age the vitreous body thickens, loses its transparency and a homogeneous structure. Abnormalities in connections with adjacent tissues appear. As a result, various sized scotomas may appear in the field of vision, initially making it difficult to see, but usually cease to be noticeable with time. However, the presence of these or other visual sensations (sparks in the field of vision, auras around light sources, etc.) always requires ophthalmological consultation, as it may indicate pathogenic factors such as retinal detachment. In most older people, there is an increase in intraocular pressure, which creates a risk of damage to the optic nerve.

The sclera becomes less elastic and yellows due to the accumulation of fat. The vessels of the choroid and retina narrow and stiffen, resulting in a weaker blood supply to the latter. There is a loss of nerve cells in the optic tract, from retinal photoreceptors to the brain structures. The photoreceptors disappear, especially the rod cells (responsible for twilight vision) in the peripheral part and cone cells (responsible for acute vision) in the macula. Similarly, there is a decrease in the number of optic nerve cells and in the part of the brain responsible for sight.

The functional effects of the described anatomical changes of the eye can be seen in an objective and subjective evaluation. The loss of nerve cells results in the limitation of the visual field, especially in its peripheral part, which weakens the ability to visually detect objects appearing in this range, necessary for moving or driving a car safely. It has been demonstrated that mobility difficulties are more pronounced among older people with limited peripheral visual field, or a limited visual field combined with a loss of visual acuity than in those who have lost visual acuity alone[21]. After the age of 55, the prevalence of severe damage to the visual field increases rapidly e.g., a reduction in peripheral vision is found among 3.0% of respondents aged 55-64 and 17.0% of those aged 85[22]. As many as 40% of people over 90 have a field of attention with a diameter of less than 20 degrees (10 degrees to the left and right)[23], which can be dangerous when moving around or driving. These people will not notice an object approaching them until it is within their narrow visual field. The loss of this field also occurs as a result of pathogens, but it is still difficult to decide whether its reduction in the case of healthy seniors should be considered a consequence of natural aging of the eye or as an initial symptom of developing lesions.

Due to the narrowing of the pupil, blurring of the lens and loss of retinal receptors, which support sight in limited light conditions, the ability to see at dusk and at night is weakened. The need for light increases. To achieve the same level

21 T. Kuyk, J.L. Elliott, J. Biehl, P.S. Fuhr, Environmental variables and mobility performance in adults with low vision, "Journal of the American Optometric Association" 1996, 67(7), p. 403–409.

22 R.S. Ramrattan, R.C.W. Wolfs, S. Panda-Jonas, J.B. Jonas, D. Bakker, H.A. Pols, A. Hofman, P.T.V.M. de Jong, Prevalence and causes of visual field loss in the elderly and associations with impairment in daily functioning. The Rotterdam Study, "Archives of Ophthalmology" 2001, 119(12), p. 1788–1794.

23 J.A. Brabyn, G. Haegerström-Portnoy et al., Visual impairments in elderly people..., op. cit., p. 741–755.

of vision, an average 60-year-old needs about twice as much light, and an 80-year-old needs three or four times as much light as a 20-year-old[24]. In good lighting conditions, older people usually function properly.

A side effect of intensified lighting is glare, which is caused by excessive dispersion of light by lenses and the vitreous body losing their translucency. Glare can be divided into two categories: those causing discomfort but not leading to a measurable decrease in visual acuity and those impairing functional capacity by limiting vision. In a situation of glare, most people aged 65 years and older function with weak vision, while most people aged 85 years and older function with legal blindness[25]. This condition impairs functioning e.g., making it difficult to walk or read outside in sunny weather, but it can also be dangerous, for instance when driving at night and passing a car approaching from the opposite direction and being blinded by its headlights. In addition to natural and artificial light sources, shiny surfaces (floors, wall tiles, mirrors and countertops) are also sources of glare.

The increased tendency of seniors to experience glare is accompanied by a slower adaptation to vision in different light conditions, deepening with age as a result of pupil shrinkage and changes in the lens and retina. A person aged 90 and over needs 8 times more time to regain normal vision after a sudden change in the level of light compared to people under 65[26]. Until full visual acuity is restored, they function even at the level of legal blindness, which generates potentially dangerous situations e.g., while driving a car (in sunny weather, entering and leaving a tunnel, traveling at night). What is distinctive, the adaptation from darkness to light is faster than from light to darkness. Impaired ability to see in various lighting conditions (e.g., when entering from a lit courtyard into a staircase or leaving a darkened staircase outside on a sunny day) impairs the efficiency of everyday functioning.

At an advanced age, the ability to distinguish between colors deteriorates, which is mainly due to the lenses yellowing with age and losing their translucency. Colors become less intense and appear faint. It may be more difficult to differentiate between light, pastel and low-saturated colors, as well as dark tones i.e., black, brown, dark blue. It is difficult to discern shades on the palette that are close to each other, such as blue and green or red and orange. Seniors recognize warm colors better than cold ones. Importantly, each color becomes more visible if it is presented in the right lighting and contrast. Contrast facilitates the visibility of an object against a given background. In old age, contrast sensitivity is reduced because of limited light reaching the fundus of the eye and its increased dispersion through the lenses. Older people need more contrast to maintain their visual

24 A.A. Rosenbloom, Physiological and functional aspects of aging, vision, and visual impairment, in: Vision and Aging. Crossroads for service delivery, ed. A.L. Orr, American Foundation for the Blind, New York 1992, p. 47–68.

25 J.A. Brabyn, G. Haegerström-Portnoy, M.E. Schneck, L.A. Lott, Visual impairments in elderly people under everyday viewing conditions, "Journal of Visual Impairments and Blindness" 2000, 94(12), p. 741–755.

26 Ibidem, p. 741–755.

performance. In good light, an average 75-year-old needs at least twice as much contrast as a young person, and over 90 years of age – 6 times as much contrast[27]. Contrast has long been proven to play an essential role in object recognition, as it is more based on the analysis of the contours than the central areas[28]. Contrast sensitivity is strongly correlated with mobility. As shown by studies[29] conducted on visually impaired patients, sensitivity to contrast and the field of vision have a greater impact on spatial orientation and mobility than visual acuity.

In old age, there is a disturbance of spatial vision and stereoscopic (binocular) depth perception. The main reason for difficulties in assessing depth is a reduced contrast sensitivity. The ability of spatial vision decreases significantly – most people over 90 years of age are unable to perform spatial perception (depth) tests[30]. In everyday life, the limitation of this ability causes difficulties in assessing the distance from an object (near/far, low/high) e.g., when approaching curbs, stairs or reaching for objects.

Correct visual functioning is made possible not only through visual acuity but also through a full field of vision, the ability to recognize colors, contrast, assessing depth and the ability to see in different lighting conditions. To detect the most significant changes affecting the ability to see, it is recommended to perform annual ophthalmological examinations after 65 years of age regarding visual acuity, the field of vision and the fundus. If there are any functional changes in vision, attention should be paid to the proper adaptation of the environment to the visual needs of seniors. Difficulties with visual functioning will deepen in low-contrast or low-light conditions. It should be noted, however, that the aging process itself does not automatically mean a gradual, inevitable deterioration of physical functioning. When older people experience a normal decrease in sensory sensitivity, they learn to compensate, for instance, they need more time to complete tasks, use more than one sense to obtain information, limit their activity to an environment in which they feel confident and rely more on other people.

Hearing

With age, the walls of the ear canal and the eardrum become thinner, the production of ear wax decreases, and in the small joints connecting bones in the middle ear, degenerative changes and even arthritis appear. These physiological changes lead to reduced auditory sensitivity, distorted sound perception and difficulties in understanding speech[31]. Another prosaic yet common cause of hearing impairment

27 J.A. Brabyn, G. Haegerström-Portnoy et al., Visual impairments in elderly people..., op. cit., p. 741–755.

28 M.F. Marmor, Visual changes with age, in: The eye and its disorders in the elderly, eds. F.I. Caird, J. Williamson, Wright, Bristol 1986, p. 27–36.

29 J.A.Q. Marron, I.L. Bailey, Visual factors and orientation-mobility performance, "American Journal of Optometry and Physiological Optics" 1982, 59(5), p. 413–426.

30 J.A. Brabyn, G. Haegerström-Portnoy et al., Visual impairments in elderly people..., op. cit., p. 741–755.

31 M. Pabiś, A. Babik, Najczęstsze problemy osób w wieku podeszłym na podstawie analizy "zespołów geriatrycznych", "Medycyna Rodzinna" 2007, 10(3), p. 62–65.

in old age is the clogging of the ear canal with earwax, which over time becomes denser and harder – its accumulation in the ear canal blocks the reception of sound impulses like a plug.

It is sometimes the case that in old age, the difficulties in understanding speech are much greater than the results of audiometric studies (phonematic regression) would indicate. It is assumed that the increasing damage to sound recognition over time, known as senile deafness (presbycusis), may be caused not only by changes in the ear itself but also by a slowing down of the processing of auditory information at the cerebral level, where the sound impulses should gain meaning. This slowdown in cerebral function results in a loss of understanding of fast speech and difficulties in following conversations with a wider audience. In such conditions, the flow of information exceeds the mental capacity to process it.

The recognition of very high and very low tones decreases with age, with a better hearing of lower frequencies. The decrease in auditory sensitivity is also associated with the distortion of sound signals, which leads to difficulties in locating and understanding the sounds heard. These changes affect older men more than women – they appear earlier and progress faster. Studies show that the decrease in auditory sensitivity occurs between 20 and 30 years of age in men, in women over 50 years of age, around 60 years of age, producing clear functional symptoms. Over 10 years, the change in hearing levels is more than twice as fast in men as in women[32]. As a result, understanding and conducting conversations is becoming increasingly difficult. Problems arise when listening in conditions of noise, reverberation, simultaneous transmission of different, rapidly transmitted sounds, especially those of high frequency. In such conditions, older people hear someone saying something but do not understand what they are saying, especially if the interlocutor has a squeaky voice (e.g. children, young women). This is because the ability to selectively focus attention decreases, associated with a weaker ability to inhibit insignificant auditory stimuli. Normally, older people do not experience difficulties in understanding speech in good conditions when it is quiet, the voice is known, speech is clear, slow and the conversation is in a one-on-one arrangement. Other hearing difficulties experienced in old age include: differentiating sounds, especially short-tone sounds, locating similar sounds, transferring attention between different sound sources, poorer understanding and remembering.

The etiology of the changes observed in auditory sensitivity in old age is not clear, and research continues to provide new insights into the subject. According to the latest reports, seniors lose their hearing because of the limited presence of a hormone called aldosterone, which is also responsible for the regulation of kidney function and controls the level of the two primary signaling agents in the nervous system: potassium and sodium. The conclusion is that the higher

32 J.D. Pearson, C.H. Morrell, S. Gordon-Salant, L.J. Brant, E.J. Metier, L.L. Klein, J.L. Fozard, Gender differences in a longitudinal study of age-associated hearing loss, "Journal of Acoustical Society of America" 1995, 97(2), p. 1196–1205.

the concentration of this hormone in the blood, the better the hearing[33]. It is worth noting, however, that hearing difficulty in old age are largely caused not only by internal but also environmental changes, such as prolonged exposure to outside noise. Characteristically, the loss of hearing sensitivity occurs earlier than visual and although it is slower and more gradual, it is usually more difficult to adapt to it. It is a source of limitations in everyday cognitive, social and communication functions.

Smell

The sense of smell plays an important role in experiencing the pleasure of eating and drinking and is an important component of the quality of life and security. It is an excellent instrument in life-threatening situations: it is often the first to warn against fire, smoke, leaking gas, rotten food and a contaminated environment. With age, sensitivity to smell becomes blunted. Degenerative changes affect the olfactory receptors and the cortical areas of the brain that process smell signals. At 80 years of age, the sense is 50% less sensitive to smell compared to its optimal levels[34]. Many older people do not realize that the minimum threshold for the sense of smell increases over the years.

The sensitivity of smell rapidly weakens after 50 years of age among both men and women. However, the weakening of this sense affects men more than women, who are only experiencing significant changes around the eighth decade of life. Although the damage to the sense of smell is similar in both sexes, with women it occurs with a delay of about 20 years. This phenomenon is still not clearly explained, although for obvious reasons the protective effect of estrogens is considered here.

The reasons for raising the olfactory sensitivity threshold are: the reduction in the number of sensory cells located in the nasal passage epithelium, changes in the area of the brain responsible for smell, as well as environmental factors such as head injuries, viral infections (including common influenza) or long exposure to cigarette smoke or other toxic substances. Age-related difficulties in recognizing smells may also be related to mental dysfunction. There are numerous studies on the sense of smell in connection with Alzheimer's, Parkinson's and Huntington's disease. A decrease in olfactory sensitivity may be one of the early symptoms of the above, as the areas of the brain responsible for olfactory processing are subject to neurodegenerative changes characteristic of dementia. For this reason, olfactory examination can be helpful in the diagnosis of, for example, Alzheimer's disease.

33 S.F. Tadros, S.T. Frisina, F. Mapes, D.R. Frisina, R.D. Frisina, Higher serum aldosterone correlates with lower hearing thresholds: a possible protective hormone against presbycusis, "Hearing Research" 2005, 209(1–2), p. 10–8.

34 S. Nordin, A.U. Monsch, C. Murphy, Unawareness of smell loss in normal aging and Alzheimer's disease: Discrepancy between self-reported and diagnosed smell sensitivity, "Journal of Gerontology: Series B" 1995, 50(4), p. 187–192.

According to researchers of the subject, the sense of smell becomes more damaged with age than the sense of taste[35], yet it has been proven that taste sensations depend on smell. Therefore, when older people experience weaker taste stimuli than in their youth, those should be associated more with changes within the sense of smell rather than the sense of taste itself. On the other hand, the connection between the two senses means that their impairment can be mutually compensated for.

Smells are superior over other stimuli in making decisions about the attractiveness and safety of food, hence the impairments in this area may lead to eating disorders. Changes in the senses of taste and smell associated with aging are also attributed to a reduction in food intake by seniors. The experience of favorite smells and tastes, which are so strongly linked to the enjoyment of everyday life, may be less intense. Similarly, the perception of unpleasant smells decreases, which can lead to negligence in the field of hygiene and cleanliness, as well as a weaker response in life-threatening situations. For this reason, it is worthwhile to install fire alarms and gas detectors in seniors' homes and pay attention to use-by dates.

Taste

In old age, a marked weakening of taste sensitivity is observed, mainly due to a reduced amount of taste buds. The sense of taste is additionally blunted by a reduction in saliva secretion, an increase in its density and a feeling of dryness in the mouth, responsible for difficulties in swallowing food. Also, smoking, poor oral hygiene, mismatched dentures, polyps in the nose, sinusitis, as well as intake of many medications with side effects on the sense of taste – may all lead to taste disorders. The neural conduction system of taste stimuli to the brain and the digestive system are deteriorating, but the dysfunction of the mechanism itself has not been fully recognized. Perhaps a simple reason for reducing taste sensations is the placement of dental plates in the mouth, which cover the places where the taste buds are located. It may also cause difficulties in chewing and, as a result, avoiding food. This is evidenced by the results of research conducted by Sheiham et al[36] among 629 people over 65 years old. Underweight was found in 12.3% of people without teeth and in 2.9% of people with 11 teeth or more.

The taste threshold (the lowest concentration triggering a feeling of taste) increases as a result of the natural course of the aging process, so it applies to healthy seniors as well as in the case of pathological factors. Deterioration of taste sensitivity occurs after certain diseases (e.g. cancer), malnutrition, medication intake or surgery. Compared to young people, in seniors experiencing at least

35 S.S. Schiffman, B.G. Graham, Taste and smell perception affect appetite and immunity in the elderly, "European Journal of Clinical Nutrition" 2000, 54(Suppl 3), p. 54–63.

36 A. Sheiham, J.G. Steele, W. Marcenes, S. Finch, A.W.G. Walls, The relationship between oval health status and Body Mass Index among older people: A national survey of older people in Great Britain, "British Dental Journal" 2002, 192(12), p. 703–706.

one disease and taking medication, the sensitivity threshold for different tastes is at least several times higher e.g., as much as 11 times higher for salty taste and more than 4 times higher for sour taste[37]. Besides, the experience of taste may be impaired due to deteriorated sight, which limits the pleasure of "eating with one's eyes", so important for culinary enjoyment, as well as the ability to prepare meals.

As a result of the raised threshold of taste, a higher concentration is needed to induce a feeling of taste. In older people's subjective perception, food becomes bland and the ability to distinguish between different intensities of taste deteriorates. There is a preference for strong, spicy and well-seasoned food. Studies[38] show that of the four tastes (salty, sweet, sour and bitter), the taste for sweetness is the least susceptible to age-related changes, and saltiness is the most susceptible so seniors need to use higher doses of salt than young people to enjoy a similar feeling of saltiness, which, in turn, leads to over-salting dishes. Some people complain about the quality of the food, claiming that it used to be tastier. In fact, the weaker taste sensations are due to a weaker taste and olfactory sensitivity.

Changes in taste can lead to changes in eating habits. It is worth noting that elderly people associate eating with social context (for many elderly women, catering for their relatives is an important reason for cooking), so loneliness or depression have a negative impact on nutrition. Eating habits shaped in childhood are very resistant to changes in old age, so it is worthwhile for them to be correct from the very beginning and support the process of healthy eating. Quality meals are essential for maintaining physical and mental health.

Taste and smell allow to consume food that meets the current nutritional requirements of the body. They prepare the body for digestion, increase the secretion of saliva and digestive substances in the stomach, pancreas and intestines. Taste and smell induce both the initiation and the end of consumption and thus play an important role in controlling the amount of food consumed. Loss of olfactory and taste sensitivity can lead to loss of interest in food, reduced food intake and, as a result, malnutrition, as well as poor dietary choices. In old age, when preparing meals, they must be properly seasoned while maintaining proper nutritional values. To enhance taste sensations, oral hygiene is recommended (rinsing with water, brushing teeth, gums and tongue before meals). It should be remembered that mixed foods are more difficult to taste, so if possible, it is advisable to serve the food in chunks. Warm meals are also more aromatic and tastier than cold ones.

Touch

Sensitivity to touch weakens with age, although unevenly. As a rule, it decreases in peripheral parts of the body (limbs) rather than in central parts. The loss of sensitivity to touch is associated with a lower sensitivity to pain. Also, the skin's ability

37 S.S. Schiffman, Perception of taste and smell..., op. cit., p. 17–26.
38 N.E. Rawson, Age-related changes in perception of flavor and aroma, "Generations" 2003, 27(1), p. 20–26.

to sense temperature seems to weaken with age. The intensity of pain decreases (higher pain threshold), with men proving to be less sensitive to pain and cold. It may be that an older person does not feel skin abrasions, minor injuries or burns. It is difficult to judge, however, to what extent such intensified changes result from the organism's aging itself, and to what extent they are symptoms of age-related chronic diseases.

With age, sensitivity to heat and cold stimuli also decreases, making it more difficult for an older person to detect temperature differences. Particularly in advanced old age, changes in thermoregulation manifest themselves in the difficulty to adapt to environmental temperature. The feeling of cold usually deepens, caused by weakened blood circulation, structural and functional changes in the skin, limited sweating and reduced physical activity. As a result, seniors prefer higher temperatures and warmer clothes than young people.

2.2.3. Musculoskeletal system

With age, the locomotor system, which includes muscles, bones and joints, undergoes a relatively large involution. Aging affects changes in the structure and function of muscles. Their flexibility, speed, strength and activity capacity are weakened. There is a reduction in muscle mass, which is largely due to the decrease in muscle fibers. Sarcopenia, associated with age-related loss of muscle mass, starting at around 60 years of age, is the main cause of muscle weakness in old age. Differences between the sexes appear interesting – the same muscles in women weaken earlier than in men, but the process is slower. As a result, women experience lower strength loss with age compared to men.

The limitations of muscle capacity are disproportionate to the loss of muscle size. Studies show that the loss of muscle strength is more rapid than the parallel loss of muscle mass, indicating a significant decrease in muscle quality[39]. Muscle strength peaks between the second and third decades of life and remain at this level until the age of 45-50 in men. After 60 to 70 years of age, limb muscle strength decreases by 20-40%[40]. The rate of these changes depends largely on lifestyle (e.g. nutrition) and physical activity undertaken to delay these changes.

Although some decrease in physical capacity is an inherent effect of natural aging (the number of muscle fibers is reduced, which weakens muscle strength), it is considered that the impairment of physical capacity as a result of reduced muscle strength cannot be attributed solely to this process. Physical exercise can lead to an increase in the number of muscle fibers even in people of more advanced age

39 B.H. Goodpaster, S.W. Park, T.B. Harris, S.B. Kritchevsky, M. Nevitt, A.V. Schwartz, E.M. Simonsick, F.A. Tylavsky, M. Visser, A.B. Newman, The loss of skeletal muscle strength, mass, and quality in older adults: The Health, Aging and Body Composition Study, "Journal of Gerontology: Series A" 2006, 61(10), p. 1059–1064.

40 T.J. Doherty, Invited review: Aging and sarcopenia, "Journal of Applied Physiology" 2003, 95(4), p. 1717–1727.

and may delay the decline in physical capacity, and even prevent the occurrence of a disability. Muscle training results in an increase in muscle size, which gives the same or even greater increase in strength for older women and men compared to young people. Although life-long physical activity is optimal, it is advisable to exercise at any age, even if it starts only in late adulthood. It is advantageous to exercise more intensively, as well as with moderate efforts, such as going for a walk or riding a bicycle. Physical activity should be regarded as an important component of disability prevention in old age.

Higher muscle quality is associated with better physical functioning, while low muscle strength indicates functional limitations and physical disability among older people. There is evidence that older people with sarcopenia experience more physical and functional limitations compared to those without it[41]. But while women are more likely to suffer from sarcopenia, they experience lower physical and functional deficits compared to men developing it[42]. Uncontrolled sarcopenia may turn from an age-related physiological change into a pathological condition that adversely affects the functions and quality of life of older people.

Over time, bones lose their density, they become porous and thin and therefore weaker and more susceptible to fracture. Bone density decreases as a result of reduced physical activity, calcium metabolism disorders, lower levels of vitamin D, reduced levels of hormones e.g., growth hormone, androgens and estrogens. Changes in the musculoskeletal system may progress as a result of chronic diseases such as diabetes, cardiovascular failure or neurodegenerative diseases[43]. The process of the decrease of bone mineral density is observed after 50 years of age, followed by a decrease in bone structure calcification. As a result of the loss of minerals, osteoporosis develops, characteristic for post-menopausal women. Before menopause, bone mass loss occurs at a rate of about 1% per year, while after menopause it accelerates to up to 7% per year during the first 5 years[44]. Decalcified bones are vulnerable to fractures. Osteoporosis is promoted by low calcium intake, low estrogen level in the body, limited physical activity, alcohol abuse, smoking, kidney failure and rheumatoid arthritis[45]. Physical activity can delay bone loss in adults and even reverse bone degeneration.

The sizes of some bones grow e.g., the skull, ribs, fingers, femurs. In turn, bone mass decreases with age – slower in men than in women, although women are

41 L.J. Melton, S. Khosla, C.S. Crowson, M.K. O'Connor, W.M. O'Fallon, B.L. Riggs, Epidemiology of sarcopenia, "Journal of American Geriatrics Society" 2000, 48(6), p. 625–630.

42 I. Janssen, S.B. Heymsfield, Z.M. Wang, R. Ross, Skeletal muscle mass and distribution in 468 men and women aged 18–88 years, "Journal of Applied Physiology" 2000, 89(1), p. 81–88.

43 A.A. Zych (ed.), hasło – starzenie się mięśniowo-szkieletowe, in Encyklopedia starości, starzenia się i niepełnosprawności, P-Ś, Stowarzyszenie Thesaurus Silesiae – Skarb Śląski, Katowice 2017.

44 C. Snow-Harter, R. Marcus, Exercise, bone density and osteoporosis, "Exercise and Sport Science Reviews" 1991, 19, p. 351–388.

45 J. Wierzbicka, I. Brukwicka, Z. Kopański, J. Rowiński, F. Furmanik, Wybrane aspekty procesu starzenia się człowieka, "Journal of Clinical Healthcare" 2017, nr 2, http:// www.jchc.eu/numery/2017_2/files/assets/basic-html/page4.html (access 20.10.2018).

characterized by lower bone mass in comparison with men[46]. Although these changes may limit the intensity of physical activity, they usually do not affect daily mobility. Yet, these and other motor function disorders can be associated with damage to sensory and cognitive abilities, resulting in significant loss of functional capacity, including mobility.

Older people may experience degenerative changes in ligaments, cartilage and joints. Changes in the structure and composition of collagen, which becomes less elastic and calcifies, cause greater stiffness of the joints, limiting the smoothness of movement. Mobility in the joints is restricted due to lack of synovial fluid and thinning or even degeneration of cartilage. Degenerative changes in joint cartilage may be the result of their wear and the effect of retrograde changes that cause their drying, turbidity and fibrosis, with cavities and fissures appearing in their structure[47]. Stiffening of connective tissue, which reduces the elasticity of joint capsules and, as a result, reduces the mobility of the joints, occurs as early as about 30 years of age[48].

Lower bone density may manifest itself in more frequent fractures in strained areas, such as hip joints. Especially women, compared to men, have lower ligament and joint resistance[49]. Dysfunction in the production of joint structures and loss of cells is accompanied by a reduction in the capacity for cellular repair and regeneration, which stimulates the synthesis of new structures at young age. Excessive strain on joint cartilage causes its degeneration over time, while reduced ability to regenerate can lead to calcification. In the spine, degenerative changes often affect intervertebral discs made of fibrous tissue, which, additionally deprived of water saturation, decrease their height, which in turn increases the risk of pressure on spinal cord nerve roots and the appearance of painful symptoms and changes in posture and walk patterns[50]. Changes in the skeletal system characteristic of old age may limit mobility. It is acknowledged, however, that the aging process itself does not lead to joint deformations, restricted movement or experiencing pain. It is known, though, that lack of movement reduces joint lubrication and predisposes degenerative and deforming changes to joints, while proper training delays degenerative changes in the locomotor system, improves joint elasticity and mobility[51].

46 A. Jaskólski, A. Jaskólska, Podstawy fizjologii wysiłku fizycznego z zarysem fizjologii człowieka, AWF Wrocław, Wrocław 2006.

47 M. Motow-Czyż, Wpływ podeszłego wieku na procesy życiowe, in: Fizjoterapia w geriatrii, ed. P. Głowacka, Wyższa Szkoła Biznesu w Dąbrowie Górniczej, Dąbrowa Górnicza 2015.

48 K. Mizera, W. Pilis, Zdrowie oraz fizjologiczne podstawy starości i fizycznego treningu rekreacyjnego, Prace Naukowe Akademii im. Jana Długosza w Częstochowie, Seria: Kultura Fizyczna, z. IX, 2010, p. 183–203.

49 Ibidem, p. 183–203.

50 J. Wierzbicka, I. Brukwicka i in., Wybrane aspekty..., op.cit.

51 D. Gębka, K. Kędziora-Kornatowska, Korzyści z treningu zdrowotnego u osób w starszym wieku, "Problemy Higieny i Epidemiologii" 2012, 93(2), p. 256–259. http:// www.phie.pl/pdf/phe-2012/phe-2012-2-256.pdf (access 20.10.2018).

2.2.4. Cardiovascular system

Nowadays, cardiovascular diseases are largely connected with the development of civilization. However, it is still unknown whether and to what extent age-related changes in the circulatory system appear regardless of the influence of pathogens. Certainly, circulation deteriorates with time. Blood vessel walls and arteries dilate, calcify and lose their elasticity. It is assumed that increased stiffness of vessel walls is responsible for the increase in blood pressure, but it is not known to what extent this is an inevitable consequence of aging. The fact is that no vessel stiffening has been observed among older people living in isolated, less civilized societies[52]. The deterioration of the thermoregulatory system in old age (elderly people experience cold easily) is caused, among others, by the poorer blood supply to organs due to partial blocking and atrophy of capillaries. The arteries become narrower due to the accumulation of atherosclerotic plaque, which causes an increase in blood pressure, while veins dilate, slowing down the blood flow rate.

With age, the length of heart contractions and the frequency of its beats increase. The dimensions of the heart do not generally change, but the muscle itself, deprived of its ability to regenerate, undergoes fibrosis. The valves can be filled with fat and calcium deposits, which leads to abnormal heart function. The relaxation capacity, especially of the left ventricle, is weakened. A typical change in old age is considered to be a reduction in the function of the sinus-vestibular node contributing to heart rhythm disturbances in old age[53]. The heart of older people has a poorer blood supply, is contractile and flexible. With age, the maximum ejection volume and minute heart capacity are reduced due to the functional weakness of the myocardium[54], which reduces the ability of seniors to undertake lengthy physical effort. Due to the narrowing of tiny arteries, peripheral resistance increases, which forces the heart to work more intensively and to consume more energy, with weaker nutrition. Gradually, the deficiency increases, which results in an imbalance between the demand for oxygen and its supply, manifesting mainly during greater physical effort. Reduced maximum heart rate and maximum contractility during physical activity are among the causes of reduced tolerance to effort for older people[55].

Chronological age is related to the increase in systolic and diastolic blood pressure at rest. A blood pressure measurement above 140/90 is considered to be hypertension. Studies in North America, Europe, Japan, and Australia have shown that 80% of people aged 70 years and above had raised blood pressure or were taking anti-hypertensive medication[56]. Hypertension is easily controlled but does

52 M.E. Williams, The American Geriatrics Society's..., op. cit.
53 K. WieczorowskaTobis, Zmiany narządowe..., op. cit., p. 63–69.
54 K. Mizera, W. Pilis, Zdrowie oraz fizjologiczne..., op. cit., p. 183–203.
55 K. WieczorowskaTobis, Zmiany narządowe..., op. cit., p. 63–69.
56 P. Kearney, M. Whelton, K. Reynolds, P. Muntner, P.K. Whelton, J. He, Global burden of hypertension: analysis of worldwide data, "Lancet" 2005, 365(9455), p. 217–223.

not give any subjective symptoms and therefore in many cases remains undiagnosed. However, the effects of hypertension are serious – it is a major risk factor for heart disease and stroke and predisposes to the development of kidney failure and problems with eyesight.

2.2.5. Respiratory system

The aging of the respiratory system, associated with gradual structural changes and impairment of the body's natural repair mechanisms, decrease in adaptability to the changing internal and external conditions, starts around 30-35 years of age[57]. As a result of senile involution of the respiratory tract, basic lung functions, including ventilation and gas exchange, are impaired. With age, the elasticity of lung tissue, respiratory muscle strength and gas exchange area decrease. In the bronchial walls, changes occur which may lead to their collapse during exhalation. As a result of the disappearance of alveolar walls, larger air surfaces, the so-called senile emphysema, are formed. At the same time, dead areas may appear – atelectasis concerns the alveoli deprived of air due to bronchial obstruction[58].

In older age gas exchange is weaker than at younger age, so oxygen content in arterial blood decreases. Impaired gas diffusion leads to hypoxia, which is compensated for by hyperventilation i.e., increased breathing. Accelerated and shorter breaths are the body's response to reduced efficiency of gas exchange. At the same time, breathing becomes shallower as the ventilation of the lower lungs becomes weaker with time. The ability to inhale the maximum amount of air into the lungs and the amount of exhaled air decrease. On the other hand, the volume of air remaining in the lungs (especially in its lower parts) after the maximum air blow-out from the lungs grows. The amount of remaining air in the lungs after each breath increases from 20% at the age of 20 to 35% at the age of 60, this, however, does not apply to health-conscious seniors[59]. The air remaining in the lungs does not participate in the gas exchange.

The shape, size and flexibility of the chest changes with age. Its anterior-posterior dimension is transformed into a barrel form. Gradually, chest mobility decreases, due to, among other things, weakened muscle strength and calcification of cartilaginous-bone connections of ribs. In turn, the stiffness of the chest influences the strain exerted on the respiratory muscles. Muscle strength is weakened, therefore during exhalation, further chest compression and emptying of the lower lungs of air becomes a problem. The strength of diaphragm contraction decreases, which

57 M. Franczuk, Badanie czynności płuc u osób w wieku podeszłym, "Pneumonologia i Alergologia Polska" 2013, 81(6), p. 495–498.

58 K. Klimiuk, Z.B. Wojszel1, E. Gułaj, B. Bień, Problemy diagnostyczne i terapeutyczne wybranych chorób układu oddechowego u osób w podeszłym wieku, "Gerontologia Polska" 2011, 19(1), p. 7–15.

59 R.B. Mitchell, Physiological aspects of aging, in: Vision and Aging. Crossroads for service delivery, ed. A.L. Orr, American Foundation for the Blind, New York 1992, p. 33–46.

is followed by changing the breathing process to the chest. As a result, the overall lung capacity is reduced.

In an aging organism, the sensitivity of the mucous membrane and mucus production decrease, the coughing reflex is weakened, and the efficiency of the bronchial self-cleaning mechanism drops[60]. The mechanism of self-cleaning of the air flowing into them is impaired, so much more irritating content should accumulate to cause coughing and expectoration, which is often not very strong. The malfunction of the self-cleaning mechanism contributes to the development of bronchitis and pneumonia. As a result, the susceptibility to respiratory infections increases[61].

The gastrointestinal tract processes substances that enter it after selection, as people have an influence on what they eat. When it comes to the quality of the inhaled air, they have limited decision-making powers. The respiratory system is susceptible to environmental influences such as polluted air (e.g. smog), tobacco smoke, dust, allergens. It has been established that normally aging lungs of non-smokers may sustain life for 120 years, but other degenerative processes lead to earlier death[62]. Impaired defense mechanisms and the growing threat from environmental factors contribute to the increase in respiratory diseases with age.

Changes in the respiratory system which older people undergo over time do not impair their daily activities, although they do weaken the ability to perform long physical activity. What is important, however, is that the changes described are not irreversible and systematic exercises may result in a marked increase in lung capacity. Adults have significant reserves of lung function, which, although gradually decrease with age, do not altogether disappear. They get smaller but do not fade away. Physical activity largely prevents the negative effects of senile changes. It has been shown that physical exercise improves lung capacity in older women[63]. It increases muscle strength, improves the ability to perform complicated physical activities more efficiently and improves the mood.

2.2.6. Digestive system

Senile changes affect this system to a small extent and do not cause major interference with its functions. Older people's digestive problems involve their diet more than physiological changes. It is currently believed that none of the changes described are sufficient to induce a disease process, but all of them facilitate their occurrence even in healthy older people[64].

Insufficient oral hygiene results in loss of teeth in old age, while artificial teeth make it difficult to chew and bite. Although half of the elderly population

60 E. Kozak-Szkopek, K. Galus, Wpływ rehabilitacji ruchowej na stan układu oddechowego kobiet w podeszłym wieku, "Gerontologia Polska" 2010, 18(4), p. 201–206.

61 K. Klimiuk, Z.B. Wojszel, et al, Problemy diagnostyczne..., op. cit., p. 7–15.

62 X. Xu, S.T. Weiss, D.W. Dockery, J.P. Schouten, B. Rijcken, Comparing FEV1 in adults in two community-based surveys, "Chest" 1995, 108(3), p. 656–662.

63 E. Kozak-Szkopek, K. Galus, Wpływ rehabilitacji..., op. cit., p. 201–206.

64 K. WieczorowskaTobis, Zmiany narządowe..., op. cit., p. 63–69.

experiences mouth dryness[65], in healthy seniors, saliva production should be stable and salivary gland dysfunction cannot be considered normal at this age. Over time, the mobility of the tongue and lips and the ability to chew, which are critical for the first phase of food processing and digestion, are weakened. Older people swallow larger pieces of food, which may be caused by slight changes in the swallowing mechanism. Weakened swallowing even in healthy seniors may cause swallowing difficulties, known as dysphagia.

With age, the secretion of digestive juices and the acidity of gastric juice is reduced, which interferes with the functioning of certain enzymes and hinders digestion, predisposing to indigestion and intestinal disorders, as well as self-intoxication due to easy development of spoilage bacteria. In the small intestine, the lining slightly fades, there are changes in the muscle layer and blood vessels. Limited absorption may lead to deficiencies and anemia, although the effect of age on absorption has not been confirmed[66]. Weakened intestinal peristalsis prolongs food digestion and may cause problems with defecation. In the light of the latest research, however, it is difficult to attribute these changes exclusively to aging itself, as they mainly depend on one's lifestyle. As demonstrated, the slowing down of peristalsis concerns only inactive seniors, whereas in people undertaking physical activity this problem was not observed[67]. In older age, constipation is frequent, for which, apart from slower peristalsis, the following factors are responsible: the mentioned lack of physical activity, inappropriate diet (poor in fiber) and lack of fluids. Older people make a common mistake – they limit the consumption of liquids to avoid problems with incontinence. This way, besides constipation, they can also cause dehydration.

The liver and the pancreas function properly until old age (they have huge reserves and regenerative capacities). They slightly change their shape and size e.g., a decrease in liver mass by about 25% in 70 years old compared to 20 years old[68]. Their ability to regenerate their damaged cells is reduced. The blood supply to the liver deteriorates and the metabolism of medicines is slowed down.

Lack of appetite in old age does not necessarily result from the biological changes taking place within the digestive system. It may be caused by mental changes e.g., dementia, side effects of medicines taken, loss of teeth (biting problems, weakening of taste sensitivity due to dentures covering taste buds on the gums), changes in the perception of taste, limited saliva production. The loss of appetite may be caused by external factors such as inappropriate mealtimes, loneliness, stress. Research[69] has shown that in the dietary preferences of older people sen-

65 Ibidem, p. 63–69.

66 K. WieczorowskaTobis, Zmiany narządowe..., op. cit., p. 63–69.

67 C. Shimamoto, I. Hirata, Y. Hiraike, N. Takeuchi, T. Nomura, K. Katsu, Evaluation of gastric motor activity in the elderly by electrogastrography and the (13)C–acetate breath test, "Gerontology" 2002, 48(6), p. 381–386.

68 W.B. Abrams, M.H. Beers, R. Berkow, MSD Podręcznik..., op. cit.

69 L. Falk, C.A. Bisogni et al, Food choice..., op. cit., s. 257–265.

sory sensations, financial issues, convenience (time and effort) and interpersonal interactions play the most important role. The social role of eating is important for older people, who appreciate eating together at a table as an opportunity to be in the company of other people. Loneliness and depression harm nutrition. The same research shows that during meals company is more valued by seniors than individual taste preferences. For women, serving good food to family and friends is an important goal of cooking.

Nutrition disorders are sometimes considered to be one of the great geriatric problems. Obesity is not indicated at any age, but it is important to know that in old age malnutrition is quite common and dangerous to one's health, as it is associated with greater morbidity and mortality. Undernourished seniors have been found to stay in hospital longer than properly nourished seniors, to take longer to heal wounds, to experience more medical complications, to return to hospital more often, and to be at greater risk of death[70].

However, it is overweight among older people that is more common than underweight[71]. It may result from weakened muscle strength and less physical activity. The reduction of basic metabolism in the older age group leads to lower energy demand compared to younger people. For this reason, it is important to reduce energy consumption as well as to change the nutritional value and quality of the diet e.g., increased calcium and vitamin D intake, the deficiency of which contributes to accelerated bone mass loss and increased risk of fractures in old age. An easily digestible diet with limited fat is recommended. A change in diet in old age can be difficult, however, as eating habits are already formed in childhood, usually most often last throughout life and are very difficult to modify.

2.2.7. Excretory system

Although kidney function deteriorates with age, serious kidney disorders are rare. Kidney mass increases gradually from birth to the age of 40-50 years, after which it decreases by 20-30% between 70 to 90 years as a result of involutionary processes[72]. The kidney size also decreases consistently – by 20-40% (even 2 cm shorter) between the ages of 50-80 years[73]. The decrease in the total number of glomeruli varies between 30-50%[74]. With age, the functioning of the kidneys is weakened mainly due to cirrhosis, loss of nephrons, the reduction of the filtration area and

70 K. Hall, S.J. Whiting, B. Comfort, Low nutrient intake contributes to adverse clinical outcomes in hospitalized elderly patients, "Nutrition Review" 2000, 58(7), p. 214–217.

71 A. Gębska-Kurczewska, Charakterystyka grupy osób w podeszłym wieku uczestniczących w badaniach zależności między aktywnością a stanem zdrowia, "Przegląd Epidemiologiczny" 2002, 56, p. 463–470.

72 F.G. Silva, The aging kidney: A review – part I, "International Urology and Nephrology" 2005, 37(1), p. 185–205.

73 J.-F. Macías Núñez, The normal ageing kidney – morphology and physiology, "Reviews in Clinical Gerontology" 2008, 18(3), p. 175–197.

74 B. Rutkowski, Zaburzenia struktury i funkcji nerek w podeszłym wieku, "Gerontologia Polska" 2005, 13(4), p. 211–217.

the reduction of renal blood flow (even by 40% at 80 years of age[75]). The length and capacity of renal tubules is shortened. As a result of the described changes, functional disorders of the kidneys may occur e.g., a decrease in the ability to thicken urine (which may cause dehydration or overhydration), sodium maintenance (sodium levels in the blood may decrease), potassium management (a decrease in the exchangeable pool of potassium). Senile organic and functional changes in kidneys may predispose to age-related nephropathy[76].

Anatomical and structural changes of the kidneys influence the functioning of these organs as they age. Disturbances may occur in blood chemistry, which is less cleaned of harmful compounds, intensified in the case of excessive intake of toxins, such as alcohol and unnecessary medication, and simultaneous limitation of fluid consumption. Unfortunately, spontaneous fluid intake decreases with age. It is difficult to persuade older people to drink – the resistance of seniors to this issue is high, even among the sick, those undergoing pharmacotherapy, thus requiring special concern for proper hydration of the body. Apart from a reduced feeling of thirst in older people, anxiety of frequent passing of urine and limited ability to hold it is essential. Incontinence is considered to be a pathological effect of the organism's aging and, as such, is considered to be one of the great geriatric problems.

2.2.8. Endocrine system

Senile changes in the endocrine system are influenced by the efficiency of individual organs and systems. With age, the immune functions of the body deteriorate. Although there is no decrease in the number of immune cells over time, at least some of them undergo functional changes. The protective capacity is weakened while autoimmunity i.e., production of antibodies against own antigens, is increased. It is most likely due to the immunosuppressive effect of aging that infectious diseases occur in older age more often, usually with more severe symptoms than in young adults.

Immunological aging is defined as the gradual deterioration of the immune system with age and involves changes in its many components. The effects are mainly recognized as an increase in susceptibility to infections characteristic of older age[77]. Then, infections are characterized by a complicated course without typical symptoms, which hinders diagnosis and may contribute to an increase in mortality among seniors. The performance of the immune system in old age is strongly associated with survival. The decrease in immunity in old age, manifested by e.g.

75 B.R. Meyer, B.E. Hirsch, Renal function and the care of the elderly, "Comprehensive Therapy" 1990, 16(9), p. 30–37.

76 B. Rutkowski, Zaburzenia struktury..., op. cit., p. 211–217.

77 D.T.H.J. Wordsworth, D.K. Dunn-Walters, The ageing immune system and its clinical implications, "Reviews in Clinical Gerontology" 2011, 21(2), p. 110–124.

increased susceptibility to infections, may also be caused by malnutrition, which is subject to prevention and treatment regardless of age.

The proportion of gender-specific hormones changes with age, which means that in women the concentration of androgens increases, and certain features of masculinization develop, while in men the increase in estrogen levels leads to the development of feminization e.g., breast hypertrophy (so-called gynecomastia), increased tearfulness, female obesity, etc. After menopause, muscles become weaker and bones become decalcified and deproteinized, which in women may manifest itself in the so-called postmenopausal osteoporosis. Lower estrogen levels may lead to more frequent skeletal trauma in both genders. It has been shown that female gender hormones play an important role in the regulation of mental functions e.g., hormonal changes associated with menopause predispose to a deterioration of mental performance and memory[78].

2.2.9. Reproductive system

The aging of the reproductive system leads to loss of reproductive function. Women lose fertility approximately in the middle of their lives, while men retain their reproductive abilities almost throughout their whole lives. Hormonal changes accompanying menopause affect both the biology (skin and bone changes) and women's mentality – with menopause the period of menstruation and fertility ends. In older men, the level of testosterone decreases, the process of spermatogenesis is weakened, and sperm viability i.e., its ability to fertilize, is reduced. A common symptom is the degeneration of the prostate gland, which can cause cancer. The condition, therefore, affects women at quite an early stage of their lives, while men experience it more gradually, keeping a younger appearance for longer. However, it is still unknown why, although women are the first to show signs of aging, it is men who usually die earlier.

With age, reactivity to sexual stimuli decreases and so does sexual activity, although it is not clear to what extent this is due to aging and to what extent it is due to other circumstances e.g., lack of a partner or social stereotypes denying the right of seniors to sexual activity, side effects of medication or illness. In assessing the sexual behavior of seniors, it is also important to take into account the historical context – the current generation of older people typically has a more conservative approach to sex than younger people. Attitudes, rather than age itself, can lead to lower involvement in sexual activity. According to Remigiusz Kijak[79], sexual engagement in old age is influenced by the following factors: undertaking

78 S. Elsabagh, D.E. Hartley, S.E. File, Cognitive function in late versus early postmenopausal stage, "Maturitas" 2007, 56(1), p. 84–93.

79 R. Kijak, Problematyka seksualności osób w podeszłym wieku, in: Aktywna starość w perspektywie społeczno-kulturowo-edukacyjnej, ed. Ł.Tomczyk, S. Chudy, Uniwersytet Pedagogiczny w Krakowie, Kraków 2015, p. 79–94.

sexual activity throughout life, availability of a partner, subjective and objective sense of health, positive sexual self-esteem, pleasant experiences from the past, positive attitude towards sex, adaptation to a new quality of sexual life in old age, expressed not so much in sexual performance and functionality, but in developed sensuality.

According to statistical data on the sexual activity of Polish seniors, 41% of people over 60 years of age are engaged in an erotic activity, 40% of people admitted ending it, 4% – have not yet started erotic life, and 15% reported limiting active sex life due to lack of a partner[80]. Foreign data confirm a decrease in sexual activity with age. In the age range of 54-64, 73% of people take up sexual activity, in the age category 65-75 – 53%, while only 26% of people aged 75-85 are still sexually active[81]. It should be noted that especially in the case of women, sexual activity is limited by the lack of a partner.

Extensive research carried out on a sample of 3,369 men aged 40-79 from eight European cities, including Poland, showed that about 30% of the respondents reported problems with erection and 6% serious problems with orgasm, which was closely related to age and associated conditions. Sexual health declined with age, but co-morbidities increased. It was found that older men remained sexually active, even though sexual dysfunctions were more frequent at that age[82]. According to another study[83] conducted over 9 years, there is a decrease in sexual function with age e.g., the number of sexual intercourses or sexual activity during the 9 years of the study decreased by 1 time per month for 40-year-olds, 2 times per month for 50-year-olds and 3 times per month for 60-year-olds.

Only 1/5 of Poles aged 60+ reports satisfaction with their sex life[84]. Sexual life is strongly connected with morality, which in turn is strongly stereotyped in older age. In this context, it is worth emphasizing that the need for physical closeness and sexual activity do not disappear in old age, and their fulfillment slows down the aging process and promotes health[85]. It should not be expected, however, that sexual life in old age will be, in quantitative and qualitative terms, a copy of sexual activity in youth. Physical changes accompanying old age influence erotic life,

80 Z. Lew-Starowicz, Raport seksualności Polaków 2002, KRM/RMC, Warszawa 2002.

81 W.P. Bouman, J. Arcelus, Are psychiatrists guilty of "ageism" when it comes to taking a sexual history?, "International Journal of Geriatric Psychiatry" 2001, 16(1), p. 27–31.

82 G. Corona, D.M. Lee, G. Forti, D.B. O'Connor, M. Maggi, T.W. O'Neill, N. Pendleton, G. Bartfai, S. Boonen, F.F. Casanueva, J. Finn, A. Giwercman, T.S. Han, I.T. Huhtaniemi, K. Kula, M.E.J. Lean, M. Punab, A.J. Silman, D. Vanderschueren, F.C.W. Wu, Age-Related Changes in General and Sexual Health in Middle-Aged and Older Men: Results from the European Male Ageing Study (EMAS), "Journal of Sexual Medicine" 2010, 7(4 Pt 1), p. 1362–1380.

83 A.B. Araujo, B.A. Mohr, J.B. McKinlay, Changes in Sexual Function in Middle-Aged and Older Men: Longitudinal Data from the Massachusetts Male Aging Study, "Journal of American Geriatrics Society" 2004, 52(9), p. 1502–1509.

84 A. Jodko, Aktywność seksualna w podeszłym wieku. Przeszkody i ograniczenia oraz możliwości instytucjonalnej pomocy, in: Instytucjonalne wsparcie seniorów – rozwiązania polskie i zagraniczne, ed. A. Fabiś, Wyższa Szkoła Administracji w Bielsku-Białej, Bielsko Biała 2007, p. 53–67.

85 Z. Lew-Starowicz, Kobieta i Eros, Zakład Narodowy im. Ossolińskich, Wrocław 1991.

however, accepting these changes and skillful adaptation may result in satisfactory sexual life in old age. Fast and violent sex proper to the period of youth, can take a more sublime and sophisticated form in old age, allowing to find a new perspective of sexual satisfaction. Sex in old age can also have a compensatory function for the various shortcomings of seniors[86].

2.3. Mental changes in old age

A human being develops throughout the whole life, also in the psychological sphere, in terms of memory, intelligence, personality, emotions or spirituality. On the other hand, old age sees the processes of regression. Nevertheless, the mental resources at our disposal, with the exclusion of pathogenic factors, should provide seniors with functionality at the existing level and even create new mental qualities. Nowadays, the examination of the mental abilities of an old person focuses not only on the limitations that progress with age but also on indicating developmental possibilities – ensuring successful adaptation to old age[87]. In this perspective, old age ceases to be a pathological state by definition, but rather appears as the next stage of human development, and natural changes in mental functioning are to prepare the person to successfully meet the challenges of this period of life.

2.3.1. Intelligence

Some changes in mental functioning develop from early adulthood, which suggests that they may be part of normal developmental processes. K. Warner Schaie[88], specializing in the study of intellectual development in adulthood, argued that mental changes that occur with age are highly individualized and are characterized by leaps rather than a linear trend, with a period of stabilization before each subsequent decline. He emphasized that a significant decline in mental strength occurs only in late old age. These changes may be unavoidable and only the time of their appearance will remain individual. However, in terms of mental efficiency, there are large intra-individual (of the same person) and inter-individual differences i.e., the rate of changes taking place varies between individuals.

Changes in intelligence are not uniform, because intelligence itself is not uniform. There is a consensus among researchers that with age, crystallized intelligence develops, representing knowledge acquired and accumulated in the course of life, which is dependent on socio-cultural influences and educational and

86 M. Muszyński, Rozważania dotyczące aktywności seksualnej osób w trzecim wieku, "Gerontologia Społeczna" 2007, nr 1(2), WSHE w Łodzi, p. 119–125.

87 J. Kucharewicz, Psychologiczne aspekty procesu adaptacji do starości – kierunki badań, "Społeczeństwo i Edukacja. Międzynarodowe Studia Humanistyczne" 2015, 16(1), p. 227–236.

88 K.W. Schaie, Intellectual development in adulthood, Cambridge, New York 1996.

professional qualifications. On the other hand, there is a decline in liquid intelligence, largely determined by biological characteristics and independent of experience, associated with the use of general intellectual abilities to solve innovative tasks, with the ability to perceive complex relationships, to recognize, compare, categorize, create ideas and abstract reasoning. Crystallized intelligence, based on experience, may serve as a compensation for other mental or physical abilities which weaken with age and may meet the growing need for reminiscence (recollection), or for shaping wisdom appropriate for this period of life.

A person's mental abilities change, also in old age, preparing them to undertake specific tasks at any stage of life. It is true that in no later period of life does man have such enormous possibilities of absorbing and processing information as they do during childhood, but the experience accumulated with age can compensate for the slowing down of absorbing information in old age. One might argue that it is children and adolescents who compensate for the lack of knowledge and experience with the speed of acquiring new information by expanding their database to ensure a safe and efficient functioning in the future.

It is still unclear when to determine the beginning of the weakening of mental capacity. It is assumed that the gradual decline of fluid intelligence occurs as early as in middle age and intensifies around 50 to 60 years of age. In turn, crystallized intelligence remains on the same level, and even increases to around 70 years of age[89]. Klaus and Ruth Riegel from the University of Michigan argue that a significant intellectual decline takes place not so much in old age as in the period close to death. Their research shows that significant deterioration occurs in the last 5 years of life at most. This phenomenon has been described as "terminal drop"[90]. It can be assumed that if the results of participants who died within the next 5 years were not taken into account in the research, the intelligence would not change among the remaining subjects. In the course of other studies[91] following this path, it has been established that it is possible to predict whether older people will survive the next 4 years based on their mental performance. People who died within 4 years of the study had much worse results than those who remained alive. However, there is no clear explanation as to why inferior mental functioning is so strongly linked to death. However, this knowledge may allow for the implementation of more effective positive health behaviors.

Some research results into intelligence show that mental abilities decrease with age and that the subsequent young generations are becoming smarter: 20-year-olds are smarter than 40-year-olds and 40-year-olds are smarter than 60-year-olds. The basis for this conclusion is provided by cross-sectional (transversal) studies, which do not measure the changes in intelligence over time directly, on the same

89 I. Kołodziejczyk, Neuropsychologia starzenia poznawczego, "Kosmos" 2007, 56(1–2), p. 49–62.
90 L. Lamdin, M. Fugate, Elderlearning. New frontier in an aging society, The Oryx Press, Phoenix 1997.
91 K. Duff, J.W. Mold, Y. Gidron, Cognitive functioning predicts survival in the elderly, "Journal of Clinical and Experimental Neuropsychology" 2009, 31(1), p. 90–95.

sample over many years, but by comparing results from the same test in different age groups. When referring to cross-sectional study results, it is necessary to address the issue of their reliability and the relevance of drawing cause-effect conclusions from them. This is because while such studies show that the intellectual abilities of seniors are lower than those of the younger generation, longitudinal studies do not confirm the weakening of intellectual abilities with age. The cross-sectional approach is very susceptible to the cohort effect, which in the comparison of the results of intelligence tests conducted in different age groups would require considering, apart from intelligence and age, other variables resulting from the differences between the cohorts, such as educational experience, upbringing, political, cultural or economic conditions in which given age groups grew. It should be remembered, for example, that the current generation of seniors does not have much experience in solving tests compared to younger people with whom they are compared. This is referred to as the so-called Flynn effect – specific cohort influences are difficult to isolate and measure, but they significantly affect the results of tests on intelligence. The Flynn effect, understood as a cohort effect, favors people who were born later and who are better equipped to perform the tests given to them. After taking into account factors related to the cohort effect, it turns out that the differences in intelligence between the group of young and older people are significantly smaller[92].

A change in the view on the development of intelligence with age was the result of studies conducted by Klaus W. Schaie et al. (one of the pioneers of the psychology of aging)[93], so-called longitudinal studies, or cohort studies, consisting of a sequential study of the same group of people over a certain time. A sample of people aged 20-70 years was studied for 35 years, examining the level of intelligence in particular age categories every 7 years. The results obtained in one-time interval indicated higher intelligence of members of younger age groups than members of older age groups in all areas of research. However, comparing the results obtained during 35 years of research showed that their level in the same people did not change or even improved (which concerned 60-85% of respondents), and decreased only in one area – speech fluency. It remains a matter of speculation to what extent the recorded decrease in intelligence in the remaining group of respondents resulted from terminal incapacity (terminal drop or terminal involution, see[94]). What is important, the differences in the level of intelligence between individual age groups remained the same. This means that the differences between younger and older people in terms of intelligence did not result from the decline associated with the aging process but were already present at the beginning of the study. They may have been the result of differences in the worlds in

92 D. Mercedes, Dickinson1 and Merrill Hiscock, Age-related IQ decline is reduced markedly after adjustment for the Flynn effect, "Journal Of Clinical And Experimental Neuropsychology" 2010, 32(8), p. 865–870.

93 K.W. Schaie, Intellectual development..., op. Cit. K.W. Schaie, G. Labouvie-Vief, Generational versus ontogenetic components of change in adult cognitive behavior: A fourteen year crosssequential study, "Developmental Psychology" 1974, 10(3), p. 305–320.

94 A.A Zych, Leksykon gerontologii, Oficyna Wydawnicza Impuls, Kraków 2010.

which individual cohorts were brought up and lived and of the social, cultural and historical differences that shaped them.

It is worth going into detail regarding the differences in the level of intelligence between the group of younger and older people. It is explained not only by the cohort effect but also by the specificity of psycho-physical functioning in old age, requiring methodological modifications of testing conditions. In interpreting the results of studies into intelligence conducted in the group of seniors, one should take into account their adaptation to the specific abilities and needs of older people. The results will be unreliable if the tests are created in terms of their content, language or drafting, not with seniors in mind but young people. In this sense, the measurement of intelligence in old age depends on the tests used in the research. The question arises of how to measure intelligence in different age categories. Perhaps certain abilities and ways of thinking appear or fully develop only at an older age and are only specific to older people? Then measuring these abilities by tests designed for younger age groups would not be reliable. The tests, the completion of which deteriorate with age, usually require perception and motor skills as well as speed, while the completion of tests requiring verbal functions remains unchanged. In intelligence tests that make use of the social competences of the tested persons, older people have a chance to obtain even higher results. Intelligence is made up of many mental abilities, therefore the result of testing will depend on the individual mental abilities examined.

Moreover, it is necessary to take into account the specificity of the mental functioning of older people. They are generally more careful, cautious in making judgments, preferring accuracy over speed, reluctant to give uncertain answers. Such an advantageous feature in everyday life in a test situation, when tasks are carried out in a time constraint, contributes to a less favorable final result. The special characteristics of the physical functioning of seniors should prompt the consideration of the physical environment in which the tests take place. Attention should be paid to e.g. visual impairment (requiring enlarged, contrasting font, appropriate lighting), auditory impairment (desired appropriate acoustics, audible commands), preference for higher room temperature, reduction of noise, provision of an adequate test or break time, proximity to the toilet (due to difficulty in holding urine), etc.

In creating research conditions, it is important to take into account the specific mental functioning of people of advanced age e.g., slower processing of information concerning their youth (resulting, for example, from increased caution and precision), difficulties in performing new, complex tasks that require separating essential information from irrelevant elements, inhibiting irrelevant stimuli or a smooth transition from one task to another. Adaptation of the research environment to the needs of older people requires the knowledge of the methodology of work with this age group and the recognition of their specific needs to ensure

the effectiveness of the conducted activities[95]. It has been found, for example, that seniors have less difficulty answering questions presented visually than they do with an auditory presentation[96]. To gain motivation to perform a task, however, they must be convinced of its usefulness. The activity they undertake, which is perceived as meaningful, and preferably practical, will be done more effectively. So not only what is measured is important, but also how it is measured and under what conditions. Adapting test conditions to the capabilities of seniors makes them obtain comparable results as young people (e.g.[97]). The necessity to modify the environment and methodology of work with children and young people is nowadays undisputed – similar standards should be adopted in work, including research work, with older age categories of participants. According to Lois Lamdin and Mary Fugate[98], differences in race, gender or ethical issues have already been learned to be taken into account in the development of tests and it is time to take cohort differences into account.

Nowadays, it is considered stereotypical to believe that mental functions will inevitably decrease with age and depend on biological factors only. Internal biological aging takes place in interaction with social and environmental factors. Yaakov Stern[99] coined the term "cognitive reserve"), referring to the involvement in intellectually stimulating social and physical activities that give some resistance to the effects of aging on cognitive functions. Schaie[100] distinguished social determinants that positively influence intellectual capabilities in old age: high level of education (also of informal nature), intellectually engaging workplace, long marriage and intelligent spouse, exposure to stimulating environment, use of cultural and educational resources in adulthood. He discovered that people engaged in professionally complex jobs, socially and intellectually stimulating activities showed fewer changes in mental functioning than those who led a more withdrawn, sedentary lifestyle, experiencing serious family difficulties. Research results published several years later by other scientific teams[101] confirm that a social network (number of social ties, matrimonial status), as well as the level of support received

95 M. Kilian, Metodyka edukacji osób w starszym wieku. Podstawowe wskazówki i zasady, "Forum Pedagogiczne" 2015, 1, p. 171–185.

96 D.C. Park, Cognitive aging, processing resources, and self-report, in: Cognition, aging, and self-report, eds. N. Schwarz, D.C. Park, B. Knauper, S. Sudman, Psychology Press, Philadelphia 1999, p. 45–69.

97 A.D. Castel, Memory for grocery prices in younger and older adults: The role of schematic support, "Psychology and Aging" 2005, 20(4), p. 718–721. L. Luo, T. Hendriks, F.I. Craik, Age differences in recollection: Three patterns of enhanced encoding, "Psychology and Aging" 2007, 22(2), p. 269–280.

98 L. Lamdin, M. Fugate, Elderlearning..., op. cit.

99 Y. Stern, What is cognitive reserve? Theory and research applications of the reserve concept, "Journal of International Neuropsychological Society" 2002, 8(3), p. 448–460.

100 K.W. Schaie, Intellectual development..., op. cit.

101 L. Fratiglioni, H.-X. Wang, K. Ericsson, M. Maytan, B. Winblad, Influence of social network on occurrence of dementia: A community-based longitudinal study, "The Lancet" 2000, 355(9212), p. 1315–1319. H. Okabayashi, J. Liang, N. Krause, H. Akiyama, H. Sugisawa, Mental health among older adults in Japan: Do sources of social support and negative interaction make a difference?, "Social Science and Medicine" 2000, 59(11), p. 2259–2270.

from friends and acquaintances, affect mental health in the late years of life. Laura Fratiglioni et al. calculated that people living alone, with no close relations or poorly developed social networks were at a 60% higher risk of developing dementia. More so – low social support intensifies mental decline in old age, even in the absence of dementia[102]. Social relationships, therefore, have a far-reaching impact on health and mental functioning in old age, serving as their protection.

The efficiency of intellectual functioning is determined not only by social and environmental factors but also by physical ones. It is now known beyond any doubt that health affects the quality of mental functioning and mental well-being, according to a popular phrase, " a healthy mind in a healthy body". In the scientific field, this fact is confirmed by longitudinal and cross-sectional studies – poor physical health is associated with weaker mental functioning. For example, research shows a decrease in mental functioning in people suffering from cardiovascular disorders[103] or diabetes[104]. Among the less intuitive correlations, it is worth pointing out that the functioning of the senses (sight, hearing, sense of balance) is fundamental for mental efficiency[105].

Kaarin J. Anstey and Helen Christensen[106] confirm the importance of health and the measurement of illness as indicators of mental functioning, noting that a subjective evaluation of one's health judged to be weak is not always associated with actually weak mental functioning, while objective measurements of health are always associated with a decline in mental functioning. It should be emphasized that poor health may be only partly responsible for the decline of mental capacity in old age and is only a small contribution to building knowledge on the etiology of age-related mental function disorders. In this respect, it has been proven that there is a rather surprising, opposite relationship to the one discussed so far – that mental capacity can affect health. A very interesting study[107] was conducted in this area, based on an idea to train people with cardiovascular disease in the field of inductive reasoning and then check its impact on participants' health. As it turned out, fewer cases of illness and visits to the hospital were reported for those trained than in the control group.

102 T.E. Seeman, T.M. Lusignolo, M. Albert, L. Berkman, Social relationships, social support, and patterns of cognitive aging in healthy, high-functioning older adults: MacArthur studies of successful aging, "Health Psychology" 2001, 20(4), p. 243–255.

103 J.M. Starr, L.J. Whalley, S. Inch, P.A. Shering, Blood pressure and cognitive function in healthy older people, "Journal of the American Geriatrics Society" 1993, 41(7), p. 753–756.

104 S.C.M. Croxon, C. Jagger, Diabetes and cognitive impairment: A community-based study of elderly subjects, "Age and Ageing" 1995, 24(5), p. 421–424.

105 5 P.B. Baltes, U. Lindenberger, Emergence of a powerful connection between sensory and cognitive functions across the adult life-span: A new window to the study of cognitive aging?, "Psychology and Aging" 1997, 12(1), p. 12–21.

106 K.J. Anstey, H. Christensen, Education, activity, health, blood pressure and apolipoprotein E as predictors of cognitive change in old age: A review, "Gerontology" 2000, 46(3), p. 163–177.

107 W. Schaie, The optimization of cognitive functioning in old age: Predictions based on cohort-sequential and longitudinal data, in: Successful Aging. Perspectives from the behavioral sciences, eds. P.B. Baltes, M.M. Baltes, Cambridge University Press, New York 1990, p. 94–117.

The influence of the discussed physical, mental and social factors does not entirely determine the quality of mental functioning in old age. It is possible to improve one's mental abilities through exercise. It has been proven, for example, that training of older people to perform test tasks involving fluid intelligence improves their performance and results[108]. Mental training contains an element of learning, and it is known that life-long learning makes people better students. This means that intellectual abilities are plastic and prone to shaping even during mature life. Studies[109] conducted over 7 years suggest that the observed decline in mental capacities is due to their limited use and is often reversible. As many as ⅔ of the participants in the mental training program showed an improvement and 40% of those with a decline returned to their previous levels. The conclusion is that an unused skill, like an unused organ, undergoes atrophy. The mental activity of an older person is highly dependent on the length of intellectual training and the mental level achieved.

2.3.2. Memory

The common belief that memory weakens with age is strongly exaggerated. It is very important to be careful when distinguishing the effects of the normal aging process from pathological changes. Healthy old age does not entail difficulties which should be attributed to neurodegenerative changes rather than to aging itself. Dementia as a pathological process requires treatment and should not be accepted as a natural and inevitable consequence of aging. A distinction ought to be made between memory loss experienced due to pathological changes and much milder changes occurring as a result of the aging process itself, which does not affect a person's general competence.

Most seniors can accurately assess their memory and those who are unable to do so most often experience difficulties other than their memory, such as disorders of daily functioning or depression. People who complain more about memory loss are no more likely to develop dementia than those who report smaller problems of this kind. Older people suffering from depression complain more often about memory problems, although they are not confirmed by memory tests. People with symptoms of dementia may even complain about memory loss to a lesser extent than people without these symptoms, although it is they who show much more serious memory problems.

Old age entails a certain weakness in the functioning of memory, although it should be stressed that it is not as severe as it is commonly believed. Most people see increasing memory problems at the beginning of the sixth decade of life.

108 S.L. Willis, R. Bliesdzner, P.B. Baltes, Intellectual training research imaging: Modification of performance on the fluid ability of figural relations, "Journal of Educational Psychology" 1981, 73, 41–50.

109 K.W. Schaie, The Seattle Longitudinal Studies of adult intelligence, in: Essential papers on the psychology of aging, eds. M. Powell Lawton, T.A. Salthouse, University Press, New York 1998, p. 263–271.

Studies do not agree on this issue – some of them show a linear pace of changes in memory from the early years of adulthood[110], others prove that these changes are non-linear and intensify in old age[111]. Current scientific developments, however, suggest that long-term memory, especially concerning the distant past, is maintained throughout life. Seniors best remember events that took place during their youth and early adulthood. A detailed recollection of the distant past can indicate the great personal significance of events that make the recent past seem rather faint. On the other hand, often mentioned events are preserved in the memory. There are, however, difficulties in remembering recent things e.g., the name of a new acquaintance, the place where the car was parked or the shopping list, for which short-term memory is responsible. Longitudinal research[112] conducted on short-term memory on 500 participants over 15 years showed that physical activity, female gender and living with another person increases the probability of maintaining short-term memory, while low level of education, unemployment and male gender predisposes to its weakening with age.

Lin Luo and Fergus I.M. Craik[113] mention 5 main memory systems that show different rates of decline with age. Short-term memory (for specific information) and operational memory (for storing and manipulating operations in short time) tend to deteriorate quite fast, while perceptual memory (for perceptual information) and semantic memory (for creating pools of similar information and gathering general knowledge) remain relatively stable. Problems with memory in old age arise especially in the context of searching for highly specialized information and when memory processes must be initiated and conducted in a conscious, purposeful and effortless way (not in a customary manner or with support of the environmental context). Such mental operations are the responsibility of the frontal cerebral lobes, whose effectiveness decreases with age. The above difficulties with memory in old age are explained by a decrease in the ability to effectively find the necessary information in the memory storage (recollection).

Information reaches the brain via the senses – for it to be remembered, it is coded and stored first in short-term memory, then in long-term memory, so that it can be found and identified later. In old age, it is not so much the mechanism of remembering itself that fails, as the mechanism of recovering the remembered information from the "database". An aged person does not "lose" the acquired information, but only cannot extract it from the memory resources. Older people are more likely to experience the state of memory, which is defined: "have something

110 D.C. Park, G. Lautenschlager, T. Hedden, N.S. Davidson, A.D. Smith, P.K. Smith, Models of visuospatial and verbal memory across the adult life span, "Psychology and Aging" 2002, 17(2), p. 299–320.

111 T.A. Salthouse, T.M. Atkinson, D.E. Berish, Executive functioning as a potential mediator of age-related cognitive decline in normal adults, "Journal of Experimental Psychology: General" 2003, 132(4), p. 566–594.

112 M. Josefsson, X. de Luna, S. Pudas, L.G. Nilsson, L. Nyberg, Genetic and lifestyle predictors of 15-year longitudinal change in episodic memory, "Journal of American Geriatrics Society" 2012, 60(12), p. 2308–2312.

113 L. Luo, F.I.M. Craik, Aging and memory: A cognitive approach, "Canadian Journal of Psychiatry" 2008, 53(6), p. 346 –353.

at the tip of the tongue", which is interpreted as overloading the memory with age. Seniors do not experience a weakened ability to recall general information, it is more difficult when specific information such as recalling names is required. Perhaps this is due to the hierarchical structure of knowledge: general and easily accessible information located at the top and extremely detailed at the bottom. With age, it becomes more difficult to tie new information to existing structures of knowledge. As a result, an older person may remember single pieces of information that do not form a coherent whole.

Faster forgetting of the learned content by older people in comparison to younger ones is explained by their use of less effective methods of acquiring information (learning), the so-called mnemonics. Adapting the methods of learning and teaching older people according to their specific abilities and needs makes them able to achieve the same results as younger people. Research shows that older people gain a lot from memory training and that their mnemonic exercises can lead to significant memory improvement (e.g[114]). Seniors experiencing certain memory problems spontaneously use memorization and memory compensation techniques. These techniques used in everyday life include the use of simple external aids (e.g. a list, a calendar), use of one's own individual mnemonics (e.g. repetition), putting more effort into remembering or recovering the acquired information. Educational work with the elderly should use a methodology adapted to their needs and abilities, based on a thorough knowledge of bio-psycho-social aspects of functioning in this stage of life. Such methodology assumes appropriate adaptation of the learning environment, methods, techniques or content[115].

With age, the ability to remember content changes due to its type. Research has established that young adults recall more perceptual and spatial information, while older adults recall more thoughts and feelings[116]. A similar tendency is shown in autobiographical memory. Young couples asked to recall memories from past holidays recall more objective facts, older couples recall more subjective experiences, preferences and feelings[117]. There are also differences in remembering content with a different emotional load. Older people remember positive information better than negative information. Young people remember negative content to a greater extent, older people tend to recall content with positive connotations[118]. This tendency of seniors is, among other things, treated by the gerontological theory

114 R. Kliegl, J. Smith, P.B. Bakes, On the locus and process of magnification of age differences during mnemonic training, "Developmental Psychology" 1990, 26(6), p. 894–904. P. Verhaeghen, A. Marcoen, L. Goossens, Improving memory performance in the aged through mnemonic training: A meta-analytic study, "Psychology and Aging" 1992, 7(2), p. 242–251.

115 M. Kilian, Metodyka edukacji..., op. cit., p. 171–185.

116 S. Hashtroudi, M.K. Johnson, L.D. Chrosniak, Aging and qualitative characteristics of memories for perceived and imagined complex events, "Psychology and Aging" 1990, 5(1), p. 119–126.

117 O.N. Gould, R.A. Dixon, How we spent our vacation: Collaborative storytelling by young and old adults, "Psychology and Aging" 1993, 8(1), p. 10–17.

118 S.T. Charles, M. Mather, L.L. Carstensen, Aging and emotional memory: The forgettable nature of negative images for older adults, "Journal of Experimental Psychology: General" 2003, 132(2), p. 310–324.

of socioemotional selectivity. Displacement of negative memories and emotions in favor of pleasant memories, characteristic for older age, may be a beneficial purposeful mechanism of forgetting, supporting successful functioning in old age.

Numerous factors can influence weaker memory in old age. For example, over time the inhibitory mechanisms deteriorate, which causes more random information to enter operational memory, unrelated to the task but interfering with the correct course of thought processes. It is a fact that older people remember the desired content just as well as young people when environmental conditions lack distracting stimuli[119]. The difficulty in blocking irrelevant information can be seen as a cause of senile mental changes. It may not only be the amount of information to be stored in memory that decreases with age, but the inability to block insignificant information that deepens with time leads to a reduction of mental resources responsible for data processing. The decrease in memory with age can also be explained by its integration with other cognitive functions, such as attention, learning or problem solving, which are weakened by normal and pathological aging.

To some extent, this overall cognitive decline may reflect an increasing failure of the entire neurophysiological system. Highly optimistic findings, however, show that an active lifestyle (including a rich social life) may even inhibit the development of dementia among seniors experiencing early neurodegenerative symptoms[120]. Undoubtedly, it is worthwhile to build a so-called cognitive reserve in case of a future decrease in the performance of the nervous system, through increased physical, mental and social activity, as well as healthy habits and lifestyle.

2.3.3. Personality

In scientific studies, the development of personality with age is described in the context of constancy or variability. On the one hand, it proves the constancy of personality, on the other hand, on the contrary, it indicates personality variability in the human life cycle. Usually, the constancy of personality is confirmed by longitudinal studies, and variability – by cross-sectional studies, which, what is important, may be marked by the cohort effect.

The very concept of personality is a very complex construct, difficult to measure, especially because of the problematic use of objective measurement tools. The analysis of the empirical evidence to date on the development of human personality suggests that with age there are some changes in the structure and dynamics of personality, albeit small. Personality shows a constant character and at the same time the ability to make changes that are neither frequent nor radical. Significant social relationships or roles may contribute to changes in personality,

119 I. Kołodziejczyk, Neuropsychologia starzenia..., op. cit., s. 49–62.

120 L. Fratiglioni, S. Paillard-Borg, B. Winblad, An active and socially integrated lifestyle in late life might protect against dementia, "Lancet Neurology" 2004, 3(6), p. 343–353.

and in old age, it may be a breakthrough experience such as the death of a spouse, remarriage or deterioration in physical and mental health. To some extent, personality is influenced by life experiences, events and socialization.

Personality is determined by genetic and environmental factors. Certain personality traits can be inherited, but different genes can activate or deactivate at different times of life, also depending on environmental conditions. Robert R. McCrae et al[121] explain the context in which certain personality traits are revealed under certain conditions by the following example – openness and emotional expression may be more necessary for young people seeking a life partner, while conscientiousness may be of greater value to seniors responsible for raising and educating the younger generations.

A group of researchers[122], taking the variability of human personality with age as a rule rather than an exception, stresses that personality traits, despite their relative constancy in adulthood, do not cease to change throughout human life and maintain a rather dynamic nature. This approach is consistent with the assumptions of the continuity theory which accepts changes of personality with age but of a more quantitative than qualitative nature. For example, someone who poorly copes with life's challenges in their youth will face difficulties in old age in at least the same way. Adaptation strategies to challenges will remain unchanged. In the stereotype of old age, people become grumpy, depressive and withdrawn with age. According to the continuity theory, grumpy, depressive and withdrawn people have already been grumpy, depressive and withdrawn before and over time these characteristics have only become more pronounced. The personality traits formed in the early stages of life may deepen in response to the challenges of old age. Some of those traits particular to a person may intensify, sometimes to a caricatured size. Therefore, it is not worth entering old age with unresolved problems of one's nature that have not been solved in the past, as these may intensify over time.

In the concept of continuity, individual differences are more important than belonging to a particular age group[123]. The pattern of age-related personality change is not universal, common to all people, but strongly depends on the individual conditions of life of individuals. However, the following studies[124] conducted in the United States, Germany, Italy, Croatia, Portugal and South Korea contradict this finding. In all the countries surveyed, young people were more neurotic, more

121 R.R. McCrae, P.T. Costa Jr, M. Pedroso de Lima, A. Simões, F. Ostendorf, A. Angleitner, I. Marusić, D. Bratko, G.V. Caprara, C. Barbaranelli, J.H. Chae, R.L. Piedmont, Age differences in personality across the adult life span: Parallels in five cultures, "Developmental Psychology" 1999, 35(2), p. 466–477.

122 R. Helson, C.J. Jones, V.S.Y Kwan, Personality change over 40 years of adulthood: HLM analyses of two longitudinal samples, "Journal of Personality and Social Psychology" 2002, 82, s. 752–766. B.W. Roberts, W.F. DelVecchio, The rank-order consistency of personality traits from childhood to old age: A quantitative review of longitudinal studies, "Psychological Bulletin" 2000, 126(1), p. 466–477.

123 L. Zając, Psychologiczna sytuacja człowieka starszego oraz jej determinanty, in: Starość i osobowość, ed. K. Obuchowski, Wydawnictwo Akademii Bydgoskiej im. Kazimierza Wielkiego, Bydgoszcz 2001.

124 R.R. McCrae, P.T. Costa et al, Age differences in personality..., op. cit., p. 466–477.

extroverted and more open to experience, but also less conscientious and obligation-oriented than older participants. They were more emotionally unstable, more interested in new things, seeking thrills, responding more intensively to stress, more socialized, less calm, much more often lacking a sense of self-control. Older people were, in turn, more conscientious, obligation-oriented and with better self-control. The greatest personality changes were recorded between the ages of 20 and 30. With age there was a decrease in: hostility and activity, to a lesser extent anxiety, depression, assertiveness and emotional warmth. These changes were common to all the people surveyed, coming from 6 countries, with different historical and cultural experiences.

Although the personality of an adult can change and mature, in old age most of the personality traits remain quite stable. Longitudinal studies conducted by Paul Costa, Jian Yang, and Robert R. McCrae[125] have shown that personality traits in people in late adulthood are similar to those they exhibited at an earlier age. Costa and McCrae emphasize the genetic and biological basis of personality structure, indicating the relative stability of personality traits in different situations. They consider the age of about 30 years of age[126] to be critical in the development of the personality, stabilizing the changes so far. They proved that extroversion, neuroticism and openness to experiences decrease slightly over time, which suggests less activity and anxiety in old age. At the same time, there is an increase in conscientiousness and compliance. Similarly, Peter Warr[127] showed significant age differences in conscientiousness – it was older people who proved to be more diligent, but also less sociable and communicative, less change and career-oriented than younger people. In turn, Italian research[128] shows the weakening of the personality traits exhibited more in older men than in older women. Men showed a decrease in: energy, kindness, emotional stability and openness. In the case of women, on the other hand, there was no decrease in energy, kindness and conscientiousness, but a significant increase in emotional stability was detected.

Scientific reports have shown that some personality traits are more beneficial than others. For example, people who are highly open, compliant, extrovert and conscientious, but at the same time not very neurotic, show few health problems in old age[129]. Other studies[130] carried out over 5 years have shown how dangerous

125 P.T. Costa Jr., J. Yang, R.R. McCrae, Aging and personality traits: Generalizations and clinical implications, in: Clinical geropsychology, eds. I.H. Nordhus, G.R. VandenBos, S. Berg, P. Fromholt, American Psychological Association, Washington DC 1998, p. 33–48.

126 R.R. McCrae, P.T. Costa, Personality in adulthood, Guilford Press, New York 1990.

127 P. Warr, Age and work behaviour: Physical attributes, cognitive abilities, knowledge, personality traits, and motives, "International Review of Industrial and Organizational Psychology" 2001, 16, p. 1–36.

128 G.V. Caprara, M. Caprara, P. Steca, Personality's correlates of adult development and aging, "European Psychologist" 2003, 8(3), p. 131–147.

129 K.L. Jerram, P.G. Coleman, The big five personality traits and reporting of health problems and health behavior in old age, "British Journal of Health Psychology" 2010, 4(2), p. 181–192.

130 R.S. Wilson, C.F. Mendes de Leon, J.I. Bienias, D.A. Evans, D.A. Bennett, Personality and mortality in old age, "The Journals of Gerontology Series: Psychological Sciences and Social Sciences" 2004, 59(3), p. 110–116.

neuroticism is and they have proven that it is strongly linked to mortality. In turn, a strong sense of conscientiousness was associated with a low risk of death. To establish the relationship between personality and the development of disability in old age, interesting studies were conducted among 813 Catholic nuns, monks and priests in old age, with no symptoms of dementia or disability at the time of their commencement. Measurements were made every year over 6 years. As it turned out, the risk of acquiring a disability was 85% lower in highly extroverted people in comparison with those with a low level of extroversion and 50% lower in more conscientious people in comparison with less conscientious individuals. Thus, the higher level of extroversion and conscientiousness was associated with a lower risk of disability appearing in older age in the given test sample.

People of advanced age have higher self-esteem than younger people. In men, it reaches its highest value in middle age and then slightly drops. In women, on the other hand, it peaks during the period of raising children, then falls to 65 years of age and then grows again[131]. Interesting studies[132] have been carried out in this area with seniors suffering from cardiovascular disease. The results showed that self-esteem had a very strong impact on functioning, especially in the case of women – in the top quartile, female participants in studies into self-esteem were 5 times more likely to maintain or improve functioning than women from the lowest quartile.

Older people like to present themselves in a better light despite experiencing ageism and age-related losses. This tendency to maintain a positive self-image is called the paradox of well-being. Most seniors have a positive opinion of themselves, and their lives and this opinion does not diminish with age. The phenomenon is confirmed by empirical studies by Daniel K. Mroczek and Avron Spiro[133], who studied the course of such personality traits as extroversion and introversion in over 1600 men (mean age of 63 years). As it turned out, while extroversion was fairly stable, introversion and neuroticism tended to decline with age, which means that over time people are less worried and anxious.

To be active, older people need a stronger stimulus and encouragement, preferring rather passive forms of spending time, requiring little energy, predictable, allowing them to control the pace and extent of their involvement (e.g. gardening, reading, watching TV). There is a growing tendency for inactivity and simplifying life, and an aversion to all novelties and changes, even those for the better. Caution grows – older people avoid risk regardless of the probability of success[134].

131 L.R. Aiken, Aging. An introduction to gerontology, SAE Publications, California 1995.

132 M.S. Forthofer, N.K. Janz, J.A. Dodge, N.M. Clark, Gender differences in the associations of self esteem, stress and social support with functional health status among older adults with heart disease, "Journal of Women and Aging" 2001, 13(1), p. 19–37.

133 D.K. Mroczek, A. Spiro, Modeling intraindividual change in personality traits: Findings from the normative aging study, "The Journals of Gerontology: Psychological Sciences" 2003, 58(3), p. 153–165.

134 R.J. Sternberg, T.I. Lubart, Wisdom and creativity, in: Handbook of the psychology of aging, eds. J.E. Birren, K.W. Schaie, Academic Press, San Diego 2001, p. 500–522.

This tendency, called conservatism of old age, is explained by decreasing energy and adaptation resources. However, there are individual differences in this respect. People with higher intelligence and greater self-confidence are more likely to take risks rather than cling rigidly to past solutions. Seniors with lower intelligence or with organic brain damage (e.g. in the course of Alzheimer's disease) will adapt poorer to environmental changes.

In older couples, there is a visible phenomenon of becoming similar to each other, manifested, for example, by the fact that men are more involved in household activities, they become more sensitive, family matters become more important to them, while women become more aggressive, egocentric and self-sufficient. Men have increasing cognitive needs, women have increasing needs for expression, including of affective nature. It can be assumed that in the second half of life women assume a more active and assertive attitude and having raised their children, reveal more masculine qualities that were previously dormant. Older men, on the other hand, can afford to reduce aggression and rivalry and release the expression of more caring qualities.

Over time, older people develop a disposition to introspection and change their orientation from the outside world to the inside world, including increased self-centeredness, which is called internalization of experience. This tendency is observed in people of different geographical locations, cultures and nations. The motivation for the need for success is weakened – it is redirected from focusing on one's achievements to providing gratification to other people. Generativity is of particular interest to most middle-aged people. This concept was introduced by Erikson in his personality development theory. It is defined as a focus on developing and preserving resources for future generations. This focus includes concern for others, especially the upbringing of young generations. Generosity is beneficial to communities that draw on resources generated by seniors, as well as to those who grow old and gain a sense of life satisfaction from it. To be useful or to have a sense of meaning is particularly important for the perception of successful old age.

Older people are less focused on the future than young people. However, it seems natural, given that fast-moving time is something they are familiar with. with. They do not ignore the future but do not focus on it any more than on the present and past. The fact is that they judge the past better than the present, which does not mean that they live in the past. In fact, it is healthy seniors who focus more on the present than other age groups[135]. They do not live in the past, escaping from the present reality; on the contrary, they focus on the here and now.

135 S. Eisenhandler, More than counting years: Social aspects of time and the identity of elders, in: Research on adulthood and aging, ed. L.E. Thomas, State University of New York Press, Albany 1989, p. 163–181.

2.3.4. Emotionality

In late adulthood, emotionality does not change significantly. Positive emotions, in particular, remain at a similar level, while the frequency and duration of negative emotions decrease. Numerous studies prove reduced emotionality in advanced age, especially the weakening of anger attacks (e.g.[136]), mood swings, strong emotions, overt aggression, including the decrease of crimes committed in affection[137]. Compared to younger people, seniors are characterized by a lower level of depression, anxiety, hostility and shyness, but a higher level of satisfaction[138]. As a result, they experience more positive and less negative affections, maintaining a relatively positive emotional balance. In the long run, emotional well-being even improves. This positive effect consists of mechanisms of positive preference and negative avoidance. Older people prefer positive stimuli and avoid negative ones, while young adults do not show such tendencies or even tend to show the opposite. Positive preference is generated by proactive attention to positive information and by strengthening it in the memory. Negative avoidance is redirecting attention away from negative stimuli and reducing negative information in the memory. Numerous studies confirm the existence and activity of this positive and negative effect in old age (e.g.[139]).

A positive attitude can start at the level of mood, attention span, and end at the stage of decoding the remembered information. When older people were examined for the movement of their eyeballs in reaction to the presented facial images, it turned out that they were distracting their attention from faces manifesting anger and looked more at images expressing happiness. In turn, younger adults paid more attention to frightened faces[140]. Other research has shown that older people remembered positive faces presented earlier better than younger ones in comparison to negative faces[141]. The developmental trend of an increasing disposition to process positive information with age compared to negative information is called the positivity effect, at a terminological level derived directly from the theory of socioemotional selectivity. For the sake of clarity, it should be stressed that the positivity effect refers to a lifelong perspective, while a positivity bias means a total increase in positive information processing compared to negative

136 S.J. Gibson, The measurement of mood states in older adults, "Journal of Gerontology: Series B" 1997, 52(4), p. 167–174. J.J. Gross, L.L. Carstensen, J. Tsai, C.G. Skorpen, A.Y.C. Hsu, Emotion and aging: Experience, expression, and control, "Psychology and Aging" 1997, 12(4), p. 590–599.

137 M.P. Lawton, S.M. Albert, Affective self-management across the lifespan, American Psychological Association, Atlanta 1990.

138 M.P. Lawton, M.H. Kleban, J. Dean, Affect and age: Cross-sectional comparisons of structure and prevalence, "Psychology and Aging" 1993, 8(2), p. 165–175.

139 S.T. Charles, M. Mather at. all, Aging and emotional ..., op. cit., p. 310–324.

140 D.M. Isaacowitz, H.A. Wadlinger, D. Goren, H.R. Wilson, Selective preference in visual fixation away from negative images in old age? An eye-tracking study, "Psychology and Aging" 2006, 21(1), p. 40–48.

141 Mather M., M. Knight, Goal-directed memory: The role of cognitive control in older adults' emotional memory, "Psychology and Aging" 2005, 20(4), p. 554–570.

information and can be observed within the compared age groups. The theory of socioemotional selectivity emphasizes the importance of emotions in the life of an old-age person, who, while appreciating their importance in everyday life and being aware of the limited future time perspective, learns to better regulate their negative emotional states. There is a growing need to maximize positive emotions, realized through the reduction of social relations, especially new ones, which require a time investment, and at the same time are at risk of failure and experiencing negative emotions. Seniors limit themselves to their closest and most important social contacts, which is an expression of a well-functioning mechanism of emotional regulation and natural care for emotional well-being.

At present, it is difficult to determine to what extent the mentioned improvement in emotional well-being is achieved through the positive effect and to what extent through the reduction of the negativity effect. It is uncertain which effect dominates in old age, although empirical evidence suggests that the negativity effect is the most important. The processing of negative images or memories weakens with age. When positive, negative and neutral images were presented to young, middle-aged and old-age people, the proportion of correctly recognized negative images decreased with age[142]. Other clinical trials[143] detected differences in the perception of emotions shown in upper and lower facial images among older people. It was found that the participants of the study were clearly worse at recognizing the emotions presented in the upper half of the face, compared to the lower half of the face, which would suggest that their social competence might be reduced. Paweł Izdebski and Anna Polak[144] interpret these results as follows – the upper half of the face is responsible for expressing mainly negative emotions, the lower half manifests positive emotions that older people better recognize and prefer.

Older people are characterized by selective memory, more likely to evoke positive memories. This tendency increases with age, which may be a component of the mechanism regulating own affective experiences through memory preferences. Older people remember more positive information than young people while negative emotions are evoked less intensively. Research on the evaluation of past events has revealed that older people perceived the choices made more positively than younger people[145] and were more likely to recall a positive event in response to a question about one of the most important events in their moral development[146]. A 14-year longitudinal study of autobiographical memory showed that

142 S. Charles, M. Mather, L.L. Carstensen, Aging and emotional memory: The forgettable nature of negative images for older adults, "Journal of Experimental Psychology: General" 2003, 132(2), p. 310–324.

143 C.I. Prodan, D.M. Orbelo, E.D. Ross, Processing of facial blends of emotion: Support for the right hemisphere cognitive aging, "Cortex" 2007, 43(2), p. 196–206.

144 P. Izdebski, A. Polak, Regresja czy progresja? Emocje w okresie starzenia się, "Gerontologia Polska" 2008, 16(1), p. 1–5.

145 M. Mather, M.K. Johnson, Choice-supportive source monitoring: Do our decisions seem better to us as we age?, "Psychology and Aging" 2000, 15(4), p. 596–606.

146 S.W. Quackenbush, M.A. Barnett, Recollection and evaluation of critical experiences in moral development: A cross-sectional examination, "Basic and Applied Social Psychology" 2001, 23(1), p. 55–64.

older nuns tended to recall the past more positively in 2001 than originally in 1987, while young nuns showed the opposite tendency[147]. Maximizing a positive affect becomes a chronic goal for seniors and its activation and implementation requires fewer and fewer resources over time. Individual differences should be noted, for instance, people with a high level of neuroticism are less motivated to maximize the positive affect than those with a low level of it[148].

Avoiding negative emotions can be a sign of regulatory efforts to move towards internal strategies, a subject discussed in the case of personality changes, the internalization of experience and the world. As a result, there is an increase in mood stability and emotional self-control. Seniors are becoming increasingly proficient in regulating their own emotions, gaining more control over them. In their case, it is even possible to speak of reduced emotionality at the level of affective sensitivity and psychophysiological response.

In older age, emotional states are not manifested in such a clear and intensive way as in younger years, which is called vegetative stiffness and appears in the weakening of such bodily emotional reactions as paleness, redness, shivering, facial expression. It is enough to compare the reactions of the young and older people to unexpected good news – in the latter, it is difficult to find joy expressed loudly by shouting, laughing, jumping – typical means of emotional expression in adolescent years. The physiological effect of emotional arousal requires the body to be able to cope with this arousal, while aging is associated with the reduction of energy and mechanisms of its regulation. According to Howard Leventhal et al[149], prolonged arousal with limited somatic resources in the case of an old-age person may intensify the effect of the body's deterioration. The ability to regulate and express one's own emotions can therefore be important for physical health.

The very content of emotions changes with age towards more complex states. Some studies show that emotional experiences are becoming more and more multidimensional, mixed, bittersweet, moving and insightful[150]. When Americans of European and Mexican origin were shown films with scenes of injustice, it turned out that young people were more likely to express single primary negative reactions, while the reactions of older participants were more complex regardless of gender or race. Greater emotional diversity can be associated with a greater number of life experiences, appropriate for mature age.

147 Q. Kennedy, M. Mather, L.L. Carstensen, The role of motivation..., op. cit. p. 208–214.

148 G. Murray, N.B. Allen, J. Trinder, Longitudinal investigation of mood variability and the ffm: Neuroticism predicts variability in extended states of positive and negative affect, "Personality and Individual Differences" 2002, 33(8), p. 1217–1228.

149 H. Leventhal, L. Patrick-Miller, E.A. Leventhal, E.A. Burns, Does stress-emotion cause illness in elderly people?, in: Annual review of gerontology and geriatric (Vol. 17): Focus on emotion and adult development, eds. K.W. Schaie, M.P. Lawton, Springer, New York 1998, p. 138–184.

150 L.L. Carstensen, M. Pasupathi, U. Mayr, J.R. Nesselroade, Emotional experience in everyday life across the adult life span, "Journal of Personality and Social Psychology" 2000, 79(4), p. 644–655.

Older people tend to avoid conflicts and have a positive attitude towards them. Polish research[151] has identified gender differences in emotional regulation in situations of confrontation. Women showed a greater tendency than men to suppress anger and use escape mechanisms i.e., they showed a tendency for excessive self-control and avoidance of conflict situations. In the view of women, the externalization of anger was more often associated with a negative self-image. Men, on the other hand, turned out to be more inclined to get angry and oppose others, while describing themselves as more aggressive and competitive in comparison with women and more willing to succumb to urges.

Although in old age loss dominates over profit, subjective emotional well-being is maintained until late adulthood and even improves, which is called the paradox of well-being. This surprising effect is explained by the presence of adaptation processes i.e., maximizing positive emotions is a sign of adapting to the intensified effects of stressors resulting from deteriorating physiology. A positive affect, therefore, serves as an antidote to health problems. The cause of a positive affect can also be seen in changes in motivation and regulation of one's own emotions with age (focusing on the positives and reducing the negatives in life) or in the increase of experience in maintaining a positive mood.

2.3.5. Spirituality

Old age, although dominated by physicality, is primarily a spiritual experience. In this sense, it is a decisive stage in achieving the fullness of humanity. Without spirituality, old age loses its meaning, burdened with anguish and loss (experiencing aging, pain and suffering, death, loneliness, abuse of intimacy) becomes incomprehensible and difficult to accept[152]. "An older person prepares for old age all his or her life, works for his or her old age to finally face existential concerns. There comes a time when the perspective of the future is drastically shortened, in the face of inevitable death. It is the natural fear of it, together with universal loneliness, physical and spiritual suffering and the need to balance life, which awakens the spiritual anxiety that a mature person is confronted with in his or her final stage of development[153]. The spiritual perspective of faith and hope allows a person in his or her old age: "(...) to see beyond what everyday life brings, to understand more deeply than the surrounding reality allows, to live more fully than allow human capabilities and the physical condition"[154].

151 B. Bereza, S. Fundowicz, Strategie regulacji złości a obraz siebie u osób starszych, "Psychiatria i Psychologia Kliniczna" 2013, 13(4), p. 232–238.

152 E. Dubas, Starość znana i nieznana – wybrane refleksje nad współczesną starością, "Rocznik Andragogiczny" 2013, v.20, p. 135–152.

153 A. Fabiś, Duchowy wymiar starzenia się homo oeconomicus, in: Homo oeconomicus w przestrzeni społeczno-pastoralnej, ed. I Celary, G. Polok, Księgarnia św. Jacka, Katowice 2013, v. 139–146.

154 J. Kochel, Pedagogika i duchowość starszego wieku, "Family Forum" 2018, 8, p. 101–124.

As far as terminology is concerned, it should be noted that spirituality and religiousness are not identical concepts. Spirituality as an existential category is a cognitive, social and emotional ability originating from within a person[155]. The development of spirituality is expressed in a personal search for meaning and purpose in life, in exceeding its material and temporal dimensions. Spirituality encompasses a religious and non-religious context, which means that religious life can be a tool for spiritual development, but spirituality can exist without faith and have a non-religious character[156]. Religion itself is linked to external, institutionalized, formal and doctrinal aspects, while spirituality is oriented towards internal and subjective experiences. Religiousness, however, is not only religious practices – its essence is faith and a personal relationship with God[157].

Spirituality is therefore a term that precedes religiousness and does not always embrace a personal relationship with God. Religiousness does not have to be accompanied by a highly developed spirituality, and spirituality does not necessarily manifest itself in religiousness. Today, the dualistic nature of religious and non-religious spirituality is easier to grasp for the younger generations, who separate these two spheres more frequently than their ancestors, in a natural way. Studies[158] conducted in the United States show that cohorts born before World War II see religion and spirituality as two sides of the same coin while those born after the war see them separately i.e., religion from a historical perspective, as an organizational structure, a culture of religious denomination or subgroup, while spirituality as an internal area over which a person has the highest control.

Although spirituality is an important dimension of human functioning, it is difficult to measure, because as an internal and strictly subjective category, concentrated around individual and transcendental experiences of existence, related to the sacrum, it remains largely beyond rational cognition and eludes objective methods of measurement. Being a multidimensional and abstract concept which is difficult to define, it gives rise to conceptual and methodological difficulties. However, numerous longitudinal studies have proved capable of detecting individual changes occurring over time in the sphere of spiritual life, as well as quite numerous cross-sectional studies providing intergenerational comparative information.

Spirituality is an inseparable sphere of human functioning and is increasingly accepted in concepts of successful aging. In the proposed psycho-social model of development, Erik Erikson tries to combine psychological and spiritual

155 Fabiś A., Rozwój duchowy jako atrybut dojrzałości w starości, in: Duchowość jako kategoria egzystencji i transcendencji w starości, ed. A. Fabiś, A. Błachnio, "Biblioteka Gerontologii Społecznej Exlibris" 2015, 1(9), p. 11–18.

156 Ibidem.

157 Kędziora S., Duchowość i religijność osób starszych, in: Społeczne wymiary starzenia się, ed. A. Fabiś, M. Muszyński, "EXLIBRIS Biblioteka Gerontologii Społecznej" 2015, 1(9), Bielsko Biała 2011, p. 147–156.

158 C.W. Roof, The Spiritual Marketplace: Baby boomers and the remaking of American religion, Princeton University Press, Princeton, N.J. 1999. R. Wuthnow, After heaven: Spirituality in America since the 1950s, University of California Press, Berkeley CA 1998.

development. According to Susan H. McFadden[159], the seventh and eighth stages of Erik Erikson's psycho-social development relate to the spiritual life of older people. In the penultimate stage (generativity versus stagnation), there is a turn outward – the opening of the self to the outside world and religious engagement can help to find expression for generativity. In the last stage (integrity versus despair), people try to ease the tension between the integration of the ego and despair to gain a sense of spiritual reconciliation in the final stage of life. This stage represents an inward orientation and can be supported by meditative practices and symbolic links between humanity and the sacrum offered by religion. The integration of the ego is based on the ability to reflect on past life, accepting the good and the bad and preparing for one's death without fear. Here, contemplation, reflection and reminiscence (review of life) are key to well-being in old age.

Where Erikson ends his theory, Lars Tornstam starts it. In his view, spiritual development gradually and steadily increases from middle age and results in a shift from the rational and materialistic sphere of life to its cosmic and transcendental dimension, in which the sacrum can be present. According to the theory of gerotranscendence, spiritual development is driven inwardly, autonomously but can be strengthened by social factors such as education, social class, normative restrictions. Tornstam himself has conducted quantitative research[160] to detect the relationship between gerotranscendence and variables other than age. These studies were conducted among 2002 Swedes aged 20-85 years. High cosmic transcendence was detected among women, people with life crisis experience and seniors, among others. Cosmic gerotranscendence proved to be the most intensive among the latter.

According to the continuity theory, adaptation occurs in a way that preserves consistent patterns of life and coping mechanisms that are unique to each person. If religious engagement played a central role in youth, it would remain so in old age. If a person was not particularly religious in his or her youth, they are not expected to become more religious in old age. According to David O. Moberg: " They will become all the more so who they already are"[161]. The best predictor of religiousness at an advanced age is therefore interest and participation in religion in early adulthood and middle age.

Longitudinal studies speak of the constancy of religiousness with age, while other studies show an increase in age-related religiousness, although there is evidence that it increases in the life cycle non-linearly. Certain critical events lead to the development of spirituality e.g., serious illness, disability, death of loved ones. It has

159 S.H. McFadden, Religion, personality and aging: A life span perspective, "Journal of Personality" 1999, 67(6), p. 1081–1104.

160 L. Tornstam, Gerotranscendence in a broad crosssectional perspective, "Journal of Aging and Identity" 1997, 2(1), p. 17–36.

161 D.O. Moberg, Religion and Aging, in: Gerontology: perspectives and issues, ed. K. Ferraro, Springer, New York 1990, p. 198.

been discovered[162] that the rate of development of spirituality at an older age stem from religiousness at a younger age and previous negative life experiences and certain personality traits, such as the ability to introspection and personal discernment. Research[163] on the personality profile of older people involving religion in coping with problems revealed that these people achieved significantly lower scores indicating domination, aggressiveness, hostility, rebellion and higher scores in terms of sensitivity, kindness, gentleness, tenderness, sentimentality.

Age is a strong predictor of religious beliefs and participation in services. Withdrawal from professional life and reduction of social activity allows focusing on one's religiousness in a more systematic and organized way. On the other hand, participation in formal services can be reduced in old age, mainly due to illness and disability. However, functional limitations show a link with a decrease in participation in a short period, unnoticeable after three years[164]. At the same time, health problems may, but do not necessarily, interfere with maintainable religious participation almost to the point of death despite experiencing functional limitations. A disability may therefore have little impact on their continued participation in religious practices.

There are significant individual differences in spiritual development – some people's spirituality increases, others' decreases or remains stable. Differences between the sexes can be seen here. In general, women have a higher level of organized and unorganized religiousness than men, but they are also more religious in all age groups and are more inclined towards greater spirituality earlier than men[165]. As revealed[166], women aged 65-98 have more time and space for prayer than young women. The prayer itself also changes, benefiting from simplicity, spontaneity, intimacy, meaning, flexibility, openness to a personal relationship with God. For many of them, prayer has become a fixed activity in their lives, determining the structure of their day and serving as a source of communication with other people and with God. Nuns surveyed between the ages of 70-98 expressed the conviction that with age their relationship with God deepens, prayer becomes increasingly silent and contemplative, a sense of continuity that transcends their own life increases, giving a sense of meaning and integration[167].

162 P. Wink, M. Dillon, Spiritual development across the adult life course: Findings from a longitudinal study, "Journal of Adult Development" 2002, 9(1), p. 79–94.

163 H.G. Koenig, I.C. Siegler, K.G. Meador, L.K. George, Religious coping and personality in later life, "International Journal of Geriatric Psychiatry" 1990, 5(2), p. 123–131.

164 E.L. Idler, S.V. Kasl, Religion among disabled and nondisabled persons ii: Attendance at religious services as a predictor of the course of disability, "Journal of Gerontology: Series B" 1997, 52(6), p. 306–316.

165 A.S. Miller, R. Stark, Gender and religiousness: Can socialization explanations be saved? "American Journal of Sociology" 2002, 107(6), p. 1399–1423.

166 S.P. Melia, Older women find that prayer matures along with them, "Aging and Spirituality" 2001, 13(1), p. 1–7.

167 S.P. Melia, Themes of continuity and change in the spiritual reminiscence of elder Catholic women, Springer Publishing Co., New York 2002.

It is worth quoting research conducted by Moberg[168] that shows the relationship between prayer and health, which leads to the conclusion that the frequency of prayer and the mystical experience that accompanies it are positively connected with subjective well-being. Prayer serves as a tool for dealing with chronic pain or other medical conditions and life stressors, such as the death of a spouse. In one study[169] patients with coronary artery disease prayed for a quick recovery every day for 4 weeks. Other patients and doctors were not aware of the study. The praying group achieved 11% better medical measurements than the control group. Other patients after by-pass surgery who prayed privately achieved a better psychological outcome one year after surgery compared to those who did not pray[170]. Research on the relationship between religiousness and spirituality and health has led to the conclusion that religious people in old age seem to be in better condition than less religious people. Spiritual and/or religious engagement results in better physical and mental health in old age.

Spirituality can be an important strategy for coping with the challenges of old age. Spiritual resources can support successful adaptation to old age and age-related changes, especially in situations of long-term disability or the death of a spouse and peers. Religion and spirituality are among the most significant resources for dealing with crises and problems. Religion is a source of consolation, understanding, forgiveness in times of suffering or conflict. It gives meaning and purpose to the life of seniors, brings hope and courage in confronting stressful circumstances. When one's own resources for coping with difficult situations expire, religion offers spiritual support, giving a sense of purpose and control over one's life and giving meaning to negative events. It alleviates the effects of stress so that religiously advanced people can reduce the level of depression compared to those who do not benefit from religious resources[171]. Older people, whose sense of meaning in life derives from religion, have a higher sense of self-esteem, life satisfaction and optimism[172].

Religion encourages positive health behaviors such as diet, physical activity and charity activity. Studies[173] show the influence of religiousness on leading a healthy lifestyle (people reporting frequent participation in church were more likely to give up smoking, do physical exercises), increasing social contacts, longer marriages.

168 D.O. Moberg, Research in spirituality, religion, and aging, "Journal of Gerontological Social Work" 2005, 45(1/2), p. 11–40.

169 W.S. Harris, M. Gowda, J.W. Kolb, C.P. Strychacz, J.L. Vacek, P.G. Jones, A. Forker, J.H. O'Keefe, B.D. McCallister, A randomized, controlled trial of the effects of remote, intercessory prayer on outcomes in patients admitted to the coronary care unit, "Archives of Internal Medicine" 1999, 159(19), p. 2273–2278.

170 A.L. Ai, R.E. Dunkle, C. Peterson, S.F. Bolling, The role of private prayer in psychological recovery among midlife and aged patients following cardiac surgery, "The Gerontologist" 1998, 38(5), p. 591–601.

171 L. Roff, D. Klemmack, M. Parker, H. Koenig, M. Crowther, P. Baker, R. Allman, Depression and religiosity in African American and white community-dwelling older adults, "Journal of Human Behavior in the Social Environment" 2004, 10(1), p. 175–189.

172 N. Krause, Religious meaning and subjective well-being in late life, "Journal of Gerontology: Series B" 2003, 58(3), p. 160–170.

173 W.J. Strawbridge, R.D. Cohen, S.J. Shema, G.A. Kaplan, Frequent attendance at religious services and mortality over twenty-eight years, "American Journal of Public Health" 1997, 87(6), p. 957–961.

Stronger involvement in religion is associated with a greater and more effective social network, which can be explained by the support offered by religious communities, as well as implementing the norms and doctrines of the church, which encourage care for relationships with other people, help, compassion, forgiveness. According to one study, social support provided in the church community has a more beneficial effect on health and general well-being than that provided by members of a secular social network[174]. However, it is difficult to determine to what extent religiousness itself is beneficial and to what extent it is participation in religious structures that gives a sense of belonging and the opportunity to benefit from the self-help activities offered.

Spirituality is considered one of the best tools for dealing with illness and disability: it provides a theoretical framework for the experienced illness and mortality (interpreted as punishment, learning, purification, sacrifice, mystery), offers practical resources for coping with illness, suffering and mortality (e.g. prayer, social support), gives hope in the face of the inevitability of death[175]. In the religious dimension, it offers prayer – an activity free of charge, always available, giving a feeling of being needed (prayer for others), possible to be undertaken even in a state of advanced illness and disability (mental prayer can be one of the last activities in human life). Religiousness, related to prayer activity, gives a sense of being useful to others until the late years of life.

Spirituality and religiousness support coping with difficult situations e.g., loss of health and functional efficiency. Religiousness plays an important role in reducing disability[176] and as such is an important factor in regulating the well-being of seniors. A religious person will find a reason to live despite the losses associated with old age. As it has been proven, religious engagement directly results in a longer life[177]. Moreover, there is a negative relationship between religiousness and the fear of death[178]. The important role of religion in life is proven by the fact that the death of Christians and Jews usually follows important religious festivals[179]. On the other hand, negative religious feelings, such as the feeling of punishment by God, increase the risk of death[180].

174 N. Krause, Exploring race differences in a comprehensive battery of church-based social support measures, "Review of Religious Research" 2002, 44(2), p. 126–149.

175 K.E. Byrd, Concepts related to inclusion of the spiritual component in services to persons with disability and chronic illness, "Journal of Applied Rehabilitation Counselling" 1997, 28(4), p. 26–29.

176 E.L. Idler, S.V. Kasl, Religion among disabled...II, op. cit. p. 306–316.

177 H.G. Koenig, J.C. Hays, D.B. Larson, L.K. George, J. Cohen, M. McCullough, K. Meador, D.G. Blazer, Does religious attendance prolong survival?: A six-year follow-up study of 3968 older adults, "Journal of Gerontology: Series A" 1999, 54(7), p. 370–377.

178 V.G. Cicirelli, Fear of death in older adults: Predictions from terror management theory, "Journal of Gerontology: Series B" 2002, 57(4), p. 358–366.

179 E.L. Idler, S.V. Kasl, Religion, disability, depression, and the timing of death, "American Journal of Sociology" 1992, 97(4), p. 1052–1079.

180 K.I. Pargament, H.G. Koenig, N. Tarakeshwar, J. Hahn, Religious struggle as a predictor of mortality among medically ill elderly patients: A two-year longitudinal study, "Archives of Internal Medicine" 2001, 161(15), p. 1881–1885.

Because of the positive influence of religiousness and spirituality on the functioning of older people, there are calls to include them in health and social care activities. Religiousness is an important source of support, hope, consolation and successful handling of the difficulties experienced and as such should not be ignored in a professional and holistic system of treatment, rehabilitation, support and care of seniors. In the field of rehabilitation, spirituality is beginning to be seen as an effective tool to support the process of adaptation to disability. According to Keith E. Byrd[181], since increased participation in church services leads to greater satisfaction from life, prayer and worship could be essential components of rehabilitation of people with disabilities, while spirituality itself should be included in rehabilitation alongside the medical, psychological and professional components. In the professional support system, people deserve to be treated as a holistic unity of body, mind and spirit at every stage of their lives.

Difficulties and losses experienced in old age (e.g. in health, functionality, work, financial resources, loved ones) are external and beyond greater personal control, while spiritual and religious development does not require significant resources apart from inner desire and effort, becoming a means to maintain mental well-being. In old age, the approaching prospect of death naturally directs people's concerns towards the ultimate and beyond the temporal life, from the "to have" towards the "to be". In a way, nature itself makes people reflect on what is most important in the declining stage of life. According to Artur Fabiś[182]: "(...) old age is a specific period in a person's life cycle and spirituality is the very area of development that makes old age unique". Human spiritual development becomes an attribute of maturity in old age.

2.3.6. Wisdom

A person should possess wisdom in old age because only a wise person can confront the awareness of their own inevitable and imminent death[183]. The development of life's wisdom is one of the most important goals of human development. Unfortunately, not everyone achieves it, which results in a lack of acceptance of their own finiteness. Elżbieta Osewska[184] showed that a large group of seniors achieve life's wisdom (manifested by understanding, kindness or the willingness to share their experiences) or insight into the ultimate (by assessing the value of life and death, the final choices of a religious nature), while others fail to under-

181 K.E. Byrd, Concepts related to inclusion..., op. cit., p. 26–29.

182 A. Fabiś, Rozwój duchowy jako atrybut dojrzałości w starości, in: Duchowość jako kategoria egzystencji i transcendencji w starości, ed. A. Fabiś, A. Błachnio, "Biblioteka Gerontologii Społecznej Exlibris" 2015, 1(9), p. 11.

183 Ibidem, s. 11–18.

184 E. Osewska, Rozwój religijności człowieka ze szczególnym uwzględnieniem rozwoju modlitwy, "Ełckie Studia Teologiczne" 2001, Tom II, p. 187–201. http://www.studiaelckie.pl/images/sampledata/annex/elckie_studia_teologiczne/2001/e_osewska_rozwoj. pdf (access 20.10.2018).

go these changes. If wisdom in old age is the peak result of lifelong psycho-social development, then in some cases this development is incomplete. Although wisdom is usually associated with advanced biological age, its emergence in old age is not a rule. It is a desirable but not exclusive attribute of old age.

Wisdom cannot be automatically associated with biological age, because it is not only an experience accumulated during life. It is formed in difficult situations, in the face of crises, life conflicts verifying previous beliefs and attitudes, showing the truth about oneself and others. Therefore, old age alone does not guarantee wisdom but creates the most convenient conditions for its development[185]. This is probably why, as research proves, older people most often outperform younger participants on the adopted scale of wisdom. The increase in wisdom with age is recorded regardless of gender or cultural background (e.g.[186]).

How does wisdom develop in the human life cycle? The differences in the trajectory of wisdom are so great that it is difficult to talk about any predictable trends. There is therefore no single generally accepted pattern of the development of wisdom. Robert J. Sternberg[187] reviews the positions on this issue. And so, the curve of wisdom development in the human life cycle can be identified with the curve of the development of intelligence. According to some, wisdom intensifies and weakens similarly to fluid intelligence: it increases until early adulthood and decreases in middle or late middle age. According to others, wisdom develops like crystallized intelligence i.e., it grows early in life up to old age, to a period of about 10 years before death when illness damages its ability to grow. Under yet another approach, wisdom develops like fluid and crystallized intelligence i.e., when fluid abilities begin to weaken in the middle or late years of life, the increase in crystallized abilities will partly compensate for the decline in wisdom, also the decline will occur a little earlier. Some studies confirm the decline in wisdom in advanced age (over 75 years of age), which is associated with a decline in physical health[188].

According to Erikson's concept, besides generativity and integrity, wisdom appears as a positive solution to a sequence of developmental crises in the life cycle, in old age occurring between integrity and despair. It is the final human virtue, which can develop earlier in certain conditions. According to Stanisława Steuden, wisdom is a particular ideal, towards which human development aims, and whose achievement makes it possible to cope with life's challenges[189]. Over time, Erikson[190], in advanced years of life himself, replaced wisdom with faith as attributed to the last stage of life. The process through which people turn into wise men is in turn described by the theory of gerotranscendence.

185 Z. Szarota, Gerontologia społeczna i oświatowa, WNAP, Kraków 2004.
186 H.C. Hui, C. Yee, The shortened individualism and collectivism scale: Its relationship to demographic and work related variables, "Journal of Research in Personality" 1994, 28(4), p. 409–424.
187 R.J. Sternberg, Older but not..., op. cit., p. 5–26.
188 P.B. Baltes, U.M. Staudinger, Wisdom..., op. cit. p. 122–136.
189 S. Steuden, Psychologia starzenia się i starości, Wydawnictwo Naukowe PWN, Warszawa 2011.
190 C.H. Hoare, Erikson: On development in adulthood, Oxford University Press, Oxford 2002.

There is no universally accepted definition of wisdom. There is a consensus that it is a multidimensional concept that brings together cognitive, social, emotional and motivational components that are mutually supportive. The cognitive component of wisdom refers to highly developed intellectual abilities, rich knowledge and experience, the ability to acquire and use it, the ability to think critically. The socio-emotional component is associated with social skills, the ability to give relevant advice, sensitivity and care for others. The motivational component amounts to the intentions of the undertaken activity related to wisdom[191]. Wisdom is a form of maturity developing as life experience is accumulated and the awareness of one's own imperfection deepens. An expression of wisdom is the ability to solve crises and life problems, to give good instructions, to make accurate assessments and decisions, or to deepen one's self-reflection. It is the ability to live a good life. According to Steuden[192] wisdom sets high standards of action. One can say that it elevates human functioning to a higher level.

In the context of wisdom attributed to older people, a distinction should be made between pragmatic wisdom, directed outwardly, on the practical aspects of life, and transcendent wisdom, directed inwardly, giving a sense of inner freedom, crossing one's own limitations and discovering the meaning of individual life events against the background of the whole life. Transcendent wisdom is achieved in the course of spiritual development, of which it is the culmination[193].

Numerous definitions of wisdom include a cognitive and reflective element and an often neglected affective element. According to Monika Ardelt[194], the cognitive dimension of wisdom refers to the ability to understand life, especially inter- and intrapersonal issues, such as knowledge of the positive and negative aspects of human nature, the limitation of knowledge, unpredictability and uncertainty of life. The reflective element – essential for the development of the cognitive dimension of wisdom and a deep understanding of life – is the perception of phenomena and events from different perspectives, the development of self-awareness and inner insight. It strengthens the knowledge of the true nature of things, including one's own motivation and other people's behavior, which in turn improves emotions and attitudes towards others, while also helping to develop a kind and compassionate love. These three dimensions are not independent of each other but are also not conceptually identical, nevertheless, they must be simultaneously present in a person considered wise. Wisdom not only elevates the human being to a higher level of mental functioning (cognitive element), but also allows the person to see themselves and others in truth (reflective element), as well as to develop an attitude of love towards others (affective).

191 S. Steuden, Psychologia starzenia się..., op. cit.
192 Ibidem.
193 S. Kędziora, Duchowość i religijność..., op. Cit., p. 147–156.
194 M. Ardelt, Empirical assessment of a three-dimensional wisdom scale, "Research on Aging" 2003, 25(3), p. 275–324.

According to Asian standards, the components of wisdom are competence and knowledge, kindness and mercy, openness and depth, modesty and discretion (Chinese research[195]). Americans and Australians similarly understood wisdom, associating it primarily with experience and knowledge, least of all with discretion, which in old age was considered an undesirable feature. Adult Indians and Japanese understood wisdom in a strong semantic connection with discretion, followed by age and experience. The Japanese considered being wise and discreet the most desirable and having knowledge the least desirable. Wisdom was very desirable in all cultures, but being old was strongly undesirable. None of the respondents wanted to be old[196].

Acquiring wisdom in the late years of life can be more important for older people than intellectual knowledge itself. Intellectual knowledge helps to stay informed about contemporary matters, while knowledge related to wisdom allows one to prepare for the challenges posed by old age. Intellectual knowledge tends to decline with age, while the relationship between wisdom and age is positive[197]. It is a very optimistic correlation, given that wisdom leads to improved subjective well-being and life satisfaction.

* * *

Aging is a natural process, inscribed in the nature of human life and passing. Healthy and efficient aging is possible, and although desirable, it becomes a reality for few. The results of autopsies of old people prove that their death often occurs not so much because of old age itself as because of illness[198]. It, therefore, follows that presently human old age is premature and pathological. However, a successful old age lies in the interest of seniors themselves and entire societies that are currently aging. Social policy should therefore aim to help the oldest citizens to face the challenges of old age through preventive and corrective measures. The goal is not only to prolong human life but also to care for its quality. As Sheldon S. Tobbin[199] has rightly pointed out – the task of younger years is to become oneself, the task of adulthood is to fulfill oneself, the task of old age is to preserve the self, preferably in full health and physical and mental capacity.

195 S. Yang, Conceptions of wisdom among Taiwanese Chinese, "The Journal of CrossCultural Psychology" 2001, 32(6), p. 662–680.

196 M. Takahashi, P. Bordia, The concept of wisdom: A cross cultural comparison, "International Journal of Psychology" 2000, 35(1), p. 1–9.

197 M. Ardelt, Intellectual versus wisdom-related knowledge: The case for a different kind of learning in the later years of life, "Educational Gerontology: An International Journal of Research and Practice" 2000, 26(8), p. 771–789.

198 K. Wiśniewska-Roszkowska ed., Gerontologia dla..., op. cit.

199 S.S. Tobin, Preservation of the self in the oldest years with implications for practice, Springer Publishing Company, New York 1999.

Chapter 3
Pathological changes in physical and mental functions in old age

Health is defined as well-being with the proper condition and functioning of the organism, while disease is defined as a deviation from the health norm, a defensive reaction of the organism to a harmful stimulus, a pathogenic factor[1]. In a broader sense, developed by the World Health Organization, health is not only the absence of disease and infirmity but also the ability to cope with the challenges of life and to maintain physical, mental and social well-being[2], in this sense being close to the concept of functional capacity.

According to Kinga Wiśniewska-Roszkowska[3] the characteristic features of illnesses in old age are chronic conditions, multimorbidity, rich etiology, unusual course, numerous complications, long convalescence strongly associated with the risk of infirmity. For a young age, acute conditions are typical, most often completely curable. In old age, chronic states prevail and are subject to preventive and curative actions consisting of alleviating symptoms, often long-lasting and not fully cured.

Another feature of old age illnesses is their multitude. The probability of developing diseases increases with age. Among people aged 65+ 85% suffer from at least one chronic disease, 30% from three or more[4]. Older people have 3.5 diseases

1 K. Wiśniewska-Roszkowska ed., Gerontologia dla pracowników socjalnych, PZWL, Warszawa 1987.
2 World Health Organization Regional Office for the Western Pacific Region, Ageing and health: A health promotion approach for developing countries, World Health Organization Regional Office for the Western Pacific Region, Manila 2003.
3 K. Wiśniewska-Roszkowska, Gerontologia dla pracowników..., op. cit.
4 M.E. Williams, The American Geriatrics Society's complete guide to aging and health, Harmony Books, New York 1995.

compared to 1.8 among the total population in the country[5]. Multiple diseases i.e., the co-occurrence of several diseases for one person, complicates the interpretation of their symptoms. The clinical picture of a patient becomes very complex and in etiological findings, it requires an indication of primary and secondary conditions. Multiple causes of symptoms make it difficult to make an accurate diagnosis and apply effective treatment because it requires interdisciplinary medical knowledge, a holistic approach to the patient (to not damage certain functions as a result of treating others, among other things) and a longer time dedicated to them. The process of treatment and rehabilitation should also take into account indications and contraindications for each of the conditions[6].

In the case of multimorbidity, the recommended pharmacological treatment is usually extensive. Polish PolSenior studies have shown that 80% of people aged 65+ use at least 5 medications i.e., 4 medications prescribed by a doctor and 1 over-the-counter product[7]. Patients may experience side effects of the medicines they take, and it is important to know that they are more frequent and serious in the older population, which further weakens their ability to function efficiently. Multi-drug use may therefore contribute to functional impairment e.g., increase the risk of falls.

In old age, symptoms and course of diseases may be non-standard e.g., lacking typical fever or pain. Fever, characteristic of infections at a young age, is absent or weaker in 20-30% of serious infections in the older population[8]. The common symptoms of infection at an older age include falls, anorexia, delirium, general weakness or a decrease in functional capacity i.e., symptoms also affecting some older people without infection. This non-specificity complicates the diagnostic process and the undertaking of appropriate treatment.

Chronic diseases are strongly impairing and as such are the main cause of disability in middle and older age. In the case of an old-age person, the presence of many chronic diseases results in additional disabilities. According to the findings of the Polish Central Statistical Office (GUS), the diseases that are the main cause of disability among people aged 60 and over include cardiovascular diseases as well as injuries and diseases of the locomotor system (affecting about half of the people of this age), followed by neurological diseases as well as injuries and diseases of the sight organ (affecting about 1/5 of the elderly of this age), and also

5 Główny Urząd Statystyczny, Stan zdrowia ludności Polski w 1996 roku, Zakład Wydawnictw Statystycznych, Warszawa 1997.

6 K. Wieczorkowska-Tobis, Specyfika pacjenta starszego, in: Fizjoterapia w geriatrii, ed. K. Wieczorowska-Tobis, T. Kostka, A.M. Borowicz, PZWL, Warszawa 2011, p. 18–27.

7 A. RajskaNeumann, K. WieczorowskaTobis, M. Mossakowska, A. Skalska, P. Ślusarczyk, M. Świech, T. Grodzicki, Farmakoterapia u osób starszych w Polsce, in: PolSenior. Aspekty medyczne, psychologiczne, socjologiczne i ekonomiczne starzenia się ludzi w Polsce, ed. M. Mossakowska, A. Więcek, P. Błędowski, Termedia Wydawnictwo Medyczne, Poznań 2012, p. 379–390.

8 D.C. Norman, T.T. Yoshikawa, Fever in the elderly, "Infectious Disease Clinics in North America" 1996, 10(1), p. 93–99.

a smaller number of injuries and diseases of the hearing organ, mental illnesses and impairment[9].

This chapter will discuss the most common physical and mental functional disorders, which are among the so-called geriatric giants, including (e.g.[10]): mobility disorders and falls, depression and dementia, sight and hearing disorders, bladder and bowel incontinence. These are chronic conditions, typical of old age, with long-term effects on the impairment of daily functioning, which is the focus of this publication. Therefore, the issues will focus on the functional effects of disorders and diseases typical for older age, without a detailed analysis of their clinical picture.

3.1. Mobility disorders

Locomotion efficiency is a comprehensive ability, consisting of the action of individual subsystems, such as bones, ligaments, muscles, receptors, central and peripheral nervous system. Problems in moving at an advanced age include walking disorders and difficulties in maintaining balance, leading to difficulties in moving outside and even around one's own home, and as a consequence, also to falls and fractures correlated to a large extent with a disability acquired at an advanced age. Unfortunately, changes in posture, balance and mobility are so frequent among seniors that they are commonly perceived as synonymous with old age.

3.1.1. Changes in the gait pattern

Normal gait requires the ability to simultaneously perform complex movements allowing the body to move forward while maintaining its center of gravity. In old age a defensive posture is assumed while walking: the body leans forward, the support base widens, and the steps become short. Over time, the head moves forward, the upper part of the backbends and the lumbar part flattens. The hips and knees are not fully stretched, the feet shuffle against the groin and arm movement becomes limited. There is an increased tendency to look under the legs while walking. Functional adaptation to musculoskeletal damage develops on an individual basis, however, there are gender differences in this respect. It is noted[11] that older men have a characteristic slope towards the front of the upper torso, limited waving with their hands, shortened length of steps, while women have a swaying gait, reduced length of steps and kyphosis.

9 Główny Urząd Statystyczny, Stan zdrowia..., op. cit.

10 B. Wojszel, B. Bień, M. Przydatek, Wielkie problemy geriatryczne: II. Upadki, "Medycyna Rodzinna" 2001, zeszyt 13(2), p. 83–86. K. Wieczorkowska-Tobis, Specyfika pacjenta starszego..., op. cit., p. 18–27. B. Isaacs, The challenge of geriatric medicine, Oxford University Press, Oxford, New York and Tokyo 1992.

11 S. Gilman, Ataxia and disorders of gait and balance, in: Harrison's Principles of Internal Medicine, eds. K.J. Isselbacher, E. Braunwald, J.D. Wilson, J.B. Martin, A.S. Fauci, D.L. Kasper, McGraw-Hill, New York 1994, p. 125–130.

With age, the gait pattern changes, which is important for the ability to maintain balance. Over time, the preferred walking speed decreases, the frequency of steps increases, the lifting of the feet above the ground is reduced to a shuffle, the rotation in hip and knee joints weakens, while the phase of the two-sided support is increased, which slows down the gait. Older people take shorter and wider steps, perhaps due to the progressive stiffness of the joints. The smaller length of steps may be an attempt to maximize stability and balance and a strategy to minimize the risk of falls. Hip rotation and joint stretching decreases. The speed of movement is reduced as a result of compensation mechanisms in a state of muscle weakness, pain or degeneration of the joints.

Gait patterns may change as a result of experienced diseases, especially those causing disorders of the nervous, musculoskeletal or cardiovascular systems. As shown[12], Parkinson's disease is characterized by e.g., small steps, stiff arms, tendency to accelerate gait with a simultaneous inability to stop. Although the step becomes wider with age, patients with Parkinson's disease narrow their steps, which predisposes them to sideways falls – not common among seniors generally but characteristic for people with Parkinson's disease. Moreover, there is limited mobility of arms, the torso and other parts of the body. Due to the progressing slowdown in movement, there is an impression of alienation of single movements i.e., when the patient moves, the rest of the body seems to freeze. People with Parkinson's disease also do not make smooth turns but rather stop and turn their whole body at the same time. Recognizing these subtle symptoms of Parkinson's disease at an early stage can contribute to a successful treatment.

In case of brain damage, depending on the location of the damage, certain walking disorders may occur e.g., damage to the cerebellum may manifest itself in a wide step, staggering, gait apraxia (a disorder of purposeful movements and activities), disrupted ability to initiate a movement or to make abstract moves, such as kicking a non-existent ball (kicking an actual ball may not at all cause difficulty)[13]. Gait apraxia may occur in the advanced stage of neurodegenerative diseases when neurological connections that generate an impulse responsible for walking are damaged. A person experiencing difficulty in initiating a walk feels as if they are glued to the ground, whereas the initiated walk continues without major disruption. Dementia is characterized by wide gait, sloping posture, short and shuffling steps, feet – as if glued to the ground[14].

Ataxic gait disorders (problems with coordination of movements and balance due to nerve cell atrophy) occur with brain damage. Myopathies (diseases leading to muscle damage and weakness) and neuropathies (peripheral nerve inflammation)

12 A.S. Duxbury, Gait disorders in the elderly: Commonly overlooked diagnostic clues, "Consultant" 1997, 37(2), p. 2337–2351.

13 F.U. Steinberg, Disorders of mobility, balance, and gait, in: Rehabilitation of the aging and elderly patient, eds. G. Felsenthal, S.J. Garrison, F.U. Steinberg, Williams&Wilkins, Baltimore 1994, p. 243–252.

14 A.S. Duxbury, Gait disorders..., op. cit., p. 2337–2351.

cause weakness that may affect the gait pattern e.g., abnormal compensatory limb movement will develop due to the weakening of the quadriceps. As a result of damage to a single nerve, a lack of B (12) group vitamin or diabetes, the foot may drop[15]. In this case, the foot does not roll over during the walk from the heel to the toes but rises and falls from the toes. Compensating the dropping foot involves lifting the leg bent in the knee or moving the legs to the sides. Injuries of cerebellar origin manifest themselves in a wide step and staggering if both hemispheres are damaged, and in case of one-sided damage staggering occurs on the damaged side[16].

After a stroke, the symptoms of gait disorder depend on the location of the damage, but most often the flexor muscles suffer and become weak or paralyzed, while extensors may become spastic[17]. A stroke may result in a disturbance in the initiation of gait or the ability to continue walking after a distraction. Hemiplegia, or hemipatic paralysis, may cause stiffening of the lower limb during gait, which moves outwards from the hip – the patient moves their leg along a curve, taking a step forward[18].

Walking may also be hindered by musculoskeletal damage, causing pain when moving as well as other foot injuries resulting in, for example, painful limping[19]. Advanced halluxes, toe deformations, and posterior tibial tendon dysfunction are common causes of foot pain, swelling and changes in gait patterns in older people[20]. In the case of arthritis, changes in gait are associated with pain and joint instability, which makes walking difficult. Bone and joint inflammation are one of the most painful conditions affecting seniors. To relieve the painful area, asymmetrical gait is developed. Gait and balance disorders may also be caused by a lack of physical efficiency due to prolonged convalescence and immobilization or physical inactivity. Some medications, such as diuretics, anti-psychotics or anti-hypertensive drugs may predispose a person to falls[21].

Movement and functional independence are highly correlated. Studies show that mobility problems increase the risk of loss of independence and even death[22]. Gait disorders cause disability in 13% of older adults[23], often due to falls and fractures. The strong influence of unstable gait on the process of losing independence in

15 Ibidem.
16 F.U. Steinberg, Disorders of mobility..., op. cit., p. 243–252.
17 Ibidem.
18 A.S. Duxbury, Gait disorders..., op. cit., p. 2337–2351.
19 F.U. Steinberg, Disorders of mobility..., op. cit., p. 243–252.
20 M. Leslie, R.W. St. Pierre, An integrated risk assessment approach to fall prevention among community-dwelling elderly, "American Journal of Health Studies" 1999, 15(2), p. 57–62.
21 A.S. Duxbury, Gait disorders..., op. cit., p. 2337–2351.
22 M. Hirvensalo, T. Rantanen, E. Heikkinen, Mobility difficulties and physical activity as predictors of mortality and loss of independence in the community-living older population, "Journal of the American Geriatrics Society" 2000, 48(5), p. 493–496.
23 D.D. Larish, P.E. Martin, M. Mungiole, Characteristic patterns of gait in the healthy old, "Annals of the New York Academy of Science" 1988, 515, p. 18–32.

the lives of older people is largely determined by a psychological factor i.e., anxiety inducing seniors to limit their own physical activity, which in turn may result in deterioration of their health e.g., intensification of osteoporosis or arthritis, but also social isolation and, consequently, depression.

The majority of gait disorders among seniors remain unnoticed for the simple reason that doctors do not see their patients as they march and patients do not talk about difficulties experienced in mobility, often considering them normal in old age or, as long as they do not cause pain and discomfort, as a minor problem. Pathological changes in gait progress gradually, thanks to which seniors have time to develop compensation functions, often beyond their consciousness (so-called subclinical disability).

3.1.2. Changes in the sense of balance

Normal gait is possible thanks to the cooperation of two essential components: locomotion i.e., the ability to move and balance i.e., the ability to maintain the center of gravity in relation to the ground while moving[24]. Sensory impressions play a significant role in maintaining balance and are sometimes considered to be even fundamental. The integration of visual, vestibular and proprioceptive information, with the participation of musculoskeletal coordination, is essential for generating an appropriate balance response. The central balance system is located in the brain. When an imbalance is experienced, this information is detected by the sensory system, which sends signals to the muscles and joints. It triggers a sequence of coordinated sensory and motor responses to restore balance to the body and avoid a fall. The nervous system's inability to integrate a variety of sensory stimuli can increase the risk of falls in old age.

The proprioceptive system is located in joints in different parts of the human body. It provides information on the orientation of the body while standing and moving in relation to its individual parts and immediate surroundings. It enables a person to navigate in space during changes in the position of the body and to control balance. With age, the abilities of the proprioceptive system deteriorate, leading to an increased risk of losing balance.

Visual functions such as visual acuity, sensitivity to contrast or depth perception provide information about the position of the body, its distance from nearby objects or the presence of obstacles before direct contact, allowing for a timely response. Over time, the importance of visual information for maintaining the stability of the body increases. Healthy seniors rely primarily on proprioceptive information to maintain balance, but when their reception is limited, visual stimuli gain weight. Sight can enhance proprioceptive feedback or prevent its loss. To compensate for

24 L. Sudarsky, Geriatrics: Gait disorders in the elderly, "New England Journal of Medicine" 1990, 322(20), p. 1441–1446.

poor balance, older people look at the ground and control the position of their feet. One study revealed significant problems with maintaining balance by seniors with their eyes closed and when receiving inaccurate visual impressions[25], as well as in conditions of a moving environment e.g., when the whole room or its sides were subject to movement[26]. If somatosensory and visual sensations are limited during the session (with eyes closed) or if the visual information is misleading, the risk of loss of balance in older people increases at least five times[27]. Seniors build reliance on visual information to compensate for a decrease in proprioception. However, this adaptation mechanism fails in the case of visual impairment, which is common among seniors, when their ability to determine the position of their body in space and to recognize obstacles in the environment threatening to fall deteriorates.

Bifocal glasses are a little known cause of impaired balance among seniors, as they disturb the perception of depth and sensitivity to contrast – functions necessary to detect obstacles in the environment while moving. A study conducted on people aged 63-90 years using multifocal glasses (bifocal, trifocal or progressive) concluded that they were more than twice as likely to fall as those who wore ordinary glasses or did not use glasses at all[28].

Changes in the auditory system that progress with age result in reduced activity of the peripheral part of the vestibular organ, impaired speech recognition and an increase of the threshold for hearing clear tones, reduced ability of an older person to orientate and receive auditory warning stimuli[29]. As Rein Tideiksaar explains[30], the vestibular system is located in the inner ear and works in conjunction with the sight and proprioceptive systems to create balance and maintain a stable visual perception and body orientation when moving around. When the balance is disturbed, the vestibular receptors in the middle ear detect movement and signal to the muscles the compensatory movements of the head, torso and limbs to correct the disturbed body position. With age, this system weakens, so when an older person loses balance, they have less chance of regaining stability and avoiding a fall. However, when proprioceptive and visual information is available, the vestibular system plays a lesser role in controlling balance, because the proprioceptive and visual system is more sensitive to imbalance than the vestibular system. However, if the visual function is impaired, it takes overcompensation functions.

25 R. Whipple, L. Wolfson, C. Derby, D. Singh, J. Tobin, Altered sensory function and balance in older persons, "The Journal of Gerontology"1993, 48(Spec. No), p. 71–76.

26 M.G. Wade, R. Lindquist, J.R. Taylor, D. Treat-Jacobson, Optical flow, spatial orientation, and the control of posture in the elderly, "Journal of Gerontology: Series B"1995, 50(1), p. 51–58.

27 J.O. Judge, M.B. King, R. Whipple, J. Clive, L.I. Wolfson, Dynamic balance in older persons: Effect of reduced visual and proprioceptive input, "Journal of Gerontology: Series A" 1995, 50(5), p. 263–270.

28 S.R. Lord, J. Dayhew, A. Howland, Multifocal glasses impair edge contrast sensitivity and depth perception and increase the risk of falls in older people, "Journal of American Geriatrics Society" 2002, 50(11), p. 1760–1766.

29 B. Wojszel, B. Bień i in., Wielkie problemy..., op. cit., p. 83–86.

30 R. Tideiksaar, Sensory impairment..., op. cit., p. 22–27.

Approximately half of the seniors with impaired vision also have impaired hearing[31], as a result of which the psychological and functional effects of damage to each of the senses deepen, leading to a significant increase in the risk of falls.

3.1.3. Falls and fractures

According to the medical definition, a fall is: "(...) a sudden, unintended change of position, consisting of a loss of balance when walking or doing other activities resulting in the person being on the ground, floor, or a different low surface"[32]. Epidemiological studies on falls in old age reveal that more than 1/3 of seniors living in their own homes have one fall in a year[33]. According to PolSenior studies, 10% of people from the pre-senior group (55-59 years old) declared a fall during the year preceding the study, with this percentage increasing to 12% in the 65-69 age group and to 36% in the 90 years old and above[34]. This data forecasts an increase in the prevalence of falls in old age, which is influenced not only by the process of aging of societies but also by the aging of the population of seniors themselves.

It is difficult to obtain accurate statistics on the commonness of falls in old age, as many of them remain unreported, especially when they occur at home without the presence of witnesses and do not end in injury. Hence, due to 24-hour surveillance, the detection rate of falls among seniors in long-term care institutions is higher. Those in hospitals and long-term care facilities fall much more frequently – 45-70% of residents experience falls each year, of which 50% – multiple falls[35]. It is estimated that 1 in 5 hospitalized old-age patients fall while in hospital[36]. In the case of older residents of care facilities, there is a higher likelihood of experiencing multiple falls compared to seniors living in their own environments.

The understanding of the etiology of falls allows us to identify risk factors and develop effective preventive measures. In older age, the following factors can cause falls: limitations in general physical functioning, gait and balance disorders, musculoskeletal and neuromuscular damage, certain chronic conditions, use of medications, environmental and demographic factors. For the most part, falls are caused by the overlapping of internal and external predispositions i.e., the accumulation

31 C.C.W. Klaver, R.C.W. Wolfs, J.R. Vingerling, A. Hofman, P.T.V.M. de Jong, Age-specific prevalence and causes of blindness and visual impairment in an older population. The Rotterdam Study, "Archives of Ophthalmology" 1998, 116(5), p. 653–658.

32 K. Galus, J. Kocemba (ed.), MSD Podręcznik geriatrii, Urban &Partner, Wrocław 1999.

33 J.M. Hausdorff, D.A. Rios, H.K. Edelber, Gait variability and fall risk in community-living older adults: A 1-year prospective study, "Archives of Physical Medicine and Rehabilitation" 2001, 82(8), p. 1050–1056.

34 A. Skalska, B. Wizner, A. Klich-Rączka, K. Piotrowicz, T. Grodzicki, Upadki i ich następstwa w populacji osób starszych w Polsce, in: PolSenior. Aspekty medyczne, psychologiczne, socjologiczne i ekonomiczne starzenia się ludzi w Polsce, ed. M. Mossakowska, A. Więcek, P. Błędowski, Termedia Wydawnictwo Medyczne, Poznań 2012, p. 275–282.

35 P.B. Thapa, K.G. Brockman, P. Gideon, R.L. Fought, W.A. Ray, Injurious falls in nonambulatory nursing home residents: A comparative study of circumstances, incidence, and risk factors, "Journal of American Geriatrics Society" 1996, 44(3), p. 273–278.

36 W.J. Falbe, Falls in the elderly, "US Pharmacist" 1990, 15(4), p. 49–62.

of many factors related to age and chronic diseases and their interaction with the dangerous environment. The probability of a fall increases with the number of risk factors, from 8% for 0 risk factors to 78% for 4 or more risk factors[37]. Risks can be minimized through preventive action to reduce risk factors, such as not wearing bifocal glasses or performing strengthening physical exercise.

Gait and balance disorders are the main cause of falls among seniors – about 55% of falls are caused by problems with gait, 32% by balance disorders[38]. Falls are closely related to such functional skills disorders as getting up from a sitting position or inability to climb stairs without holding on to the handrail. Weakness and gait disorders are the most common causes of falls in nursing homes[39]. The inability to lift oneself after a fall can affect one's health by causing dehydration, bedsores, pneumonia, depression or increased anxiety.

Musculoskeletal and neuromuscular injuries are among the factors that increase the risk of falls. For example, osteoporosis leads to joint damage, pain, stiffness and reduced movement in the knees and hips. Diabetes can cause joint neuropathy, reduced mobility, cramps and painless ulcers. In the etiology of falls, the weakness of the lower limbs is of great importance, increasing their probability 5 times, while in the case of gait and balance disorders, the risk of falls increases 3 times[40].

Certain chronic states predispose to falls. Arthritis, diabetes or strokes may result in weakness, deformities, neuropathy or gait impairment. Diseases of the musculoskeletal system, especially foot disorders or poor physical condition, are an obvious contributor to falls. Falls are particularly likely in the cases of neurological disorders e.g., epilepsy, atonic seizures, post-stroke conditions, Parkinsonism, dementia syndromes, depression. Sensory disorders also predispose to falls, especially damage to eyesight and diseases of the ears and balance system, which may cause dizziness. Diseases of the urinary system, such as incontinence, are also an underestimated cause of falls. This type of disorder, when there is a feeling of pressure on the bladder, causes uncontrolled urination and then a fall.

It has been calculated that drugs are responsible for 10-20% of falls in the old age[41]. Some of them may delay psycho-motor reactions, cause sleepiness during the day and lower orthostatic pressure. Medications such as sedatives, anti-anxiety, antidepressants or anti-hypertensive, analgesics, diuretics and laxatives may increase the risk of falling. The use of psychotropic drugs doubles the risk of falls[42]. In old age, the side effects of taking medication may be intensified due to decreased

37 Tinetti M.E., M. Speechley, S.F. Ginter, Risk factors for falls among elderly persons living in the community, "New England Journal of Medicine" 1988, 319(26), p. 1701–1707.

38 L.Z. Rubenstein, K.R. Josephson, A.S. Robbins, Falls in the nursing home, "Annals of Internal Medicine" 1991, 121(6), p. 442–451.

39 Ibidem.

40 K.K. Steinweg, The changing approach to falls in the elderly, "American Family Physician" 1997, 56(7), p. 1815–1823.

41 K.K. Steinweg, The changing approach..., op. cit., p. 1815–1823.

42 P.B. Thapa, P. Gideon, R.L. Fought, W.A. Ray, Psychotropic drugs and risk of recurrent falls in ambulatory nursing home residents, "American Journal of Epidemiology" 1995, 142(2), p. 202–211.

ability to metabolize medication in the liver and excrete it through the kidneys, decreased body water and increased body fat. The so-called polypharmacotherapy i.e., taking many medicines, may be dangerous.

Most falls are consequences of the interaction between an individual and the environment. A high percentage of falls among older people take place while walking. It has been calculated that only up to 5% of falls occurred while performing potentially dangerous activities (e.g. climbing a ladder, playing sports), 10% occurred during acute medical conditions, 44% because of environmental risk[43]. It is estimated that environmental factors are responsible for an older person's fall in over 50% of cases[44]. Environmental risk is mainly related to a failure to adapt the surroundings to the capabilities and functional needs of their users. In the case of seniors, falls most often occur outside the home, whereas at home the most critical areas are the living room, stairs and bathroom. The most common environmental factors that increase the risk of falls include inappropriate footwear, inadequate lighting, surface unevenness and slippery floors (e.g. carpets not attached to the floor, protruding carpet edges), elements that can be tripped over (furniture, pets, stairs, protruding elements such as electric cables, thresholds), and clutter in the apartment. The risk of falling is also increased by inappropriate furniture, such as: low chairs, soft seats (especially if they have no armrests), beds, toilets which are difficult to get up from. Approximately 10% of falls are associated with stairs[45], perhaps due to lack of handrails, poor eyesight or weakness of lower limbs. In the case of stairs, the first and last steps are the most dangerous, with a higher risk of falls with serious injuries being caused by climbing down the stairs. To prevent falls, it is essential to assess the immediate surroundings of an older person and adapt them to his/her functional requirements.

Improper clothing may also be responsible for falls. Interesting results were obtained in a study[46] which aimed to determine the impact of sole hardness and upper height on stability and balance among older women. It turned out that wearing shoes with high uppers was associated with better balance compared to low uppers and walking barefoot. However, the effect of sole hardness on the sense of balance in old age has not been proven.

Demographic factors are also related to falls. The prevalence of falls increases with age, depending on gender and residence. Falls are more common among women than among men, also it is women who experience fractures more often

43 M.E. Tinetti, M. Speechley, et al, Risk factors for falls..., op. cit., p. 1701–1707.

44 N. Niino, S. Tsuzuku, F. Ando, H.N. Shimokata, Frequencies and circumstances of falls in the National Institute for Longevity Sciences, Longitudinal Study on Aging (NILS-LSA), "Journal of Epidemiology" 2000, 10(1 Suppl.), p. 90–94.

45 K.K. Steinweg, The changing approach..., op. cit., p. 1815–1823.

46 S.R. Lord, Effects of shoe collar height and sole hardness on balance in older women, "Journal of American Geriatrics Society" 1999, 47(6), p. 681–684.

during falls e.g., they have about 80% of all hip fractures[47]. Fractures are often associated with osteoporosis characteristic for women in the postmenopausal period. In the etiology of falls, the environmental factors associated with normal changes in aging prevail among patients under 75 years of age, whereas after 75 years falls are most often caused by cumulative consequences of multiple medical conditions and medication use. Moreover, it has been shown[48] that the risk of falls is higher in older people who have fallen – if someone has already fallen once, they are more likely to fall again.

Although young people and children fall more often, falls have more serious consequences for seniors. The older the fall victim is, the higher the trauma associated with the fall. Falls are responsible for about 40% of all injuries experienced by older people[49]. These include bruises, head injuries or fractures, leading to reduced functional capacity and often requiring hospitalization. About 5% of seniors experience a fracture as a result of a fall, about 1% a hip fracture[50]. In mature adulthood, the so-called hip fracture has a frequent fall pattern i.e., falling to the side of the body, which makes it impossible to mitigate the force of the fall to an unprotected hip. The risk of a hip fracture is even greater in slim and tall people (the hip is less protected against impact while the femur is longer). The increasing number of seniors with functional limitations due to a hip fracture requires appropriate medical and care services.

The senior population is characterized by a high disability following a fall and reduced life activity. A hip fracture, in particular, has severe impairing effects. People who have suffered a hip fracture at an advanced age often require support in their daily activities. Only 33-40% of patients regain the ability to perform basic everyday activities, 20% are unable to move around on their own, 10-60% are unable to return home[51]. Many seniors admitted to hospital due to a fall do not return to their previous level of independence, which often results in admission to a nursing home – falls are responsible for about 40% of admissions to nursing homes[52].

Falls among seniors are associated with an increased risk of benefiting from health care – the majority of A&E visits by older people are related to falls[53]. Fractures and bruises are the most common adverse consequences of falls and quite often require hospitalization in older age groups. Hospitalization is longer for seniors

47 J.A. Stevens, S. Olson, Reducing falls and resulting hip fractures among older women, in: CDC Recommendations Regarding Selected Conditions Affecting Women's Health, MMWR 2000, 49(RR-2), p. 3–12.

48 L.K. Brians, K. Alexander, P. Grota, R.W. Chen, V. Dumas, The development of the RISK tool for fall prevention, "Rehabilitation Nursing" 1991, 16(2), p. 67–69.

49 R. Evans, Trauma and falls, in: Emergency care of the elder person, ed. A.B. Sanders, Beverly Cracom Publications, St. Louis 1996, p. 153–170.

50 M.E. Tinetti, Falls, in: Geriatric Medicine, eds. C.K. Cassel, D.E. Riesenberg, L.B. Sorenson, J.R. Walsh, D.E. Meier, Springer-Verlag, New York 1990, p. 528–534.

51 J.D. Zuckerman, Hip fracture, "New England Journal of Medicine" 1996, 334(23), p. 1519–1526.

52 R.W. Sattin, H. Lambert et al, The incidence of fall..., op. cit., s. 1028–1037.

53 R.W. Sattin, Falls among older persons: A public health perspective, "Annual Review of Public Health" 1992, 13(8), p. 489–508.

after a fall, compared to those admitted to hospital for other reasons. After being discharged from hospital, the person is often moved to a nursing home. Falls in old age, often resulting in increased demand for treatment, rehabilitation and care, are costly in terms of increased costs but also reduced quality of life, making them a major public health problem worldwide.

Over 85% of fatal falls affect people over 65 years of age[54], with hip fractures being the main cause. In Poland, hospital mortality due to a femoral neck fracture in people aged 80+ amounts to over 20%[55]. Death occurs here not so much because of the fall as of the necessity to stay in bed and the inability to take care of oneself. Falls are the most preventable cause of death in old age, compared to heart disease, cancer, stroke or respiratory diseases.

Falls, even if they do not cause damage, can cause the so-called post-accident syndrome manifesting itself in excessive fear of another such event, even if it did not result in physical injury. Fear of falling is experienced by more than half of people aged 62 years and older[56], more often expressed by women than men (74% vs. 26%)[57]. Fear of falling, even among individuals without earlier experience of such matter, may not be groundless. It is often found among the oldest seniors with gait and balance disorders. This fear is dangerous in its far-reaching consequences – it leads to a reduction in voluntary physical activity, which in turn leads to a reduction in the overall physical condition and, like a vicious circle, increases the risk of another fall. As a result of reduced activity, gait disorders may deepen and limit the ability to perform daily activities, there is a risk of social isolation and depression, reduced independence in life and, as a result, an increased risk of institutionalization.

3.2. Depression

Depression in old age is often considered, in clinical and social assessment, as a normal psychological response to aging and its associated limitations. However, in the course of natural aging, depressive symptoms are treated as signs of pathological processes requiring treatment. Although old age abounds in various losses and depression may be a natural reaction to them, it remains a temporary dysfunction in the aging cycle, not a permanent feature of old age.

54 J.M. Lilley, T. Arie, C.E.D. Chilvers, Accidents involving older people: A review of the literature, "Age and Ageing" 1995, 24(4), p. 346–365.

55 H. Roszkowska, P. Goryński, B.Wojtyniak, Hospitalizacja z powodu złamań szyjki kości udowej w Polsce w latach 1979–1993, "Reumatologia" 1997, 35, p. 178–187.

56 J. Howland, M.E. Lachman, E.W. Peterson, J. Cote, L. Kasten, A. Jette, Covariates of fear of falling and associated activity curtailment, "Gerontologist" 1998, 38(5), p. 549–555.

57 B.J. Vellas, S.J. Wayne, L.J. Romero, R.N. Baumgartner, P.J. Garry, Fear of falling and restriction of mobility in elderly fallers, "Age and Ageing" 1997, 26(3), p. 189–194.

Prevalence of depression

Due to the difficulty of identifying depression in official statistics, it is an underdiagnosed disease, and the available epidemiological data can vary considerably. It is confused or masked by other health problems, such as dementia, or attributed to old age itself as its typical symptom requiring acceptance rather than professional intervention. The specificity of depressive symptoms in the elderly population also makes them more difficult to detect.

Undoubtedly, depression is one of the main psychological problems of older people – about half of the psychiatric patients in old age suffer from depression[58]. Significant depressive symptoms are reported by up to 30% of the not institutionalized seniors[59]. Depression is not to be associated with old age alone, although its prevalence increases with age, but with the health and psycho-social difficulties that accompany this period of life, or with demographic factors. According to Polish data[60], depression in old age affects women more often than men (36% vs. 25%). Family situations, especially having a spouse, turns out to be a protective factor. Depression was most common among widowed seniors (37%), divorced persons (35%), among unmarried women and men (32%), while noticeably the least common among spouses (23%).

Symptoms of depression

Typical symptoms of depression include low mood (sadness, hopelessness, pessimism), inability to feel pleasure, change of appetite, sleep and activity, loss of life interests, irritability and anxiety, disorientation, fatigue, reduced concentration. Seniors suffering from depression are predominantly complaining about irritability, nervousness, somatic complaints, and cognitive dysfunctions, while mood reduction is less frequent than in younger people[61]. Symptoms specific to depression in old age include hypochondriacal delusions, guilt and sin delusions, memory disorders, consciousness disorders, and depression somatization i.e., disguising depression by interpreting its symptoms as typical symptoms of somatic diseases[62] e.g., linking depression to back pain or other chronic pain. In general, older people are more likely to report somatic symptoms than psychological ones, which are more often rejected because of the associated stigma. Older people who are willing to attribute symptoms of depression to some other causes are at risk of delaying anti-depressive treatment. Symptoms can also be mistakenly attributed to older

58 S. Krzymiński (ed.), Zaburzenia psychiczne wieku podeszłego, PZWL, Warszawa 1993.

59 K. Broczek, M. Mossakowska, A. Szybalska, E. Kozak-Szkopek, P. Ślusarczyk, K. Wieczorowska-Tobis, T. Parnowski, Występowanie objawów depresyjnych u osób starszych, in: PolSenior. Aspekty medyczne, psychologiczne, socjologiczne i ekonomiczne starzenia się ludzi w Polsce, ed. M. Mossakowska, A. Więcek, P. Błędowski, Termedia Wydawnictwo Medyczne, Poznań 2012, p. 123–136.

60 K. Broczek, M. Mossakowska et al., Występowanie objawów..., op. cit., p. 123–136.

61 K. Filipska, Ł. Pietrzykowski, N. Ciesielska, Ł. Dembowski, K. Kędziora-Kornatowska, Zaburzenia depresyjne u osób w podeszłym wieku – przegląd literatury, "Gerontologia Polska" 2015, 23(4), p. 165–169.

62 T. Kostka, Zaburzenia psychogeriatryczne (otępienie, depresja, delirium), in: Choroby wieku podeszłego. Praktyka lekarza rodzinnego, ed. T. Kostka, M. Koziarska-Rościszewska, PZWL, Warszawa 2009, p. 148–151.

age itself as inherent, making it even more difficult to make a diagnosis and start treatment.

Depression can be associated with short-term memory disorders, which can suggest dementia with which it is often mistaken. For this reason, depression should also be considered when diagnosing dementia for an older person. There is a risk that the symptoms of depression will be interpreted as dementia and that the diagnosis and treatment program will be wrong. In the case of an older patient, it is also possible to combine the simultaneous symptoms of depression and dementia. Depression may co-occur with dementia syndrome, be under the mask of dementia or appear as its early symptom. However, depression may indeed be a prelude to dementia syndrome[63].

In the senior population, mild depression is more common than deep depression and may be a reaction to stressors typical of this age. About 15-50% of seniors with symptoms of mild depression show symptoms of deep depression within two years, which is the natural duration of such untreated depression[64].

Risk factors of depression

The etiology of depression in old age is difficult to establish due to the multitude of coexisting psycho-physical states, in relation to which depression may be a primary or secondary condition. Symptoms of depression may be a consequence of disease and affect the deterioration of health, but on the other hand, they may be a reaction to changes in the disease and be the first sign of these changes (e.g. in Alzheimer's disease, thyroid disease).

Compared to young people, depression in seniors is more common due to physical and mental illness, usually accompanying health problems. Characteristically, there is no correlation between the severity of an illness and the rate of depression[65]. However, there is a link between depression and this type of disease. Those most often associated with depression include stroke, coronary artery disease, cancer, Parkinson's and Alzheimer's disease. Depression can be caused by drugs e.g., antipsychotic, sedative, anti-inflammatory, hormonal[66]. The relationship between depression and disease may be indirect. Diseases associated with depression are distinguished by their impairing character, leading to social isolation, which is mentioned as one of the strongest risk factors for depression to occur.

In the etiology of depression, psycho-social factors are of great importance e.g., those related to losses typical of old age. It is assumed that if mourning seriously disrupts daily life or lasts longer than 6 months, it may be seen as abnormal and

63 Z.B. Wojszel, B. Bień, M. Przydatek, Wielkie problemy geriatryczne: III. Zespoły otępienne, "Medycyna Rodzinna" 2001, zeszyt 14 (3–4), p. 162–168.

64 American Psychiatric Association, Task Force on DSM-IV. Diagnostic and statistical manual of mental disorders: DSM-IV, American Psychiatric Association, Washington DC 1994.

65 G. Magni, Depression in geriatric and adult medical inpatients, "Journal of Clinical Psychology" 1985, 41(3), p. 337–344.

66 E.B. Boswell, A. Stoudemire, Major depression..., op. cit., p. 3–9.

require professional help. Depression may be a reaction to loss or may be a result of anticipating a loss in the future, such as loss of health, physical efficiency, independence, dignity, money or loved ones.

The increased risk of depression is also associated with demographic factors such as old age and place of residence – depression is more common in long-term care settings than among primary medical care patients. Gender is also important – women are more susceptible to depression, from which they suffer more than twice as often as men[67], probably because they live longer than men and are more likely to lose health, have disabilities, experience widowhood, loneliness, poverty and placement in long-term care.

Risk factors for the development of depression in old age include genetic predisposition, history of depression, and even vitamin B12 deficiency. It is worth noting that seniors whose spouse experiences depression are at increased risk of developing one, too.

Effects of depression

Depression in old age is associated with increased morbidity. It has been calculated, for example, that people with hypertension are twice as likely to develop heart disease if they also experience depression[68]. Undiagnosed depression can lead to a loss of appetite among seniors due to a loss of interest in and enjoyment of food and ultimately to malnutrition and weight loss. Untreated depression can make it difficult to treat other conditions, increase the risk of new diseases and the need for medical services.

Symptoms of depression coexisting with the main disease reduce the chances of survival. Research has shown that depression associated with heart disease increases the risk of death. After myocardial infarction, the development of deep depression results in a 5-fold increase in the risk of death within the next 6 months[69]. In contrast, within 10 years of a stroke, the risk of death is 3.5 times greater for patients with depression than without it.[70]

Depression leads to a disruption of everyday activities, especially the essential activities of everyday life and, consequently, to disability. The relationship between depression and disability can be a complex and two-way one. Depression can be a risk factor for the appearance or aggravation of existing disabilities but on the other hand, disability can increase the risk of depression. The two states can enhance each other, causing a progressive spiraling decline in functional capacity. However, there is no simple relationship between the level of depression

67 A. Raj, Depression in the elderly, "Postgraduate Medicine" 2004, 115(6), p. 26–35.

68 J. Abramson, A. Berger, H.M. Krumholz, V. Vaccarino, Depression and risk of heart failure among older persons with isolated systolic hypertension, "Archives of Internal Medicine" 2001, 161(14), p. 1725–1730.

69 N. Frasure-Smith, F. Lesperance, M. Talajic, Depression following myocardial infarction: Impact on 6-month survival, "JAMA" 1993, 270(15), p. 1819–1825.

70 P.L. Morris, R.G. Robinson, P. Andrzejewski, J. Samuels, T.R. Price, Association of depression with 10-year poststroke mortality, "American Journal of Psychiatry" 1993, 150(1), p. 124–129.

experienced and disability. Scientific research has shown that although Afro-Americans have a greater degree of disability in their daily activities than do white people, they do not experience a greater degree of depression[71]. However, it has been confirmed that there is a correlation between the number of depressive symptoms and the number of functional limitations experienced – the more depressive symptoms there are, the more limitations appear in daily functioning[72]. Yet, importantly, the treatment of depression results in improved daily functioning.

Depression, associated with low motivation to act, may delay recovery and improvement of the impaired functioning. The treatment of depression is associated with better results obtained in the rehabilitation process, which is explained by reduced motivation for improvement among patients with depression. For this reason, the treatment of seniors with disabilities who additionally suffer from depression is essential for their overall functional capacity.

Untreated depression is a serious cause of suicide in old age. It is the most commonly diagnosed condition among older suicide victims, while young suicide victims are most commonly diagnosed with addictions and psychoses that occur alone or in combination with mood disorders[73]. Suicide in old age is most likely to be committed through the use of the drugs prescribed to them[74]. Older suicidal people may also use less obvious, slow self-killing methods, such as: stopping eating, taking medication, giving up treatment, using drugs, or deliberately leading an unhealthy lifestyle, which are not included in statistics.

At an advanced age, more suicides are recorded among men who attempt to take their own lives about 5 times more often than women[75], using more extreme means (e.g. firearms, hanging, conjuring), while women using more gentle means (e.g. pills)[76]. Women are more likely to attempt suicide while men are much more effective in carrying out suicide attempts. Although women are more likely to suffer from depression, men are less likely to accept the losses associated with old age, such as retirement, loss of prestige, opportunities to influence their own situation, limitations to independence, increasing somatic problems, and performance disorders[77] and choose to end their lives voluntarily. The highest risk group includes

71 S. Cummings, J. Neff, B. Husaini, Functional impairments as a predictor of depressive symptomatology: The role of race, religiosity, and social support, "Health and Social Work" 2003, 28(1), p. 23–32.

72 K.M. Langa, M.A. Valenstein, A.M. Fendrick, M.U. Kabeto, S. Vijan, Extent and cost of informal caregiving for older Americans with symptoms of depression, "American Journal of Psychiatry" 2004, 161(5), p. 857–863.

73 G.S. Alexopoulos, I.R. Katz, C.F. Reynolds, D. Carpenter, J.P. Docherty, The expert consensus guideline series. Pharmacotherapy of depressive disorders in older patients, "Postgraduate Med" 2001, Spec No Pharmacotherapy, p. 1–86.

74 W. Kołodziej, Zaburzenia psychiczne i ryzyko samobójstwa u osób w starszym wieku, in: Wybrane problemy osób starszych, ed. A. Nowicka, Oficyna Wydawnicza Impuls, Kraków 2006, p. 87–97.

75 Ibidem.

76 A. Raj, Depression in..., op. cit., p. 26–35.

77 W. Kołodziej, Zaburzenia psychiczne..., op. cit., p. 87–97.

men living alone, with a history of depression, drinking and women who are recently widowed, divorced or separated, and with complex health problems[78].

Depression, which often causes or aggravates existing diseases and disabilities, can significantly contribute to increasing demand for medical services and formal and informal care. People with symptoms of depression use medical services 2-3 times more often than people without depression[79]. More hours of care are needed for depression among seniors than for seniors without symptoms of depression. Studies estimating the number of hours spent caring for depressed seniors report that older people without depression require an average of 2.9 hours of informal care per week, while those with 1-3 symptoms of depression require 4.3 hours per week, and for those with 4-8 symptoms of depression, it amounts to 6 hours of care per week[80]. The social cost of depression is therefore personal, human but also financial.

The prevention and treatment of depression in old age, given its high prevalence and severe consequences, should be developed towards greater effectiveness and coverage. Still, however, despite such advanced medical and psychological progress, the symptoms of depression are attributed to normal aging or physical illness by the patients themselves and even by doctors. Effective treatment of depression is also hindered by lower expectations of patients regarding their functioning, masking the symptoms of depression by coexisting other medical problems, side effects of the medication taken, mourning after the loss of loved ones or hypochondria. There is a lack of close cooperation between the health service and the psychological support system. Many elderly people at risk for depression do not go to mental health professionals, but to primary care physicians, who often lack the time and expertise to diagnose and treat depression at an advanced age. Thus, although it is fairly easy to treat, depression remains undiagnosed in many cases, with very serious consequences, including an increased risk of disability and death.

3.3. Dementia

Dementia was once thought to be an inherent consequence of the aging process, but it is now known that it is caused by a syndrome of diseases that cause degenerative changes in the brain, being of pathological rather than natural nature. However, it is difficult to distinguish between a natural decline in intellectual capacity and initial degenerative changes requiring medical intervention. It is assumed that memory and other cognitive abilities may weaken with age, but to an extent

78 M.S. Lantz, Suicide in late life: Identifying and managing at-risk older patients, "Geriatrics" 2001, 56(7), p. 47–48.

79 B.G. Druss, R.M. Rohrbaugh, R.A. Rosenheck, Depressive symptoms and health costs in older medical patients, "American Journal of Psychiatry" 1999, 156(3), p. 477–479.

80 K.M. Langa, M.A. Valenstein et al, Extent and cost..., op. cit., p. 857–863.

that does not impair the overall competence of the older person. Most often, however, these changes are small, not meeting the criteria for diagnosing dementia, although they may predispose to the development of dementia in the future[81].

Prevalence of dementia

Older people attribute their deteriorating mental functioning to the natural course of the aging process, so the problem is kept silent in their medical interviews, which results in the underestimation and high discrepancy of statistical data concerning the so-called late-onset dementia. Worldwide estimates indicate that 3-11% of older members of the population are affected by dementia[82]. The prevalence of dementia increases rapidly with age – analysis of numerous epidemiological studies has shown that it doubles every 5 years or so until the age of 94[83]. Such a strong correlation of dementia with age causes the percentage of patients with this incurable and severely impairing disease to increase as the population grows older. For example, the prevalence of Alzheimer's disease is estimated to triple in the US between 2000 and 2050, making dementia diseases one of the most important health issues[84].

Symptoms of dementia

Dementia is a chronic disease with a permanent and irreversible course. Patients show a wide range of dysfunctions in mental activity, behavior and mood. Dementia is a syndrome caused by a chronic, progressive brain disease in which cognitive functions i.e., always memory and at least one of the following are impaired: aphasia (speech disorders), apraxia (inability to make intentional movements despite undamaged motor functions), agnosia (dysfunction of the ability to recognize objects with undamaged visual perception) or executive function deficits (inability to think abstractly, plan, initiate, perform again, monitor and stop performing complex tasks)[85]. To diagnose dementia, these changes should interfere with everyday functioning and persist for at least 6 months.

The above-mentioned symptoms usually occur with decreased control over emotional and social reactions, behavior and motivation. The ability to learn is weakened. In the advanced stage, people become extremely forgetful, are unable to absorb information and recreate it after a while. Personality changes occur, there is greater irritability, nervousness, loss of previous interests, change of habits,

81 Z.B. Wojszel, B. Bień et al, Wielkie problemy..., op. cit., p. 162–168.

82 K. Fleming, A.C. Adams, R.C. Petersen, Diagnosis and evaluation of dementia, "Mayo Clinics Proceedings" 1995, 70(11), p. 1093–1107.

83 T. Gabryelewicz, Rozpowszechnienie zespołów otępiennych, "Neurologia i Neurochirgia Polska" 1999, Suppl. 1, p. 11–17.

84 L.E. Hebert, P.A. Scherr, J.L. Bienias, D.A. Bennett, D.A. Evans, Alzheimer disease in the US population: Prevalence estimates using the 2000 census, "Archives of Neurology" 2003, 60(8), p. 1119–1122.

85 R.J. Schindler, C.P. Cucio, Late-life dementia: Review of the APA guidelines for patient management, "Geriatrics" 2000, 55(10), p. 55–60.

in the moderate and advanced stage there are psychotic symptoms (visual and auditory hallucinations, delusions, misrecognition of persons and events). These symptoms may be accompanied by behavioral disorders (aggression, wandering, screaming, a reversal of daily rhythms)[86].

According to the DSM-IV (Diagnostic and Statistical Manual of Mental Disorders) published by the American Psychiatric Association, a mild cognitive dysfunction causes a slight impairment of daily functioning but does not limit the patient's life independence. It may be difficult to perform complex activities e.g., to prepare more sophisticated meals, follow complicated medical recommendations or organize one's free time. Moderate cognitive dysfunctions reduce the autonomy of the patient's functioning in the scope of performing instrumental activities of daily life (IADL), progressively inhibiting the ability to perform simpler self-care activities e.g., bathing, shaving, fastening buttons. Severe disorders lead to partial or complete suppression of thought processes e.g., patients need to be fed and require constant help with hygienic activities, they are taken to the toilet. In the final stage, the ability to perform self-care activities disappears, which makes the patient completely dependent on the help of others and increases the risk of his institutionalization[87]. The last stage is the vegetative state.

Symptoms of dementia are characterized by a long phase of latency, during which neuropathological changes and decline in mental functioning progress. The long preclinical period characteristic of this disease requires attention to the weakening of mental functioning as early as in the middle years of life.

Causes of dementia

It is nowadays relatively simple to diagnose dementia itself; it is much more difficult to properly identify its root causes. More than 50% of all cases are caused by primary neurodegenerative changes within the central nervous system, mainly Alzheimer's disease, which is the most common form of dementia, about 13% by neurological and vascular anomalies (e.g. cerebral circulation disorders, Parkinson's disease), about 25% are mixed causes – a combination of Alzheimer's disease with vascular problems. Vascular episodes overlapping the primary degenerative brain image cause exacerbation of dementia symptoms[88].

Dementia develops as a result of a loss of brain cells without any necrosis foci (in such a case the disturbed mental performance is not accompanied by damage to physical efficiency) or with necrosis foci resulting from the reduced circulation of blood vessels due to atherosclerotic deposits[89]. A series of small strokes cause damage to brain tissue. Changes in memory may also be caused by medication poisoning, metabolic and hormonal disorders, cerebral hypoxia, depression,

86 Z.B. Wojszel, B. Bień et al, Wielkie problemy..., op. cit., p. 162–168.
87 Ibidem.
88 T. Gabryelewicz, Rozpowszechnienie zespołów..., op. cit., p. 11–17.
89 K. Wiśniewska-Roszkowska, Starość jako zadanie, Instytut Wydawniczy Pax, Warszawa 1989.

neuroinfections, improper nutrition, sensory deprivation, depression or toxins. These changes are largely reversible and are attributed to the so-called pseudodementia. As calculated[90], 11% of dementia patients suffer from pseudodementia and depression. The diagnosis of dementia requires the prior exclusion of depression because dementia does not include those dysfunctions of intellectual capacity that occur on other grounds than permanent damage to the central nervous system[91].

Consequences of dementia

In the psychological realm, people with dementia experience a sense of loss of self and a sense of guilt, sadness, frustration and helplessness. However, they rarely express affection, which can make people from their immediate surroundings feel unappreciated and lonely. And indeed, in the case of dementia, there is a deterioration of personal bonds of the sick person, who with time becomes someone else than they used to be. The close ones may mourn the loss of the sick person while the person is still alive.

Mental efficiency is an important component of a person's overall functional capacity, and the weakening of mental functions results in a reduction of life's independence. In daily life, memory loss can lead to dangerous situations e.g., caused by forgetting about pots left on the stove in the kitchen or water running in the bathroom to prepare a bath.

Dementia results in an increased demand for informal care, usually provided by the closest family members. Consequently, it affects the patient and his or her family. It is extremely demanding, long-term care and is associated with serious side effects for carers. Deteriorating contact with the patient and their disordered behavior constitute a strong emotional burden for the caregiver and, along with the worsening of their condition, also a physical burden. Carers can develop depression and therefore also need support.

Carers should be provided with the necessary information as well as emotional and social support. At the diagnosis stage, it is recommended that the family learns as much as possible about the disease, which will help them to properly interpret the patient's behavior, especially when perceived as inappropriate, and not to treat it in personal terms. The family needs to participate in support groups at all stages of the disease. At an advanced stage of the illness, it will be important to provide the carer with periodic rest. The patient's presence in a day-care home can provide significant relief for the carers and prevent the appearance of signs of depression. If the symptoms of dementia become more severe and the patient needs advanced care, it may be necessary to place them permanently in a day-care home. In the final stage of the disease, patients require specialist palliative care.

90 J.E. Kasl-Godley, M. Gatz, A. Fiske, Depression and depressive symptoms in old age, in: Clinical Geropsychology, American Psychological Association, Washington DC 1998, p. 211–217.

91 M. Rzewuska, Klinika i leczenie otępień pierwotnie zwyrodnieniowych, "Postępy Psychiatrii i Neurologii" 1992, 1, p. 69–78.

3.4. Sight and hearing impairment

Hearing and sight are the basic channels of perception of stimuli, which deteriorate with age. The impairment of their function is common among seniors. At the same time, they experience more comorbidities, which significantly complicates their clinical and functional state. Sight and hearing (including the sense of balance) are of paramount importance for efficient functioning and therefore the frequent limitation of their functions in old age leads to the spread of disability at this stage of life.

3.4.1. Loss of sight in old age

Age is a serious risk factor for blindness and impaired vision. It is estimated that one in three people over 65 has some form of vision impairment[92]. The prevalence of eye diseases characteristic of older people increases with age. As part of the Rotterdam Study[93], research based on a large sample revealed that among people aged 55+ blindness, according to the World Health Organization criteria, ranged from 0.1% in people aged 55-64 to 3.9% among people aged 85+, while the prevalence of visual impairment varies from 0.1% to 11.8% respectively. Among people aged 75+, age-related macular degeneration was the main cause of blindness, while cataracts were the cause of impaired vision.

Pathological changes in sight may manifest the effects of the following age-specific diseases: cardiovascular diseases, hypertension, diabetes, hyperthyroidism, neurological diseases (e.g. Parkinson's disease, mental and dementia diseases), connective tissue diseases (arthritis, Paget's disease, eyelid, conjunctival and skin tumors). The most common eye diseases in old age include age-related macular degeneration, glaucoma, cataracts, diabetic retinopathy. The diagnosis of these diseases is fundamental for the early diagnosis and treatment of eye diseases and, if necessary, for rehabilitation.

A cataract is partial cloudiness of the lens, which blocks the flow of light and hinders proper vision. Contrary to stereotypical views, it is not any growth or accumulation of a foreign substance, but rather a loss of translucency of the lens due to the accumulation of proteins and its impaired ability to diffuse light. A cataract appears in response to a disturbance in lens nutrition. It usually progresses slowly, leading to damage to vision. It is the most common cause of blindness in the world. It is estimated that out of 45 million cases of blindness worldwide as many as 19

92 J.P. Ganley, J. Roberts (eds.), Eye conditions and related need for medical care among persons 1–74 years of age, United States, 1971–72, U.S. Dept. of Health and Human Services, Public Health Service, National Center for Health Statistics, Hyattsville, MD 1983.

93 C.C.W. Klaver, R.C.W. Wolfs et al, Age-specific prevalence..., op. cit., s. 653–658.

million are attributable to cataracts[94]. The prevalence of cataracts is significantly reduced by surgical intervention, which is widely available, effective and safe.

The onset of cataracts may occur as early as in 40-year-olds; however, it is most often detected around the age of 50 – 60[95]. It is assumed that some degree of cataract can be found in almost every person over 65 years old. The pathomechanism of the development of cataracts is not exactly known. It is assumed that the reasons for its formation are: metabolic disorders (in the composition of the aqueous liquid lead to hypoxia of the lens), prolonged exposure to sunlight, physical injuries, taking some medications (e.g. diuretics, treatment with corticosteroids), smoking (especially long-term and frequent), the presence of other diseases (e.g. hyperlipidemia, hypertension), alcohol abuse, inadequate diet (especially poor in protein, with excess lactose and galactose, poor in antioxidants such as vitamin A, C, E), diarrhea affecting the body's biochemical balance, mechanical injuries.

In the initial stage, visual symptoms depend on the type of cataract and the location of the opacity. In the case of a nuclear cataract, located in the middle of the lens, visual acuity remains relatively good, but vision deteriorates in bright light and narrowed pupil e.g., on a sunny day. Therefore, sight can work effectively at home and cause functional difficulties outside the home or at nightfall. The refractive power of the lens increases, which can to some extent compensate for the loss of accommodation and prevent presbyopia for some time. Shortsightedness can occur, so that people with a nuclear cataract will feel a temporary improvement in vision and, for example, read again without glasses. At the same time, they may experience serious difficulties in seeing from a distance. With a cortical cataract, the opacity initially covers the peripheral part of the lens, which generates difficulties in seeing in low light conditions. A posterior subcapsular cataract, on the other hand, leads to visual impairment at short distances rather than long distances.

People with cataracts report experiencing unusual light sensations e.g., due to light diffusion, light points are seen as jagged spots. Hypersensitivity to light and glare increases while sensitivity to contrast and colors that appear faded is reduced. The world can be seen in a dominant blue or yellow. This is followed by a decrease in visual acuity. A mature cataract may also result in a reduced field of vision. In the advanced stage of the disease, the image is seen as a transparent veil, becoming less and less clear until only a sense of light is retained. In everyday life, there is an inability to see details and difficulties in assessing the distance and therefore an inability to perform many daily activities, such as reading or driving a car. The process of lens opacity usually takes several years, and the changes occurring outside are manifested by a change in the color of the pupil from black to light gray.

94 World Health Organization, Population Aging – a Public Health Challenge, "Fact Sheet", nr 135, WHO 1998.
95 M.H. Niżankowska, Podstawy okulistyki, Volumed, Wrocław 2000.

Glaucoma is characterized by increased intraocular pressure responsible for disorders in the blood supply to the optic nerve, its progressive irreversible degeneration and, consequently, blindness. As a result of treatment, the process of damage to retinal nerve cells can be stopped, but it is not possible to undo the pathological changes that have already occurred at the bottom of the eye. The loss of sight is therefore irreversible.

Since glaucoma affects about 3.0-3.5% of the total population and has dangerous consequences, the WHO has recognized it as a social disease. Of the more than 70 million people suffering from glaucoma worldwide, about 7 million lost their sight because of it. Glaucoma is the third cause of blindness in the world. In Poland, about 800 thousand people suffer from glaucoma, but only half of them is aware of the disease and undergo treatment[96].

Glaucoma develops in response to increased intraocular pressure. If it exceeds the level considered statistically normal, vision loss occurs at a rate of 1% per year. However, it is not possible to determine the level of intraocular pressure below which the risk of developing glaucoma does not exist[97]. And although elevated levels of intraocular pressure are still considered to be the main risk factor for glaucoma, it is already known that the disease can progress despite normal pressure.

The two most important factors in the development of glaucomatous neuropathy are now considered to be increased intraocular pressure and vascular dysregulation based on vascular risk factors (especially arterial hypotension and vasospasm), whereby vascular changes affect the eye as one of many organs of the entire body[98]. In the case of glaucoma, ocular symptoms may indicate general circulatory failure. The risk factors also include age e.g., 75% of Americans blind due to glaucoma are over 65 years old[99]. Race also predisposes to glaucoma – its prevalence is much higher among the black race compared to the white race. Additionally, a more aggressive form of open-angle glaucoma is more common among the black population and the damage to the optic nerve occurs about a decade earlier than in other populations[100]. Genetic conditions of glaucoma and the possibility of its inheritance are also possible.

Some of the diseases are associated with glaucoma. For example, secondary glaucoma can develop as a "symptom" of diabetes, in the course of which the fibrous-vascular membrane can overlap the filtration angle and block the outflow of the aqueous liquid. Similarly, this channel will be blocked by inflammatory cells

96 Polskie Towarzytwo Okulistyczne, http://tydzienjaskry.pl/dla-pacjenta (access 20.10.2018).

97 L.F. Rosenberg, Glaucoma: Early detection and therapy for prevention of vision loss, "American Family Physician" 1995, 52(8), p. 2289–2298.

98 J. Czajkowski, M. Depczyńska, K. Hein, P Brzóska, Rola naczyniowych czynników ryzyka i ich występowanie w polskiej populacji chorych na jaskrę. Wyniki 14 208 badań ankietowych, "Okulistyka" 2003, wyd. specj., p. 1–8.

99 The Eye Disease Case-Control Study Group, Risk factors for neovascular age-related macular degeneration, "Archives of Ophthalmology" 1992, 110(12), p. 1701–1708.

100 L.F. Rosenberg, Glaucoma..., op. cit., p. 2289–2298.

in inflammations of the eye or intraocular melanoma or cancer cells. Treatment with certain medications, such as corticosteroids, may result in glaucoma, as they hinder the outflow of the aqueous liquid and increase intraocular pressure. For this reason, annual eye tests are recommended for patients taking this type of medication for at least 4 weeks. Severe farsightedness also carries a risk of glaucoma.

The most characteristic subjective symptom of glaucoma is a reduced field of vision, but this is only felt at a late stage when a large part of the peripheral field of vision is occupied, or only central vision provides acute yet highly limited vision, the so-called tunnel vision. The limitation of the peripheral field of vision causes problems in safe movement, which in this case ensures intensive head movement from one side to the other. Sensitivity to glare, difficulties in adapting to light and darkness, night vision and the sensitivity to contrasts and colors are all weakened. Other symptoms include moderate headaches (acute in the event of an angle-closure glaucoma attack), eyeball pains, nausea, and eye fatigue.

The macula is located in the center of the retina at the bottom of the eye and is responsible for acute central vision. Age-related macular degeneration (AMD) concerns slow, painless pathological changes in the macula of an aging eye accompanied by loss of central vision.

AMD is the most common eye disease among older people and the main cause of their irreversible loss of vision. Age is the main risk factor for this disease. In the United States, 14% of people aged 55-64 years have some form of AMD, while at 65-75 years of age the incidence increases to 20% and at over 72 years of age to 37%[101]. There are more seniors with AMD than glaucoma and diabetic retinopathy combined[102]. Other demographic risk factors for this disease include female sex e.g., women over 75 years of age are at double the risk of developing AMD than men of the same age[103]. This risk may be exacerbated by early menopause due to weakened protective effects of estrogens.

According to numerous epidemiological studies, genetic predisposition is also an important risk factor for AMD. There is undeniable evidence of genetic predisposition to AMD from studies of twins, which found 100% co-occurrence of AMD among monozygotic twin pairs and 25% among fraternal twin pairs[104].

The development of AMD is supported by an inadequate diet, especially low in carotenoids and vitamins A, C and E. Moreover, smoking presently or in the past also shows harmful effects. Compared to non-smokers, the risk of AMD is up to four

101 R. Klein, B. Klein, K.L.P. Linton, Prevalence of age-related maculopathy. The Beaver Dam Eye Study, "Ophthalmology" 1992, 99(6), p. 933–43.

102 National Advisory Eye Council, Vision research – A national plan: 1999–2003, NIH Publication No. 98-4120, National Institutes of Health, Bethesda, MD 1998.

103 J.R. Vingerling, I. Dielemans, J.C. Witteman, A. Hofman, D.E. Grobbee, P.T.V.M. de Jong, Macular degeneration and early menopause: A case-control study, "British Medical Journal" 1995, 310(6994), p. 1570–1571.

104 S.M. Myers, A twin study on age-related macular degeneration, "Transactions of American Ophthalmological Society" 1994, 92, p. 775–844.

times higher in current smokers and twice as high as in former smokers[105]. However, it takes a long time, as many as 20 years after giving up smoking, for smokers who smoke more than 20 cigarettes a day to reduce the risk of late form AMD to a level appropriate for non-smokers[106].

AMD is also predisposed to develop in people with a bright iris and of the white race, which is explained by the lower amount of protective melanin in the retina of the eyes with bright irises. There is an increased risk of AMD among people with hypertension and cardiovascular diseases, whose ocular symptoms may be only part of systemic cardiovascular disease. For example, the risk of AMD is almost 5 times higher in people with atherosclerotic lesions compared to healthy people[107].

It may take many years from an early diagnosis of AMD before its subjective symptoms start to be felt. None of the forms of AMD, wet or dry, cause pain. At an early stage corresponding to clinical symptoms, such as the appearance of pigmentation changes on the retina, there is a slight subjective reduction in visual acuity. Vision becomes fuzzy, blurred, as if behind a fog, which results in difficulty in seeing details or reduced comfort of reading. Next, there is a reduced sensitivity to contrast and the adaptability to light and darkness. Vision at night can be significantly limited. At an early stage, there are image distortions: metamorphopsia (distortion of visual impressions) – usually described as irregularity and curvature of straight lines, distortion of the size of seen objects e.g., micropsia – image reduction. There are changes in the perception of colors (dyschromatopsia) and abnormal light sensations. Flashing lights appear in the field of view. Both forms of AMD cause reading difficulties: colors fade, individual letters of the text become invisible, lines seem wavy. There is an increased demand for light.

In advanced stages, corresponding to the clinical picture of atrophy of retinal cells, its detachment, vascular tumors and the formation of a thyroid scar, there is a significant loss of visual acuity, weakened sensitivity to contrast, serious impairment of color recognition and adaptation to darkness, strong image distortion, the partial and total disappearance of the central part of the field of vision. A small darkening of the center of vision may occur, which will expand and become darker over time. When the detached retina is torn, the quality of vision suddenly deteriorates[108]. Total loss of vision occurs only in the case of exudative AMD.

AMD usually involves both eyeballs, but the loss of vision, like changes in the fundus, can be asymmetrical. If changes occur in only one eye, subjective symptoms may not be noticed early due to the compensatory properties of the visual

105 J.R. Vingerling, A. Hofman, D.E. Grobbee, P.T.V.M. de Jong, Age-related macular degeneration and smoking: The Rotterdam Study, "Archives of Ophthalmology" 1996, 114(10), p. 1193–1196.

106 C. Delcourt, J.-L. Diaz, A. Ponton-Sanchez, L. Papoz, Smoking and age-related macular degeneration. The POLA Study, "Archives of Ophthalmology" 1998, 116(12), p. 1031–1035.

107 J.R. Vingerling, Age-related macular degeneration is associated with atherosclerosis: The Rotterdam Study, "American Journal of Epidemiology" 1995, 142(4), p. 404–409.

108 A. Mierzejewski, Obraz kliniczny starczego zwyrodnienia plamki I. Postać sucha, "Okulistyka" 2002, 2, p. 15–24.

function. The preserved peripheral field of vision usually allows for independent movement and socialization. Although the macula is responsible for only 11% of the field of vision, the loss of its function generates serious consequences in everyday life related to the disturbance of the ability to perform usual activities that require seeing details. The appearance of a dark spot in the center of vision makes it difficult to read, watch TV, causes "losing" elements of the image, problems with face and color recognition or driving. There are also difficulties with shopping, managing money, preparing meals, using the phone, doing housework. In the case of this condition, patients see with the peripheral part of the retina, which means that to see the object in front of them, the eyeballs must be turned to the side. They move their heads from one side to the other to look at what is in front of them. It also helps to get closer to the object being looked at so that the central darkening does not completely cover it.

However, the central dark spot can be so extensive and the visual acuity so impaired that the person will function at the level of blindness on a daily basis. If, in addition, the loss of visual acuity occurs suddenly, in both eyes, the person's ability to adapt can be severely restricted. The difficulties experienced are most often a source of irritation and stress, especially when they overlap with older people's problems. Research shows that AMD is associated with strong emotional stress and severely reduced quality of life. It has been calculated that people with AMD are more likely to need help in everyday life than in any other type of sensory dysfunction[109]. As a consequence, this disease is a common reason for placing seniors in nursing homes.

Diabetic retinopathy develops in people with a long history of diabetes when vascular lesions adversely affect the small blood vessels of the eyes. Circulatory disorders and retinal ischemia occur, which stimulates the formation of new, brittle and deficient vessels, which can then burst and cause retinal hemorrhages, even resulting in retinal detachment. Age is one of the main factors determining the formation of retinopathy. In the case of a 20-year history of diabetes, almost all patients with type 1 diabetes and more than 60% of patients with type 2 diabetes have some degree of diabetic retinopathy[110]. The treatment of diabetes may delay or reduce the severity of diabetic retinopathy, although the risk of developing this disease in people with diabetes still exists, and this should be taken into account when taking preventive measures.

The physical symptoms of diabetic retinopathy depend on where the retina is damaged. The various extent of damage to the field of vision and visual acuity may occur, although it is not a rule. Sensitivity to contrast and the ability to distinguish between colors may also be impaired. Patients with diabetic retinopathy often complain about variable vision. Usually, the first symptoms of this condition are dark,

109 R.A. Williams, B.L. Brody, R.G. Thomas, R.M. Kaplan, S.I. Brown, The psychosocial impact of macular degeneration, "Archives of Ophthalmology" 1998, 116(4), p. 514–520.

110 P.J. Watkins, Retinopathy, "British Medical Journal" 2003, 326(7395), p. 924–927.

blurred or wavy spots in the center and peripheral fields of vision. It is becoming difficult to see at dusk and hypersensitivity to glare appears.

Diabetic retinopathy is associated with several complications, including recurrent stye (due to reduced resistance to infections), refractive disorders, proliferative retinopathy or secondary glaucoma with vascular cancer, as well as neuropathy of periorbital muscles, causing disorders of binocular vision. In the course of diabetes itself, as well as the accompanying conditions, visual nerve atrophy and loss of vision may occur[111]. Diabetic retinopathy is usually accompanied by reduced fingertip sensitivity, which makes learning the Braille language difficult.

The functional effects of visual impairment in old age are serious. Older people with sight disorders show much stronger functional impairment in basic (ADL) as well as instrumental (IADL) activities of daily life than older people without such impairment. It is worth noting that difficulties within IADL are much more common and include, for example: recognizing clothes, locating and recognizing food, handling money, using the telephone and taking medication. Weak eyesight is a source of difficulty in performing daily activities even when using corrective glasses. One study[112] showed that seniors with vision impairment compared to older people without it experienced more difficulties in walking (43% vs. 20%), going outdoors (29% vs. 10%), sitting and getting up from bed or chair (22% vs. 9%), taking medication (12% vs. 4%), preparing meals (19% vs. 7%). They also experienced more frequent falls during the 12 months preceding the examination (31% vs 19%) and hip fractures (7% vs 4%). They met friends less frequently (65% vs 72%) and did not go out to restaurants as often (56% vs 65%). So far, fully effective methods of treating typical old age vision disorders have not been developed and the related functional disability is a fact to be confronted in medical and rehabilitation practice.

It should be mentioned that visual disability is determined not only by the loss of visual acuity but also by damage, to a greater or lesser extent, to other visual functions. For example, impairment of everyday functioning is associated with reduced sensitivity to contrast, hypersensitivity to glare, impaired binocular vision, and limited field of vision. Characteristically, however, mobility difficulties are more pronounced among older people with a limited peripheral field of vision, or a limited field of vision combined with a loss of visual acuity than among those who have lost visual acuity alone[113].

The age-specific ocular conditions described above are chronic and as such are not curable. The treatment aims to prevent further damage to visual structures, not to repair them, which in subjective assessment results in stopping the progressive

111 T. Kęcik, I. Mencel-Bednarek, D. Kęcik, I. Świtka-Więcławska, Powikłania oczne w cukrzycy – uwagi praktyczne, "Terapia" 2000, 11(99), p. 30–31.

112 V.A. Campbell, J.E. Crews, et al, Surveillance for sensory impairment..., op. cit., p. 131–56.

113 T. Kuyk, J.L. Elliott, J. Biehl, P.S. Fuhr, Environmental variables and mobility performance in adults with low vision, "Journal of the American Optometric Association" 1996, 67(7), p. 403–409.

process of loss of sight, and not to restore the quality of lost functions. Due to significant impairing effects and unsatisfactory treatment efficiency, it is important to stress the role of prevention and diagnosis in the initial stage of the disease. Early detection and treatment, thanks to regular ophthalmological examinations, allows saving sight. Unfortunately, most of these diseases subjectively do not give perceptible symptoms until the stage of irreversible vision loss.

3.4.2. Hearing loss in old age

Senile deafness (presbycusis) usually starts in the sixth decade of life, although it can even reach the beginning of the third decade of life for men and the end of the third decade of life for women. It is characterized by functional impairment of hearing and processing of sounds due to age, which cannot be linked to a genetic burden of the patient or to other diseases and disabilities of the hearing organ caused by mechanical damage, exposure to excessive noise or toxic chemicals. Because deafness is usually gradual and two-sided, the patient may not be aware of progressive hearing limitations for a long time. It rarely leads to total hearing loss, being rather a hearing impairment, so it is suggested to use a more precise name – senile hearing impairment or senile hearing loss, and thus to move away from the term "deafness" – with an assumption that it applies to all degrees of hearing loss[114].

This condition increases the hearing threshold for higher tones and to a lesser extent for lower tones. Continuous hearing loss results in social hearing impairment at around 65 years of age, associated with speech recognition difficulties[115]. As early as in middle age, there is a deterioration in the ability to filter the desired auditory information from the stimuli in the background sound. In this case, a person has no difficulty in understanding the conversation in the privacy of his/her own home but interprets the incoming sound stimuli as informative chaos in a street noise environment. Another difficulty lies in the inability to detect gaps between sounds, which makes speech perceived as a stream of incomprehensible tones. Unfortunately, many people accept this condition as natural in old age, so they do not undertake treatment and allow for the aggravation of an avoidable disability.

Prevalence

Hearing loss is usually mild but common among older people. Its prevalence in the general population increases with age. On average, 30% of people over 65 years of age report hearing loss that is severe enough to experience normal hearing

114 J.J. Kuś, Starcza głuchota, "Terapia" 2000, 11(98), p. 37–39.
115 Ibidem.

difficulties[116]. As they grow older, they become more common and affect a half of 80-year-olds[117]. Polish epidemiological data[118] is even less optimistic in this respect – in 2014 as many as 77% of Poles over the age of 60 reported hearing problems hindering free communication, which in absolute figures amounted to 6.5 million Polish seniors facing functional limitations, which at this age is becoming more of a rule than an exception. Importantly, hearing loss is more common among older men than women.

Tinnitus refers to cases of permanent or temporary hearing of sounds despite their absence in the environment, due to degenerative changes in the middle or inner ear or the damaging effects of noise[119]. It often accompanies senile hearing loss and is usually mild although it can be very annoying. As people experiencing tinnitus are also more likely to have weaker hearing, the link between noise and hearing loss is stronger than it is with age.

Hearing loss in old age is often an unrecognized and untreated disorder. According to available data, only 22% of people with mild hearing loss and 56% with moderate and significant hearing loss reported a hearing impairment. Communication difficulties[120]are more frequently reported, which should be the basis for the primary care physician to refer the patient to further specialist examinations.

Causes

The most common causes of hearing loss at an advanced age include aging and exposure to noise. With age, the middle ear undergoes anatomical changes, whose contribution to hearing loss in old age is still unknown. Atrophic changes in the ear canal progress, the eardrum is muted, earwax production decreases and arthritis can occur in the small bone joints in the middle ear. However, increasingly common speech difficulties reported in old age are attributed to senile cerebral lesions. Dysfunction in the recognition of different speech sounds may be caused by slowing down and impaired information processing in the brain, memory problems and slowed down thought processes. Also, environmental factors such as exposure to increased noise may also be responsible for hearing difficulties in old age.

Hearing loss can also be caused by Meniere's disease, brain tumors, cerebral hemorrhages, hypothyroidism, diabetes, hyperlipidemia, central nervous system diseases or medications, especially antibiotics and diuretics. A common cause of hearing impairment is clogging of the ear canal with hardened earwax – removal

116 K.J. Cruickshanks, T.L. Wiley, T.S. Tweed, B.E. Klein, R. Klein, J.A. Mares-Perlman, D.M. Nondahl, Prevalence of hearing loss in older adults in Beaver Dam, Wisconsin: The Epidemiology of Hearing Loss Study, "American Journal of Epidemiology" 1998, 148(9), p. 879–886.

117 B. Yueh, N. Shapiro, C.H. MacLean, P. Shekelle, Screening and management of adult hearing loss in primary care: Scientific review, "JAMA" 2003, 289(15), p. 1976–1985.

118 TNS Polska, Słuch Polskich Seniorów 2014, raport z badań, Warszawa 2014.

119 N. Coni, W. Davison, S. Webster, Starzenie się, Wydawnictwo Naukowe PWN, Warszawa 1994.

120 D.S. Dalton, K.J. Cruickshanks, B.E.K. Klein, R. Klein, T.L. Wiley, D.M. Nondahl, The impact of hearing loss on quality of life in older adults, "The Gerontologist" 2003, 43(5), p. 661–668.

of the wax, which forms a plug in the canal, in a simple way eliminates the interference in sound perception.

The study of socio-psychological factors influencing hearing loss provides extremely interesting data. It has been shown that people aged 70-96 years exposed to more negative and external stereotypes (e.g. relating to physical appearance) about their older age, showed worse hearing in the next 3 years[121]. As it turned out, age stereotypes have an impact on sensory perception. In cultures where the stigma of old age is lower, seniors experience hearing loss less frequently (e.g.[122]). This relationship explains the phenomenon of self-stigmatization, which is a self-fulfilling prophecy – a person projects stereotypes onto themselves. If someone is convinced that in old age the loss of health, including hearing, is common and normal, he or she is more likely to experience this type of problem themselves. On a physiological level, this phenomenon is explained by the stress factor of triggering negative stereotypes, which in turn is associated with an increase in the level of cytokines that ultimately affecting hearing. A similar phenomenon of activating negative stereotypes, adhered to by older people, may affect memory efficiency[123].

Senile hearing loss is incurable – only hearing aids and cochlear implants can improve hearing in people with deeper hearing loss. Technical devices such as telephone or TV and radio amplifiers are also helpful. It is also recommended to avoid excessive noise and stress but also to engage in physical activity to prevent obesity and arteriosclerosis[124].

Impacts

Senile deafness progresses gradually, slowly and painlessly, so most of the affected seniors are unaware of the growing hearing problem. These difficulties are most often noticed by their relatives, who usually collide, especially in the initial phase, with the typical denial of obvious signs of hearing loss.

A decrease in auditory sensitivity is associated with a distorted reception of sound signals, which is a source of difficulty in locating and understanding the sounds heard. This can lead to a hypersensitivity to loud auditory stimuli and noise. Senile hearing impairment means loss of the ability to hear high pitched tones, which makes the voice of women and children with more pitchy voices less comprehensible. The initial impairment of hearing the high notes then extends to the mid and finally low tones[125]. Some sounds seem too loud, unpleasant and

121 B.R. Levy, M.D. Slade, T.M. Gill, Hearing decline predicted by elders' stereotypes, "The Journals of Gerontology: Series B" 2006, 61(2), p. 82–87.

122 M.V. Goycoolea, H.G. Goycoolea, C.R. Farfan, L.G. Rodriguez, G.C. Martinez, R. Vidai, Effect of life in industrialized societies on hearing in natives of Easter Island, "Laryngoscope" 1986, 96(12), p. 1391–1386.

123 T.M. Hess, C. Auman, S.J. Colcombc, T.A. Rahhal, The impact of stereotype threat on age differences in memory performance, "Journals of Gerontology: Psychological Sciences" 2003, 58(1), p. 3–11.

124 A.A. Zych (ed.), term – głuchota starcza, in: Encyklopedia starości, starzenia się i niepełnosprawności, A-G, Stowarzyszenie Thesaurus Silesiae – Skarb Śląski, Katowice 2017.

125 J.J. Kuś, Starcza głuchota, op. cit. p. 37–39.

annoying. The ability to understand speech is weakened, especially in noisy conditions, and the impression of mumbling appears e.g., when talking on the phone. People with this kind of hearing loss can hear human speech but cannot understand it. The difficulty of understanding a conversation that is conducted by several people at the same time increases so the pleasure of attending social gatherings is smaller due to "sound confusion". Sometimes the social environment, especially the family, recognizes that an older person's ability to hear depends on his or her will i.e., he or she can hear when he or she wants to hear since sometimes communication with them is possible and sometimes it is not. They assume that hearing difficulties are simulated to gain certain benefits, such as the attention of the environment, or to intentionally and maliciously upset and tease the speaker.

Hearing loss in old age has a strong impact on the patient's state of mind. Nearly 70% of seniors believe that it is the source of their increased nervousness[126], mainly due to the annoyance experienced in interpersonal communication. As a result of hearing impairment, especially in advanced states, mental disorders may occur, such as paranoia and depression developing based on communication difficulties, mainly uncertainty as to the proper understanding of speech. On the other hand, mentally healthy people may be suspected of mental disorders e.g., due to inadequate answers in a conversation. Moreover, seniors with impaired hearing often misinterpret sounds from the environment, like thunder during a thunderstorm as knocking on the door and take actions that do not correspond to an objective situation. As a consequence, a weakened ability to react properly in social contacts may raise doubts about their mental competence.

Due to increasing communication difficulties, distrust creeps into the relationships of a person with impaired hearing. The social environment is often more eager to talk about them rather than with them, not informing about forthcoming events. They may feel like others are saying something under their noses. Such mistrust is a healthy reaction to the situation rather than paranoia. On the other hand, not informing a person with a hearing loss about what is happening or will happen in their social or physical environment can truly make them confused.

The most severe hearing loss is experienced by older people in terms of social life and interpersonal communication. A Polish report[127] confirms that this is the case, with people over 60. They report: difficulties in hearing the radio or television at the usual volume level (30%, with 20% giving up using these media altogether for this reason), the need to ask for a repetition of what someone has said (30%), perceiving the speech of interlocutors as mumbling (24%), total resignation from telephone conversations (20%), participation in conversations in noisy environments (25%), meetings with family, friends, neighbors, as well as personally handling official matters, all due to hearing problems. Because of difficulties in

126 B.E. Weinstein, Age-related hearing loss: How to screen for it, and when to intervene, "Geriatrics" 1994, 49(8), p. 40–45.

127 TNS Polska, Słuch Polskich Seniorów 2014, raport z badań, Warszawa 2014.

understanding speech, there is a limitation of social activity and social isolation: from friends, family, because seniors are not able to follow and control verbal communication, they avoid frustration and embarrassment because they do not understand what is being said and embarrassed by their constant requests to repeat statements or their inadequate answers. They may feel humiliated when a fellow speaker shouts to be heard, tired of constant and strong focus. Since hearing loss is an "invisible disability", the environment is not able to immediately identify the reasons why people with hearing loss behave differently, and therefore they can be misunderstood, judged and consequently suffer social implications.

A hearing-impaired person withdraws from social life, which can lead to their isolation and depression. Human relationships are disrupted when incoming messages are misunderstood, the ability to interact freely and intimacy in interpersonal contacts are compromised, conversations lose their lightness and spontaneity. As a result, a person with a hearing dysfunction avoids stressful social situations and the social environment avoids a hearing-impaired senior. There is a rift between the need for socialization and instinctive withdrawal from stressful situations requiring interpersonal communication.

Hearing loss in old age is a predictor of functional impairment in both ADL and IADL activities. The sense of independence and security is compromised e.g., due to a limited ability to hear a car horn, alarm or doorbell. Characteristically, however, older people with impaired hearing report less hearing impairment than younger people with comparable hearing sensitivity[128]. Older people also complain less frequently about communication problems than younger adults[129]. They are likely to accept hearing loss more than younger people.

Hearing loss is associated with a serious decline in health and general well-being. The sense of identity and identification with the hearing population or the deaf population is weakened. Depressive symptoms occur and, as a result, quality of life decreases. There is a link, not obvious yet proven, between hearing loss in old age and falls[130]. Hearing loss is a risk factor for falls caused, among other things, by poor posture control and limited environmental information. There is a greater risk of placement in a nursing home. The combination of social isolation with limited mental stimulation, depression, communication disorders and anxiety may further impair the ability of an older person with impaired hearing to function independently and safely in the home environment.

Depending on the cause of the hearing loss, surgical treatment or hearing aids are used, although reluctantly, they can reduce the functional effects of hearing

128 S. Gordon-Salant, J. Lantz, P.J. Fitzgibbons, Age effects on measures of hearing disability, "Ear and Hearing" 1994, 15(3), p. 262–265.

129 D. Garstecki, S.F. Erler, Older adult performance on the Communication Profile for the Hearing Impaired, "Journal of Speech, Language, and Hearing Research" 1996, 39(1), p. 28–42.

130 A. Viljanen, J. Kaprio, I. Pyykkö, M. Sorci, S. Pajala, M. Kauppinen, M. Koskenvuo, T. Rantanen, Hearing as a predictor of falls and postural balance in older female twins, "Journals of Gerontology: Biological Sciences and Medical Sciences" 2009, 64(2), p. 312–317.

damage and improve quality of life. Early detection of hearing anomalies is essential for successful prognosis. For this reason, hearing tests should be included in routine medical examinations in the advanced age group.

3.4.3. Simultaneous damage to sight and hearing

Sensory deprivation can be defined as the partial or total loss of one of the 5 senses or the simultaneous loss of several senses[131]. It is one of the most common chronic conditions in old age, especially damage to sight and hearing, which provide basic information for everyday functioning. About 1/3 of all older people with vision impairment experience co-existing hearing loss, with the number reaching half in the 75+ age category. The majority of deaf-blind people are seniors[132]. Due to the strongly impairing effects, sensory deprivation needs to be discussed separately, especially when it is belittled in relation to older people, it is often unrecognized, and the resulting disability is treated as natural at that age.

Simultaneous damage to sight and hearing generates a complex disability and can significantly affect functional performance compared to a single sensory impairment. When sight and hearing impairment exceeds normal age-related changes due to pathological processes, the ability to take up daily tasks and fulfill social roles may be compromised. Dual sensory impairment is associated with a higher dysfunction of ADL activities compared to a single impairment. Most functional difficulties in the case of dual sensory impairment may have a stronger connection to the impairment of sight than to hearing because sight is the primary channel of information.

Complex sensory deprivation involves the weakening of the functioning of more than one sense and as such can make it difficult to compensate for it. For example, simultaneous visual and auditory dysfunction makes it difficult to compensate for limited visual capabilities with increased reliance on auditory information. A combined visual and hearing impairment may also be accompanied by reduced sensitivity of other senses, which further reduces the compensation possibilities. For example, reduced sensitivity to touch in old age can aggravate the effects of vision loss and prevent learning Braille. Many seniors are not aware, for example, of their limited olfactory sensitivity[133], which can threaten their safety in daily life if they are unable to detect odors that indicate risk, such as gas leaks.

Also, in the case of multisensory deprivation, damage to one sense can affect the weakening of the other senses. It may happen that loss of olfactory sensitivity, together with damage to sight and/or hearing, leads to a loss of appetite

131 K.J. Bennett, The Psychosocial Cost of Sensory Deprivation, "Geriatric Medicine" 2000, 3(8), p. 22–24.

132 M. Davis, The needs and problems of older people with a visual impairment: Historical, current and future perspectives, "The British Journal of Visual Impairment" 1996, 14(2), p. 53–57.

133 S. Nordin, A.U. Monsch, C. Murphy, Unawareness of smell loss in normal aging and Alzheimer's disease: Discrepancy between self-reported and diagnosed smell sensitivity, "Journal of Gerontology: Series B" 1995, 50(4), p. 187–192.

and an inadequate diet. There may be less interest in preparing meals and eating, but the preference for an intensely sweet taste may increase. A poor appetite caused by a dull sense of taste and smell, in turn, contributes to the consumption of insufficient calories and an inappropriate diet e.g., poor zinc, is associated with increased deprivation of the senses of sight, smell and taste and even weaker healing of wounds. Inadequate eating habits can ultimately lead to the development of diseases e.g., cardiovascular diseases.

More and more research is aiming to determine the relationship between sensory function and mental function concerning older age. So far, it has been confirmed, from both a longitudinal and cross-sectional perspective, that vision changes are associated with changes in most of the cognitive functions, while changes in hearing are associated with changes in memory[134]. The existence of a positive correlation between fluid intelligence and sensory functioning has also been demonstrated, and this correlation has increased with age, which is explained by the aging of the brain[135]. There are more hypotheses about the relationship between sensory and cognitive functioning. One of them claims that sensory deprivation, as a prolonged state of lack of sensory stimuli, induces cognitive deterioration due to neural atrophy. According to another hypothesis, in the case of sensory deprivation, a person needs more attention to perceive and interpret the incoming sensory information, which means that there is not enough of it to perform advanced mental operations. There is a hypothesis that has gained many supporters whereby damage to mental and sensory functioning has a common cause – the degeneration of central nervous structures. According to yet another explanation – people with sensory damage perform less well in cognitive tests precisely because of sensory limitations and ill-adjusted environment and the tests themselves (e.g. enlarged font, appropriate lighting)[136].

In older age, sensory deprivation is most often accompanied by additional chronic conditions such as diabetes, heart disease, arthritis or urinary incontinence, which makes the clinical picture of the patient more complicated and the disability much more serious and complex. It has been found that seniors with visual and hearing impairments are even more likely to have other conditions that may make daily activities more difficult. Sensory deprivation has its medical consequences, being correlated with a disturbed sense of balance, falls, hip fractures.

While isolated damage to sight or hearing increases the risk of a fall, sensory deprivation within both senses increases this risk further. Seniors with dual sensory deprivation of sight and hearing are also more likely to be assisted in their

134 S.A. Valentijn, M.P. van Boxtel, S.A. van Hooren, H. Bosma, H.J. Beckers, R.W. Ponds, J. Jolles, Change in sensory functioning predicts change in cognitive functioning: Results from a 6-year follow-up in the Maastricht Aging Study, "Journal of American Geriatric Society" 2005, 53(3), p. 374–380.

135 P. Baltes, U. Lindenberger, Emergence of a powerful connection between sensory and cognitive functions across the adult life span: A new window to the study of cognitive aging?, "Psychology and Aging"1997, 12(1), p. 12–21.

136 S.A. Valentijn, M.P. van Boxtel et al, Change in sensory functioning..., op. cit., p. 374–380.

daily activities, especially with IADL, than those without sensory deprivation or with hearing loss alone. They also have a higher mortality rate compared to seniors with single vision or hearing loss, the highest activity limitations, the lowest social activity and the desire to intensify it[137].

Complex sensory deprivation makes it difficult to maintain existing social activity. For example, combined damage to sight and hearing significantly affects the ability to drive a car, and the inability to drive one's car can be the cause of loss of independence and limitations in social interaction. Research showing how dangerous social isolation is, often accompanied by disability, demonstrates that loss of sight and hearing is strongly correlated with an increased risk of death, probably due to the psycho-social consequences of this impairment[138].

Sensory deprivation is associated with a serious decline in mental well-being and self-reliance. Seniors with sensory impairments are also exposed to depression, and in social relations – additionally to infantilization and wrongful accusations of dementia, which leads to the loss of their ability to lead an independent life and dependence on their carers.

Few losses can outweigh the simultaneous loss of sight and hearing. The combined impairment of sight and hearing in old age has an obvious impact on the quality of life, which argues in favor of including sight and hearing tests in standard geriatric tests. It is important to ensure the prevention, identification and rehabilitation of seniors experiencing these damages. Sight and hearing tests should be part of the standard medical assessment in old age, especially when sensory problems are often concealed by seniors due to social stereotypes and stigmatization.

3.5. Cardiovascular diseases

In subjective perception, the symptoms of cardiovascular disorders are difficult to detect. The changes are gradual and painless and do not affect the mood or physical efficiency, at least at the initial stage. Due to their hidden nature and serious health consequences, cardiovascular diseases are called "silent killers". Age is the most serious risk factor for their appearance, as well as diabetes and hypertension. Among the behavioral factors that prevent cardiovascular disease are those that contribute to overall good health, such as exercise, quitting smoking, moderate wine consumption, avoiding aspirin and even low waist circumference.

137 Crews J.E., V.A. Campbell, Vision impairment and hearing loss among community-dwelling Americans: Implications for health and functioning, "American Journal of Public Health" 2004, 94(5), p. 823–829.

138 R.G. LaForge, W.D. Spector, J. Sternberg, The relationship of vision and hearing impairment to one-year mortality and functional decline, "Journal of Aging and Health" 1992, 4(1), p. 126–148.

Heart diseases are associated with disability and high mortality – they are the cause of one in three deaths and severe infirmity in old age[139]. They pose a risk of stroke, disability, and impairment of physical and mental efficiency. Cardiovascular risk factors affect the impairment of mental functions. For example, high blood pressure in the middle years of life is strongly correlated with subsequent neurodegenerative changes[140]. On the other hand, low blood pressure in old age can also increase the risk of developing dementia, so it is optimal to maintain moderate blood pressure as a preventive measure[141].

Atherosclerosis is a lifestyle disease that can cause fatal ischemia of the heart and brain. It involves the accumulation of cholesterol and calcium deposits on the inner walls of arteries, which obstructs the blood flow, resulting in limited access of blood to the myocardium, especially in conditions of increased physical activity. The main cause of atherosclerosis is considered to be an improperly balanced diet, obesity, hypertension, as well as an irregular lifestyle full of stress and lack in physical activity.

Advancing the development of atherosclerosis and consequently narrowing of the lumen of the arteries, may lead to a decrease in blood flow and ischemia of organs, including the myocardium. Chronic right ventricular failure is manifested by cyanosis (on the face, lips, tongue and nails grayish-blue spots appear, accompanied by swelling of the ankles of the legs, and then whole legs and abdomen due to accumulation of water, later – edema and liver pain), left ventricular failure is mainly associated with shortness of breath. Chronic circulatory failure may have a bi-ventricular form[142].

The most common adverse consequences of cardiovascular diseases are cerebral stroke and myocardial infarction. The risk of stroke after the age of 55 doubles in every decade[143]. It is primarily caused by atherosclerotic changes in the arteries and consists of damage to brain tissue due to insufficient blood supply caused by a blockage of the arterial lumen with a clot or, more dangerously, its rupture and spilling of blood into the brain. Strokes sometimes precede brief ischemic attacks i.e., temporary interruptions in the supply of blood to the brain. The stroke itself is characterized by the brain becoming permanently cut off from the blood supply[144].

A severe stroke can be fatal immediately and a milder one may result in partial paralysis of the body and speech. Paralysis of one half of the body (hemiplegia) may be accompanied by a disorder or loss of speech (aphasia). The dysfunction

139 J.C. Brocklehurst, S.C. Allen, Zarys medycyny geriatrycznej. Podręcznik dla studentów, PZWL, Warszawa 1991.

140 J. Birns, L. Kalra, Cognitive function and hypertension, "Journal of Hum Hypertension" 2009, 23(2), p. 86–96.

141 J. Verghese, R.B. Lipton, C.B. Hall, G. Kuslansky, M.K. Katz, Low blood pressure and the risk of dementia in very old individuals, "Neurology" 2003, 61(12), p. 1667–1672.

142 K. Wiśniewska-Roszkowska, Gerontologia dla pracowników..., op. cit.

143 C.H. Rosenberg, G.M. Popelka, Post-stroke rehabilitation: A review of the guidelines for patient management, "Geriatrics" 2000, 55(9), p. 75–81.

144 M.E. Williams, The American Geriatrics..., op. cit.

of verbal communication manifests itself in unclear articulation, speaking only certain parts of sentences or words or being completely unable to speak. Sometimes the ability to understand speech is kept (motor aphasia) but sometimes it is not (sensory aphasia). Other symptoms include lack of interest in half of the body occupied by the disease, the environment, loss of own body image, difficulties in distinguishing between the right and left side and disturbed orientation in space, mental disorders (e.g. impaired awareness, impairment of intellect and personality, depression), incontinence and difficulty in swallowing[145]. The effects of a stroke depend on the location of cerebral damage and their type and intensity are individual. The abnormalities of cerebral circulation may also lead to vascular dementia associated with cognitive, verbal and emotional dysfunction.

Strokes can result in serious visual impairment e.g., loss of half of the field of vision (so-called half-vision), which on a functional level can lead to e.g., bumping into objects on the side of the damaged field of vision or reading problems, such as difficulties in finding the beginning of a paragraph if the left half of the field of vision is damaged. A patient with hemianopsia resulting from a stroke may have problems with performing even basic daily activities such as getting dressed and washing.

In the case of a stroke, pharmacological or surgical treatment is applied. Rehabilitation consists of minimizing the effects of brain damage and strengthening adaptive mechanisms. This may include many aspects, depending on the need and acquired physical, perceptual or linguistic deficits e.g., rehabilitation of sight, mobility and spatial orientation, physical ability to move and balance, control of defecation, speech therapy or psycho-therapeutic activities.

Coronary artery disease develops in the context of atherosclerotic coronary artery stenosis and an impaired ability to conduct the required amount of blood to the heart, especially during increased physical effort. Blocking of the coronary artery by a blood clot leads to necrosis of a certain area of the myocardium i.e., its infarction. Chest pain is a typical symptom of this, and in old age, it can be felt scarcely or not at all. Other symptoms include sudden weakness, paleness, cold sweat, weak heart rate[146]. The patient after a myocardial infarction shows poor tolerance for physical effort. Myocardial infarction leads to necrosis of the oxygen-depleted part of the heart – when it is extensive, it may lead to death.

The functional effects of cardiovascular diseases are serious. About 1/3 of people aged 51-61 and about 1/2 of people aged 70 and over have difficulty in performing one or more of their daily activities[147]. Cardiovascular diseases increase the likelihood of acquiring serious functional limitations, receiving help at home or even

145 Coni N., W. Davison, S. Webster, Starzenie się, Wydawnictwo Naukowe PWN, Warszawa 1994.

146 K. Wiśniewska-Roszkowska, Gerontologia dla pracowników..., op. cit.

147 National Academy On An Aging Society, Heart Disease, in: Challenges for the 21th century. Chronic and disabling conditions, National Academy On An Aging Society, Number 3, January 2000, http://www.civicengagement.org/agingsociety/pdf/heart.pdf (access 20.10.2018).

moving to a nursing home. In the case of these diseases, death may occur suddenly or be preceded by long years of reduced mobility. Heart disease predisposes depression, which is three times more common in the advanced age group than in the group of seniors with a healthy heart. Depression accompanying myocardial infarction implies further health problems – a serious risk factor for death one year after experiencing a heart attack[148].

Rehabilitation of patients after a stroke is effective in all age groups, but older patients show poorer results due to other comorbidities and disabilities, smaller physiological reserves, lack of support of a healthy spouse or limited financial resources.

3.6. Urinary incontinence

Involuntary urination, associated with a lack of physiological self-control, is both a common and stigmatizing health problem affecting people in their late years. Falls or incontinence are not diseases, so as such they are not included in traditional medical disease models and may be overlooked in medical care provided to advanced patients. Although there is no clear classification recognizing incontinence as a disease, considering it in the context of functional impairment, so common in older age, especially among women, can help to understand incontinence as a geriatric syndrome.

Prevalence

Urinary incontinence is a common disorder that is subjectively perceived as embarrassing and shameful, and in demographic terms remains underestimated. While reporting of the condition is very low, conventional screening is not routinely performed. As a result, urinary incontinence is underdiagnosed and undertreated, which leads to an exacerbation of the problem, the development of its functional consequences and a decrease in quality of life. Only one in four people experiencing this condition consult a physician[149], less than half of whom receive some form of treatment[150]. Many women keep the problem of incontinence a secret even from their relatives because they find it embarrassing.

Often women, who experience the condition much more often than men, do not consult their doctor because they are unaware of the possibility of effective treatment and see it as an unavoidable part of the aging process or are embarrassed to talk about it. Most often they do not believe that there is any possibility

148 M. Kaufmann, J. Fitzgibbons, E. Sussman, J. Reed, J. Einfalt, J. Rodgers, G. Fricchione, Relation between myocardial infarction, depression, hostility, and death, "American Heart Journal" 1999, 138(3), p. 549–554.

149 K.L. Burgio, K.A. Matthews, B.T. Engel, Prevalence, incidence and correlates of urinary incontinence in healthy, middle-aged women, "Journal of Urology" 1991, 146(5), p. 1255–1259.

150 C.E. DuBeau, The continuum of urinary incontinence in an aging population, "Geriatrics" 2001, 1(57 Suppl), p. 12–7.

of improvement or that the only solution is surgery, which they fear. Sometimes they hope that over time the symptoms will disappear. Keeping the shameful symptoms of incontinence secret is to prevent social stigmatization. Consequently, despite its high prevalence, incontinence is most often experienced in silence and loneliness.

The problem with the inability to control urination increases rapidly with age. It is important to note, however, that while incontinence is more prevalent among older women, it still affects a significant proportion of young women[151]. The study has shown that stress urinary incontinence is more common among younger women, while the urgency type is more common among older women[152]. The Polish data shows that women are most likely to suffer from stress urinary incontinence (30-75%), 7-30% of them experience urge, and 14-61 percent of them experience mixed urinary incontinence[153]. Due to this high prevalence, it is reasonable to treat the disease as a social condition – the World Health Organization has identified incontinence as one of the most important global health problems of the 21st century. The assessment of this condition should be part of routine geriatric medical evaluation. Although urinary incontinence is not a disease by definition, it should be prevented and treated.

Symptoms

The International Continence Society (ICS) states that incontinence is any case of uncontrolled urine leakage[154]. The type of urinary incontinence (stress, urge and mixed) determines the nature of the symptoms experienced and the treatment options. Stress urinary incontinence is the involuntary leakage of a small amount of urine without the feeling of pressure, accompanying exercise or sneezing, coughing i.e., in abdominal pressure states, caused by weakening or lowering of the uterine fundus. Urge incontinence is associated with an overactive bladder and means an urge to pass urine immediately. In this case, uncontrolled urination or complete emptying of the bladder often occurs immediately after a push on the bladder. An urgent push, caused by an unstable or excessively overactive bladder, is hard to control compulsion to pass urine immediately, and the need to use the toilet is almost constant. Some people also have a mixed type, combining stress and urge symptoms.

151 B. Gugała, J. Głaz, A. Drelich, Zapotrzebowanie na edukację w zakresie profilaktyki nietrzymania moczu u kobiet, "Przegląd Medyczny Uniwersytetu Rzeszowskiego i Instytutu Leków w Warszawie" 2011, 9(3), p. 340–347.

152 D. Thom, Variation in estimates of urinary incontinence prevalence in the community: Effects of differences in definition, population characteristics, and study type, „Journal of American Geriatrics Society" 1998, 46(4), p. 473–480.

153 T. Rachbergera, J.A. Jakowicki, Nietrzymanie moczu u kobiet. Diagnostyka i leczenie, "Folium", Lublin 2001.

154 D. Puc, A. Rasała, Metody leczenia nietrzymania moczu, "European Journal of Medical Technologies" 2015, 3(8), p. 29–38.

Causes

Incontinence can be a symptom of medical problems, including of psychological social or financial nature. The problem has a complex etiology with multiple factors predisposing to it. In addition to age, it is also obesity, smoking, pregnancy and childbirth. It has been shown, for example, that weight reduction relieves pain and brings subjective and objective improvement. A positive correlation has also been found between stress urinary incontinence and the number of births, especially among multiple births by vaginal tract[155]. Risk factors are specific to the type of urinary incontinence. Those associated with the urge type include white race, insulin-treated diabetes, symptoms of depression, oral estrogen intake, arthritis, and limited physical activity. Stress urinary incontinence is associated with chronic obstructive pulmonary disease, white race, oral estrogen intake, arthritis, and high body mass index[156]. Such a diverse etiology requires a variety of treatment and therapeutic strategies.

Although there is no doubt that age is associated with a higher risk of incontinence, it is not entirely clear what changes occurring over time are responsible for the increased prevalence of this condition. It is explained by structural changes in the bladder and significant changes in receptor response, hormonal stimulation, weakening of muscle tension, long-term effects of birth defects. Changes occurring with age reduce the contractility of the urinary bladder, its capacity and ability to withhold emptying. In addition, there is an increase in the frequency of taking medicines (e.g., drugs limiting mobility, causing confusion, reducing bladder capacity, diuretics), associated diseases, infections, constipation. These factors of physiological, pathological and pharmaceutical nature do not directly lead to difficulties in urination but are a predisposing factor. Sometimes the treatment of another condition indirectly contributes to the improvement of continence e.g., if it results in increased mobility that has a positive effect on the pelvic floor muscles, as is the case with successful treatment of vision disorders, arthritis, hip deformities, stroke, depression or hypotension. Intensive efforts are now being made to precisely identify the risk factors for incontinence, which are the result of a growing awareness of the enormous impact of this condition on the quality of life and functional status.

Effects

Urinary incontinence, due to its specific clinical symptoms in different age groups, is a serious medical, psychological, social and economic problem. It harms the psychological and physical health of women, their daily functioning as well as social

155 M. Wierzbicka, K. Urban, M. Murawski, K. Wronecki, Występowanie i czynniki ryzyka nietrzymania moczu u kobiet, "Fizjoterapia" 2009, 17, 1(1), p. 38–44.

156 R.A. Jackson, E. Vittinghoff, A.M. Kanaya, T.P. Miles, H.E. Resnick, S.B. Kritchevsky, E.M. Simonsick, J.S. Brown, Urinary incontinence in elderly women: Findings from the Health, Aging, and Body Composition Study, "Obstetrics and Gynecology" 2004, 104(2), p. 301–307.

life, resulting in restrictions on interpersonal relationships, work, sports and leisure activities or travel. Outdoor activities in particular are reduced, which leads to social isolation. As a result, women experiencing difficulties in holding urine are significantly impaired by the overall quality of life in many dimensions.

Incontinence has a significant impact on the mental well-being of those affected. It causes serious psychological stress associated with feelings of embarrassment, helplessness, anxiety, nervousness, reduced self-esteem and lower social value. Urge urinary incontinence, especially in anxiety, has a greater negative impact than stress type, as it is often associated with the unpredictability of urination in large quantities[157]. The effects of incontinence, however, will be specific to each individual experiencing the problem, his or her personality and physical and social and functional states.

It is worth noting that while experts focus more on functional aspects in analyzing the effects of incontinence, those experiencing the condition emphasize its emotional consequence. The mental condition of women with difficulties in controlling urination may indicate symptoms of depression. Deep depression is much more common in women with the problem with incontinence than in women not experiencing them[158]. The development of depression associated with incontinence is influenced by the severity of the condition and its impact on the quality of life and functional efficiency. It is indicated that social isolation and loneliness are important causes of depression in incontinence patients[159]. The risk of depression associated with the condition can therefore be reduced by providing social, emotional or informational support.

Incontinence may be an obstacle to physical activity and, as a result, lead to withdrawal from sport and exercise. Women experiencing it often give up activities such as swimming, dancing, long walks, gymnastics, fearing that wet clothes or unpleasant smells will be seen in public places. The inability to pass urine in a controlled way also usually leads to reduced mobility. It is then a problem to travel freely, especially in transport that has no toilets. There is also a fear of visiting new places with no certainty about the availability of toilets. Traveling also involves the need for constant precautions in case of uncontrolled urine leakage, planning how to dispose of used sanitary towels, or the need to change into dry things. A sedentary lifestyle and the resulting obesity can make it more difficult to hold urine.

Incontinence plays a significant role in the disablement process and functional dependence. It is often the stage when the family concludes that they can no

157 W.R. Lenderking, J. Nackley, R.B. Anderson, M.A. Testa, A review of the quality-of-life aspects of urinary urge incontinence, "Pharmacoeconomics" 1996, 9(1), p. 11–23.

158 J. Melvile, E. Walker, W. Katon, G. Lentz, J. Miller, D. Fenner, Prevalence of comorbid psychiatric illness and its impact on symptom perception, quality of life, and functional status in women with urinary incontinence, "American Journal of Obstetrics Gynaecology" 2002, 187(1), p. 80–87.

159 N.H. Fultz, A.R. Herzog, Self-reported social and emotional impact of urinary incontinence, "Journal of the American Geriatrics Society" 2000, 49(7), p. 892–899.

longer manage to care for a disabled person on their own. This is a major reason for placing older women in care homes, with the risk of incontinence increasing threefold[160]. This condition increases the likelihood of acquiring a disability and, as an indirect result of placement in a nursing home – frequent passing of urine, especially at night or rushing to the toilet, is associated with an increased risk of falls, which can result in fractures. These in turn lead to reduced daily functional capacity.

Incontinence entails social stigma and humiliation. It can cause concern about passing urine in public and the associated shame more than about incontinence itself. It consequently leads to reduced social activity, even social isolation and loneliness.

The condition is a source of problems in relationships with other people, including those closest. It can be a cause of sexual disorders or even of withdrawal from intimate life, mainly due to the need to wear protective hygiene pads and the possibility of uncontrolled leakage of urine during intercourse. Even every second to every fourth woman with urinary incontinence reports sexual dysfunction, including reduced desire, anorgasmia (inability to experience orgasm despite sexual excitement) and dyspareunia (pain during intercourse)[161]. In the opinion of 38% of women and 32% of men, the partner's incontinence negatively affected their relationship. 20% of women and 17% of men reported a reduction in intimate and physical closeness[162]. Women's urinary incontinence can even be seen as the cause of divorce, and previously a crisis in the relationship, which shows the scale of psycho-social costs of this condition.

The social implications of incontinence also apply to employment and professional life. It is due to the fear of wetting and the smell of urine. This condition may lead to a loss of concentration (19%), loss of the ability to perform physical tasks (29%), and disturbances in work rhythm due to the need to use the toilet (34%). Incontinence is common among working women – 37% of them report a case of urine leaking at work during the past month, and 8% every day[163].

Impaired continence, therefore, generates specific economic costs: direct (diagnosis, treatment, care and rehabilitation) and indirect (e.g., reduced productivity, costs of informal care, costs of coexisting diseases such as depression). These costs are incurred on an individual and social level. Urinary incontinence is therefore not only a burdensome, humiliating and impairing disorder but also a serious economic strain. Early diagnosis increases the chances of success in conservative

160 D.H. Thom, S.K. van den Eeden, J.S. Brown, Evaluation of parturition and other reproductive variables as risk factors for urinary incontinence in later life, "Obstetrics and Gynecology" 1997, 90(6), p. 983–989.

161 M.D. Barber, A.G. Visco, J. Wyman, J.A. Fantl, R.C. Bump, Sexual function in women with urinary incontinence and pelvic organ prolapse, "Obstetrics and Gynaecology", 2002, 99(2), p. 281–289.

162 Nilsson M., A. Lalos, O. Lalos, The impact of female urinary incontinence and urgency on quality of life and partner relationship, "Neurology and Urodynamics" 2009, 28(8), p. 976–981.

163 A.J. Sinclair, I.N. Ramsay, The psychosocial impact of urinary incontinence in women, "The Obstetrician and Gynaecologist" 2011, 13, p. 143–148.

treatment (exercise, pharmacotherapy, and behavioral therapy), while preventive measures can help save women from this discomfort[164].

* * *

It is worth emphasizing that pathological changes are not inscribed in the natural course of human life and old age can be free from chronic diseases and disabilities. Being subject to prevention and treatment, they should not be an attribute of old age. Although the struggle for eternal youth is a misguided strategy against the laws of nature, it is worth undertaking individual and systemic actions aimed at achieving healthy, efficient old age, in which not only the length but above all the quality of life can be satisfactory. This will be achieved not only through the focus of medicine on saving human life in borderline situations and treating acute conditions typical of young age, but also through intensifying efforts to combat chronic diseases, heavily burdened with a disability and reduced quality of life. Healthy old age is not an oxymoron, but an achievable goal for aging individuals and entire societies.

164 J. Adamczuk, J.J. Kraczkowski, J.M. Robak, K. Żurawska vel Dziurawiec, Czy nietrzymanie moczu to choroba cywilizacyjna?, "Problemy Higieny i Epidemiologii" 2011, 92(3), p. 382–386.

Chapter 4
Social functioning in old age

Throughout life, people play different roles that shape their sense of identity. Youth is a period of expansive social activity and the acquisition of roles that determine social status. In middle age, the roles are strengthened and their importance increases e.g., in family life (the role of a husband, wife, parent) or professional life (increasing importance of career). In old age, changes in the sphere of social life accumulate, but rather in terms of loss than profit. With retirement, people lose their previously valued social position, but also the source of economic income, which is one of the foundations of this status. More free time is available, which affects relations with the spouse, adult children, appearing grandchildren, neighbors and friends. The loss of roles and reduction of social activities in the outside world (both outside the home and the family) entails changes in social competences. Ending professional and family activities connected with bringing up children, once basic areas of daily routine, may be especially difficult to adapt to. Older people face the phenomena of an empty nest, widowhood, retirement and when there is an additional loss of health and physical efficiency – the range of roles to be played is extended by the role of a recipient requiring help and support.

The process of involution characteristic of old age includes biological, mental and social activity, but it is not uniform – usually, the reduction of social activity occurs later than the reduction of biological activity[1]. The issue of reducing social activity among seniors can be considered from the perspective of gerontological theories, as does Piotr Szukalski[2]. In his opinion, the proven reduction of age-related social interactions would confirm the basic assumption of the disengagement theory, according to which over time older people gradually withdraw from their

1 G. Chojnacka-Szawłowska, K. Szabłowski, Rehabilitacja, Medyczna Agencja Wydawniczo Informacyjna, Warszawa 1994.

2 P. Szukalski, Poczucie samotności i osamotnienia wśród sędziwych seniorów a ich sytuacja rodzinna, "Auxilium Sociale – Wsparcie Społeczne" 2005, 2 (34), p. 217–238.

previous relations and social roles to give way to younger generations and prepare for their death. The activity theory, while emphasizing the need to replace lost functions with other activities to maintain a similar level of activity, recognizes that at an advanced age it can be difficult to find a substitute for the lost job or spouse. According to the modernization theory, loneliness in old age would be caused by the increasingly rare cohabitation of seniors with younger generations (the disappearance of so-called multi-generational families) or divorces becoming increasingly popular today. From the perspective of the exchange theory, the decrease in seniors' participation in social life would be caused by the shrinking possibility of maintaining an equal exchange of services or goods and the discomfort resulting from the sense of overusing someone else's kindness.

Social life in old age is to a large extent determined by the way life has been lived so far. People who have a rich social network maintain it with age and even make new acquaintances, while people who are socially withdrawn, who like loneliness, persistently do not seek social relations in old age. The gerontological continuity theory describes how to maintain existing preferences and life strategies with age. The socioemotional selectivity theory, in turn, supported by numerous empirical evidence, concludes that with age, with the shrinking remaining time to live, bonds are revalued and only those that are considered to be the most beneficial and provide the most positive emotions are sustained. Mutuality and quality of relationships in old age become more important than the number of contacts and the size of the personal social network. As older people see their limited time frame, they invest their remaining resources in activities that provide maximum emotional gain. Making and maintaining new friendships is a challenge with a high risk of failure. Selectivity in choosing a company allows investing more and more limited energy in the most promising relationships, which bring some satisfaction despite their smaller size. Although the number of social relationships decreases with age, the number of close social ties and the amount of emotional support is relatively stable throughout life up to a very advanced age[3].

4.1. Social relations of old-age people

Studies prove that the reduction of social engagement characteristic of old age does not have to be a negative phenomenon, just as loneliness, which is a subjective feeling loosely connected with the real size of the social network, does not have to arouse automatic negative connotations. It is not synonymous with social isolation, because one can feel lonely in a crowd and not be alone leading a modest social life. The vision of a lonely older person should be considered as typical as it is stereotypical.

3 P. Due, B. Holstein, R. Lund, J. Modvig, K. Avlund, Social relations: Network, support and relational strain, "Social Science and Medicine" 1999, 48(5), p. 661–673.

Research[4] carried out among seniors in the Polish city of Poznań has shown that 1/4 of all the respondents complain about the feeling of loneliness, and more often they are unmarried, childless, living alone, experiencing serious limitations in physical efficiency. Characteristically, it is older women who most often feel lonely, mainly because of widowhood. According to other Polish studies[5], 14% of elderly people have always and often felt lonely, with urban residents complaining about it more often than rural residents, those with poor health and single more than married people. With age, however, the feeling of loneliness affects more and more people e.g., 56% of respondents aged 65+ never surrender to it, but for the 80+ age bracket this percentage is only 3%. It is significant that although the percentage of people longing for company increases with age (for the 60-64 age group – 8.1%, for the 75-79 age group – 20%), in the group of 80-year-olds and older it decreases and amounts to 16%, which shows that with age people get used to their loneliness. Loneliness in old age seems to be particularly striking when compared with other research results that show that with age the number of visits to seniors is decreasing, despite the growing demand for support and assistance due to decreasing functional efficiency in old age[6].

The source of loneliness in late adulthood is not age itself, because the loneliness curve does not peak in old age, but much earlier – between 40-49 years[7], but some changes which occur along with it. Throughout life, the feeling of loneliness may intensify with a gradual limitation of the closest social network (children leaving home, loss of work, widowhood, death of friends), functional isolation (e.g. damage to the senses hindering communication and maintaining or starting friendships, difficulties in moving around), environmental isolation (inadequacy of the physical environment to the needs of people with limited functional capacity), social isolation (e.g. ageism, social "role without a role" systemically assigned to seniors), mental isolation (e.g. depression, dementia, anxiety), structural isolation (e.g. lack of systemic solutions supporting the most aged citizens) or geographical isolation (moving e.g., to a nursing home).

Loneliness is a threat to health and life. It can lead to the weakening of physical and mental functions. The low level of activity within the social network increases for instance the risk of stroke and infarction[8] as well as death[9]. The lone-

4 A. Kotlarska-Michalska, Starość w aspekcie socjologicznym, "Roczniki Socjologii Rodziny" 2000, XII, Adam Mickiewicz University Press, Poznań 2000, p. 147–159.

5 T. Łobożewicz, Samopoczucie psychospołeczne ludzi starszych a ich aktywność ruchowa, "Gerontologia Polska" 1995, 3(1/2), p. 25–36.

6 Z. Woźniak, Najstarsi z poznańskich seniorów. Jesień życia w perspektywie gerontologicznej, WZiSS UMP, Poznań 1997.

7 W. Lauder, K. Mummery, S. Sharkey, Social capital, age and religiosity in people who are lonely, "Journal of Clinical Nursing" 2006, 15(3), p. 334–340.

8 L.C. Hawkley, C. Masi, J. Berry, J.T. Cacioppo, Loneliness is a unique predictor of age-related differences in systolic blood pressure, "Psychology and Aging" 2006, 21(1), p. 152–164.

9 L. Welin, B. Larsson, K. Svardsudd, B. Tibblin, G. Tibblin, Social network and activities in relation to mortality from cardiovascular diseases, cancer, and all causes: A 12 year follow up of the study of men born in 1913 and 1923, "Journal of Epidemiology and Community Health" 1992, 46(2), p. 127–132.

liness of older people may also often cause depression. The use of a satisfactory social relationship in old age is also important in a subjective perception – seniors themselves consider social and mental health to be more important than physical health[10].

The feeling of loneliness particularly affects the residents of nursing homes and therefore contemporary demographic changes within families may lead to the institutionalization of old age and thus to an intensification of the phenomenon of loneliness among seniors. Hence their social integration is important as it is a component of successful aging and enables the development of social support essential for the quality of life of seniors and aging societies.

4.1.1. Acquaintances and friendships

While the family is not something one can choose, friendships and acquaintances are neither accidental nor obligatory. The possibility of a mutual, voluntary and equal exchange of help and services between friends and acquaintances eliminates the feeling of embarrassment and abuse of experienced kindness. This is probably why seniors are more likely to turn to them than to their families for immediate help. Relationships with friends are also more intimate. During widowhood or retirement, for example, widows tend to prefer to turn to their friends for help rather than to their families as family members may be more likely to strengthen their identity as wives[11]. In addition, family relationships are strictly defined, their nature is specific and despite the close ties between the members, a parent is unlikely to choose his or her child as a confidant, even when that child is an adult. Some personal matters may be too intimate or too burdensome. However, seniors may feel more comfortable with their friends and acquaintances because the nature of these relationships is not so strictly defined.

Friendship is one of the ways to maintain mental health in old age. Friends respond to the different needs of an older person than do family members and have a significant part to play in shaping their life satisfaction and high self-esteem while, on the other hand, reducing the feeling of loneliness. Friendship provides emotional (consolation, soothing, improved self-esteem and well-being, sense of belonging, expression of negative feelings), instrumental (e.g. help with shopping, preparation of meals, resolving official matters, visiting a doctor), informative (e.g. advice and information on how to solve a problem, sharing one's own experience), and social support (being together, visiting one another, socializing)[12].

10 M.J. Giummarra, B. Haralambous, K., Moore, J. Nankervis, The concept of health in older age: Views of older people and health professionals, "Australian Health Review"2007, p. 31(4), 642–650.

11 N.R. Hooyman, H.A. Kiyak, Social gerontology. A multidisciplinary perspective, Allyn and Bacon, Boston 2002.

12 A. Gutowska, Przyjaźń a zdrowie psychiczne w okresie starości, in: Społeczne wymiary starzenia się, Biblioteka Gerontologii Społecznej, Bielsko-Biała 2011, p. 157–172.

Research[13] shows that friends and neighbors perform best in providing emotional support and performing predictable tasks, such as shopping, while the family proves best in providing personal care.

There is a different nature of interpersonal relationships between men and women. Female relationships with people are more personal, more intense – in terms of both positive and negative contacts. Women can feel deep positive and negative emotions within a relationship with the same person. They also feel a personal responsibility for the problems of the members of their social network, which prompts them to help solve them, while men do not feel this responsibility, although they wish their friends well.

Women tend to maintain long-term friendships better. In one study[14], more than half of the older women reported maintaining friendships with close friends from childhood and early adulthood, while the close friendships of the older men stemmed from a middle and older age. Married women usually have other friends and confidants in addition to husbands. They remain in contact with relatives and friends to a greater extent than men, which probably makes it easier for them to function during widowhood, while for men widowhood may involve greater social isolation. Thus, older women and men find themselves in different situations when faced with health problems. The ability of women to easily engage with others and form personal support groups makes them less emotionally dependent on their husbands. A woman can rely more on the help of her friends, while a man is more dependent on his wife, and in the absence of a wife, he is exposed to greater social isolation and deprivation of his own needs not adequately satisfied in the course of proper self-care. For many men, wives are the closest people, often the only ones with whom they have a deeper relationship, so in their case, widowhood can prove more destructive.

Due to the increasing number of divorces, growing migratory tendencies, ever more popular childlessness and the gradual disintegration of the multi-generational family model, friends and acquaintances may become increasingly important in the lives of seniors, as a pillar of their informal support system. In the case of people lacking the closest family, research results are very optimistic. It has been found that although people with spouses have a higher level of optimism and life satisfaction, the most important factors influencing the quality of life of older people is the level of social support received from neighbors and friends[15]. The role of a friend turns out to be more important in predicting life satisfaction than such

13 P.A. Dykstra, Loneliness among the never and formerly married: The importance of supportive friendships and a desire for independence, "Journals of Gerontology: Series B" 1995, 50(5), p. 321–329.

14 T.C. Antonucci, A.M. Aherman, H. Akiyama, Social networks, support, and integration, in: Encyclopedia of gerontology, vol. I, ed. J.E. Birren, Academic Press, New York 1996, p. 555–565.

15 A. Głębocka, M. Szarzyńska, Wsparcie społeczne a jakość życia ludzi starszych, "Gerontologia Polska" 2005, 13(4), p. 255–259.

factors as income, marital status or level of education[16]. Some studies even suggest that close friends play a more important role than acquaintances, neighbors, and relatives in promoting emotional well-being among older people[17].

4.1.2. Marriage

Marriages lasting as long as nowadays are a new phenomenon of our times. Never before have marriages experienced so extensively such life changes as an empty nest syndrome, the role of a grandmother/grandfather, retirement or illness and disability, requiring an effort to adapt. Following the withdrawal from their professional activity, spouses spend 24 hours a day with each other for the first time in their lives. It is a new stage in their marriage. Conflicts may arise due to too much time spent together and loss of personal space. Retirement can create tensions within the marriage and lead to a loss of quality of married life. Improvement comes about 2 years after the end of a professional career. The biggest conflicts occur when one spouse retires while the other continues to work, especially when the latter is the woman.

Satisfaction with married life is higher among seniors than among younger adults. It is high in the early years of adulthood, then gradually declines in the middle years and then increases after the children leave home. The strongest predictor of satisfaction in marriage in older age is the level of satisfaction in the early stages of marriage. Research reveals that married people have higher levels of life satisfaction and optimism compared to those without a spouse[18], are happier and healthier, have greater self-esteem and live longer than widowed people[19].

Most older people are satisfied with their marriage, with men showing more satisfaction than women and the extent to which it satisfies their emotional needs[20]. A study[21] conducted in Łódź among 40 couples aged 60-85, married for at least 20 years, showed that wives endow their husbands with feelings of little intensity (weak positive feelings predominate), directing love and affection mainly towards their children and grandchildren. Husbands have stronger feelings for their wives, both positive and negative, than they receive from them, with a prevalence of positive affects. They have positive feelings towards their children, but weaker in comparison to their wives. Even in the interview recorded during the study, husbands

16 D.C. Siebert, E.J. Mutra, D.C. Reitzes, Friendship and social support: The importance of role identity to aging adults, "Social Work" 1999, 44(6), p. 522–534.

17 P.A. Dykstra, Loneliness among..., op. cit., p. 321–329.

18 A. Głębocka, M. Szarzyńska, Wsparcie społeczne..., op. cit.

19 N. Goldman, S. Korenman, R. Weinstain, Marital status and health among the elderly, "Social Science and Medicine" 1995, 40(12), p. 1717–1730.

20 R. Bogard, B. Spilka, Self-disclosure and marital satisfaction in mid-life and late-life remarriages, "International Journal of Aging and Human Development" 1996, 42(3), p. 161–172.

21 W. Jaroszczyk-Steiner, Analiza więzi emocjonalnych w małżeństwach ludzi starszych, in: Refleksje nad starością – Aspekty społeczne, edukacyjne i etyczne, Międzywydziałowy Zakład Technicznych Środków Nauczania Uniwersytetu Łódzkiego, 12–13 czerwca, Łódź 1992, p. 167–172.

speak more positively about their wives and show more emotions, enthusiasm, and interest in the subject than the wives themselves, who in turn interrupt and correct the husband's statements more often[22].

Research confirms a fairly common view about how married couples become more and more similar to each other with age. For men with long marital experience, family matters become more important. They show a greater inclination to do household chores, while women become more assertive and self-sufficient. With time, married couples seem to be less attached to rigid gender roles. Husbands redirect their attention from career, prestige and financial security issues to family matters. At the same time, their wives are becoming increasingly independent and focus less and less on the husband and children, focusing their attention on their own affairs and needs.

Most older men are married, most older women are widowed. There are three times as many widows as there are widowers[23], which indicates a strong feminization of old age. Women are more likely to widow and live alone because men live shorter than they do, and women usually marry older men. At the age of 75, only 65% of men and 21% of women live with their spouse[24]. While widowed women can rely more on the support of their often numerous and strong social networks compared to widowed men, their economic situation is significantly deteriorating. Women's pensions are most often lower than men's, which is determined by lower income earned in the course of their professional work and shorter careers resulting from the need to provide unpaid care for their own children (later entry into the labor market or interruption of their professional career) or their aging parents (early retirement from the labor market). At the time of the spouse's death, they are left with one pension and fees that are slightly lower than before. For an older woman, the loss of the husband often means a serious depletion of economic resources and standard of living, especially when health deteriorates and the need for treatment and care increases, along with a greater risk of placement in a nursing home. The poverty rate is twice as high for women as it is for men[25]. In turn, most men, statistically speaking, can count on a higher standard of living and the company and care of their wives for the rest of their lives.

The death of a spouse leads to a decrease in the quality of life and an increase in mortality, especially during the period of mourning. A widowed person needs to be able to manage on their own, which can be difficult, especially in the spheres of life previously managed by the spouse e.g., for some men of the current generation of seniors who are culturally ill-fitted for domestic work. Depressive symptoms may even appear in people who have not considered their marriage particularly

22 F.C. Dickson, K.L. Walker, The expression of emotion in later-life married men, "Qualitative Research Reports Communication" 2001, 2 p. 66–71.

23 L. Nowak, Sytuacja demograficzna ludzi starszych w Polsce w perspektywie do 2010 roku, "Gerontologia Polska" 1995, 3(3/4), p. 4–15.

24 D. Haber, Health Promotion and Aging, Springer Publishing, New York 2007.

25 Ibidem.

successful. There are problems of an emotional nature (lack of a confidant), of material nature (the need to manage on their own, which eliminates the benefits of scale), of a practical nature (the need to perform all household duties, including those performed by the spouse in the previous division of tasks) and of a time-related nature (lack of a permanent companion in life). There is a risk of deterioration in health, or even death, especially during the first several months after widowing[26].

Some of the widowed seniors remarry. Women, the majority of whom are in the oldest age categories, have less chance of remarrying because they live longer than men and their peers prefer to marry younger women. The likelihood of remarriage is 7 times higher for widowed men than women[27]. Divorced seniors are more likely to remarry than widowed seniors. The motivation to remarry – often with an interest in having company and sufficient economic resources – seems much less romantic than in younger years of life.

4.1.3. Parenthood

As a result of extending human life, families, as never before in human history, are now spanning 4-5 generations. In the 1900s, 50-year-old Americans had a 4% chance of having both living parents, and 100 years later, this chance rose to 25%[28]. Within a single family, there may coexist parents in their senior years, their children in their older age (two generations of younger and older seniors), grandchildren and great-grandchildren. In such a large family there are many possible configurations of intergenerational interactions, including those based on parent-child relationships.

For an older person, the family is the most important social group. Research conducted among married couples in retirement shows that their life satisfaction is determined by two basic factors: successful married life and contentment with children and grandchildren[29]. Older people show a desire to strengthen emotional bonds and care for their adult children. Yet in most intergenerational relationships, solidarity intertwines with conflict. These can result from unresolved issues from the past as well as from role changes which are sometimes difficult to accept. Over time, the parental relationship with one's offspring moves from parental domination as the "donor" to the domination of the offspring as the "donor"[30]. Instrumental dependence passes from children to parents, and the inequality of exchange is

26 P. Szukalski, Przestrzenne zróżnicowanie wdowieństwa w starszym wieku w Polsce, in: Uwarunkowania demograficzne rozwoju społeczno-gospodarczego na przykładzie województwa śląskiego i opolskiego, Prace Naukowe, Akademia Ekonomiczna w Katowicach 2007, s. 111–129.

27 F.B. Hobbs, B.C. Damon, 65+ in the United States, U.S. Bureau of the Census, Current Population Reports, Washington DC 1996.

28 Ibidem.

29 A. Kotlarska-Michalska, Starość w aspekcie socjologicznym, in: Profile starości, Wydawnictwo Miejskie, Urząd Miasta Poznania. Wydział Zdrowia i Spraw Społecznych, Poznań 2000, p. 87–96.

30 A. Maciarz, Macierzyństwo w okresie starości, in: Wybrane problemy osób starszych, ed. A. Nowicka, Oficyna Wydawnicza Impuls, Kraków 2006, p. 145–150.

reversed. The quality of the existing bond determines whether, in old age, relationships with one's own children will be a source of support or conflict, as the continuation theory proves. Children who are in conflict with their parents will be less likely to help them in their old age. Moreover, parental abuse is often a continuation of an ongoing conflict, sometimes reaching back to the times of child abuse.

Older people seek both emotional support and care in their children. A parent is much more likely to receive support from his or her adult child than from his or her spouse. Daughters are most often the primary caregivers of older parents and are more likely to maintain contact with their parents. They are the most reliable and effective sources of support for parents in their old age. It is more common in Western culture for older people to live with their daughters than with their sons, with the daughters also providing most of the informal care for a disabled parent. In Japan, China or India, on the other hand, older parents live with their sons, with the daughter-in-law bearing the main burden of care for their older in-laws.

Studies[31] show that daughters who support their aging parents are primarily guided by affective motivations based on the closeness of relationship and altruism, while a sense of filial obligation, inheritance issues and frequency of contact are more motivating for sons. Sons pay less attention to the quality of the relationship they have with their parents when providing support. Taking into account the gender of the parents has shown that affective motivation is more directed towards mothers, while inheritance issues are more likely to provide care to aging fathers.

An interesting study[32] conducted in Denmark reveals that widowed parents are more likely to support adult children than divorced senior parents. Adult children of divorced parents have a weaker relationship with them, especially with a parent who does not care for them during their childhood. The emotional bond is derived from previous emotional attachment and needs to be continued during adulthood. As it turns out, it is particularly divorced fathers who are at risk of having a weaker relationship with their children, especially if they decide to divorce when the children have not yet reached adulthood[33].

Sons and daughters adopt a slightly different range of activities as caregivers – daughters usually engage in self-care activities (ADL), such as clothing, eating, maintaining personal hygiene, while sons provide support in instrumental activities (IADL), such as shopping, financial management and transportation. Wealthy children are more likely to organize paid help for their older parents. Parents receive more care from children living with them as well as from unmarried ones. Characteristically, however, in the opinion of older parents, they receive less

31 M. Silverstein, C. Xuan, K. Heller, Silverstein M., T.M. Parrott, V.L. Bengtson, Factors that predispose middle-aged sons and daughters to provide social support to older parents, "Journal of Marriage and Family" 1995, 57(2), p. 465–475.

32 J. de Jong Gierveld, P.A. Dykstra, The long-term rewards of parenting: Older adults' marital history and the likelihood of receiving support from adult children, "Ageing International" 2002, 27(3), p. 49–69.

33 K.E. Kiernan, The impact of family disruption in childhood on transitions made in young adult life, "Population Studies" 1992, 46(2), p. 213–234.

support from their children than the children themselves declare[34]. It should be emphasized that children provide care for their aging parents, even though they often enter into old age themselves and sometimes struggle with their own health problems.

In developed countries, the emphasis is placed on the importance of independence in life, allowing seniors to live autonomously for as long as possible and cohabitation with children occurs only in exceptional situations most often due to their health constraints. As research[35] shows, adult children are more willing to take an older parent under their own roof because of his or her health limitations than older people themselves, who want to remain independent as long as possible. Polish seniors also declare their willingness to live independently (57% of respondents), with only one in five wanting to live together with their family at the old age[36].

4.1.4. Grandparents

More and more older people live to see their grandchildren and assume the role of a grandparent for longer – this period can amount to as much as half of their lives or a quarter in the case of most people. According to American research[37], 94% of older parents become grandparents and 50% become great grandparents. Having great-grandparents is historically unique and results from the current record-breaking extension of human life. Entering the role of grandparents is different from adopting marital or parental roles because it is independent of one's own decisions. Grandchildren are born as the family expands, for which the grandparents were the beginning. With retirement and restructuring of the existing lifestyle, there is more space for developing family relationships, including new ones, related to the emerging function of a grandmother and grandfather.

The grandparent-grandchild relationships, uniquely long nowadays, are subject to change as the children grow up and the grandparents grow older. For the youngest, grandparents constitute great authority, but over time their position in relation to children weakens, which is particularly noticeable during adolescence. The moment when the grandchildren start to outperform their grandparents with knowledge and education or position themselves higher in the social hierarchy may be critical, but they are still too immature to understand and appreciate them.

34 K.K. Ikkink, T.V. van Tilburg, K. Knipscheer, Perceived instrumental support exchanges in relationships between elderly parents and their adult children: Normative and structural explanations, "Journal of Marriage and the Family" 1999, 61(4), p. 831–844.

35 S.M. Albert, M.G. Cattel, Old age in global perspective: Cross-cultural and cross- -national views, G.K. Hall & Co, New York 1994.

36 Centrum Badania Opinii Społecznej, Polacy wobec ludzi starych i własnej starości komunikat z badań, CBOS, Warszawa 2000. http://cbos.pl/SPISKOM.POL/2000/K_172_00.PDF (access 20.10.2018).

37 P. Uhlenberg, The burden of aging: A theoretical framework for understanding the shifting balance of caregiving and care receiving vs. cohort ages, "The Gerontologist" 1996, 36(6), p. 761–767.

Empirical research[38] has shown that the closer the relationship between parents and their parents (grandparents of their own children), the closer the bond between the grandchildren and grandparents. Close and correct relationships between grandparents and parents become the basis for the development of positive relationships between grandparents and grandchildren, while weak relationships between parents and grandparents result in less involvement of grandparents in the lives of their grandchildren and are even a trigger for the development of negative relationships. Initially, it is the parents who bear the responsibility for the grandparent-grandchild relationship, but as they grow up, it is the grandchildren who take over the responsibility for shaping the nature of their relationship with their grandparents, with the diminishing participation of their parents.

The relationship between grandparents and grandchildren is mutually beneficial not only because of the support provided to each other but also because of its power to influence the overall well-being of both generations. According to Leon Dyczewski[39] the relationship with grandchildren means more to grandparents than it does to the grandchildren themselves, for whom grandparents symbolize the past, and children to grandparents – the future, the extension of their own existence and life achievements. Sometimes the relationship with the grandchildren gives their grandparents more satisfaction than with their own, once small children. Even if relations with their own offspring were based on emotional distance, the attitude towards their own grandchildren may be quite different – the lack of parental responsibility and the perspective of the end of life allow to build contacts full of affection, patience and gentleness. The participation of grandparents in family life helps to secure and deepen relations based on love, to teach an understanding of the needs of different people, many life skills, gives a sense of constant presence, support, creates a link between the past and the future[40]. Close contact with grandchildren allows to satisfy seniors' need for unconditional love, acceptance, sense of life, usefulness, activity, fulfillment. Having grandchildren gives emotional satisfaction from mutual contacts, the opportunity to observe their development, share common activities, unconditional loving, a sense of immortality, as well as improving overall well-being. Grandmothers often feel to be a source of love for their grandchildren, while grandfathers – a source of wisdom and life experience, however, unlike grandmothers, they do not perceive their role as fundamental for their sense of identity.

Although grandparents do not play a leading role in the lives of their adult children and grandchildren, they are needed because they integrate the family and are its symbolic leaven. With longer life, better health and functionality, higher

38 M.A. Monserud, Intergenerational relationships and affectual solidarity between grandparents and young adults, "Journal of Marriage and Family" 2008, 70(1), p. 182–195.

39 L. Dyczewski, Więź pokoleń w rodzinie, Wydawnictwo Ośrodka Dokumentacji i Studiów Społecznych, Warszawa 1976.

40 S. Steuden, Psychologia starzenia się i starości, Wydawnictwo Naukowe PWN, Warszawa 2011.

education and financial security, they can play a more active role in the lives of their grandchildren compared to previous generations of seniors. They act as caregivers, teachers, advisors, chroniclers, hosts and sponsors[41]. Their contribution to the lives of children and grandchildren is substantial and concrete. Almost half of the Polish grandparents and grandmothers[42] take care of their grandchildren and great-grandchildren. One should not forget, however, that although grandparents like to take care of their grandchildren, they often prefer to give them voluntary and short-term help.

According to research[43] conducted in Poland among men living in the city and in the countryside, all participants maintained intensive contacts with children, grandchildren and great-grandchildren, seeing them almost daily. Older men from the city were more often involved in bringing up their grandchildren, which gave them a lot of joy and was not considered an obligation. Men living in the countryside, on the other hand, were more willing to take care of their older grandchildren and engage them to work on the farm and around the house. Other research[44] conducted among a group of students of the 5th and 6th grades of primary, middle and high schools in Poland (11-19 years of age) revealed that in the case of 8% of the respondents, grandparents took care of them the most in the pre-school period (before the parents), in the case of 29% – they were the second caregivers (after the mother and replacing the father), while 39% pointed to them as the third caregivers (after the parents). In total, 35% of grandmothers and grandfathers were actively involved in their grandchildren's schooling. Positive ties with grandparents were declared by the vast majority of respondents (72%). The bond with the grandmother was assessed as stronger than with the grandfather, with the grandmother on the side of the mother stronger than with the grandmother on the side of the father.

Grandchildren raised by their grandparents have a strong relationship with them also in adulthood and are more willing to help them as a form of gratitude when they enter the phase of illness and decline in functional efficiency. Their relationship is transformed – the position of domination of grandparents is weakened in favor of the domination of children. The grandchildren integrate into the grandparents' informal support system, helping them with their daily activities as well as providing emotional support.

Today's demographic transformation is leading to structural changes within families. If 25-30% of women give birth to only one child in developed countries,

41 B. Zięba-Kołodziej, Rola dziadków w życiu rodziny, Wydawnictwo Uniwersytetu Kazimierza Wielkiego, Bydgoszcz 2012.

42 P. Czekanowski, Rodzina w życiu osób starszych..., op. cit.

43 E. Kościńska, Aktywność rodzinna starszych mężczyzn, in: Starość w kontekście społecznym i zdrowotnym, "Biblioteka Gerontologii Społecznej" 2016, 1(11), p. 63–75.

44 J. Śledzianowski, Dziadkowie z pomocą wnukom, in: Człowiek w obliczu trudnej sytuacji życiowej, ed. B. Kałdon, I. Kurlak, Wydawnictwo Diecezjalne i Drukarnia w Sandomierzu, Sandomierz-Warszawa 2011, p. 173–196.

including Poland[45], a new family model will emerge over time, with more adults than children, more grandparents than grandchildren. In the next generation it may turn out that the children do not have, apart from their parents and grandparents, any relatives: brothers, sisters, cousins, aunts and uncles, thus influencing the process of their socialization, which until now was based on the family. This narrow, linear family model will generate new intergenerational challenges.

4.1.5. Siblings

Siblings are bonded by the longest relationship in life, which can last from the beginning to the very end, even surpassing in time the relationships with parents and children, spouses or friends. It is a specific bond that does not appear by choice but is given. Nor does it end up as a mere acquaintance. Along the entire social network, it is characterized by exceptional constancy: during life, many relationships, perhaps even closer ones, are weakened or broken (favored by, for example, changing schools, places of residence or marital status), while the relationship with siblings continues. They are connected by memory and a sense of common family identity increasingly appreciated over time.

As the longest living members of the initial family, brothers and sisters share family memories – they may be the last people to remember the tastes and smells of childhood, family traditions and a whole series of minor events, objects and people – a world that is already gone and stored in the memory of its immediate witnesses. In old age, communication between siblings largely focuses on family matters and memories of old times. The less the siblings remain in the family, the more time they devote to remembering. Reminiscence gives siblings a sense of exceptional closeness at the end of their lives. For some seniors, the awareness that their siblings are alive may be more important than direct contact with them. In a period of old age, when the need for recollection increases and a person faces the challenge of achieving wisdom in a period of crisis between despair and integrity (E. Erikson's personality theory) or gerotranscendence (Tornstam's gerotranscendence theory), relationships with siblings may gain in importance as a link between the past and the present.

Usually, in adolescence, relationships between siblings tend to loosen, in middle age, during the period of empty nests, they tighten and stabilize again, to intensify a little in old age[46]. The adult sibling relationship is conditioned by the quality of the relationship dating back to childhood – a strong bond will not appear in adulthood out of an emotional vacuum if there was no closeness between siblings before. Brothers and sisters accompany each other in positive and negative events

45 P. Szukalski, Demograficzne przemiany rodziny – wyzwania dla współczesnych społeczeństw, "Ruch Prawniczy, Ekonomiczny i Socjologiczny" 2004, ROK LXVI, zeszyt 4, p. 169–186.

46 L. White, Sibling relationships over the life course: A panel analysis, "Journal of Marriage and Family" 2001, 63(2), p. 555–568.

in life, with crises usually leading them to renew their contacts (illness, divorce, death, retirement) and tighten their bonds. Rivalry and conflict are put aside. Siblings relate strongly especially during mourning – their children are not easily accessible then, because they confront the loss of a parent themselves. It has been shown that those who had more contact with their sisters during widowhood experienced fewer symptoms of depression[47]. Siblings can also be brought closer when helping incapacitated parents. This is a time of closer contact, communication, referring to past family stories, sharing happy and difficult experiences and reaching out to the beginnings of mutual relations. With age, siblings increasingly perceive one another as a source of mutual help, which can be influenced by leaving home by their children and the death of their parents. During their lifetime, parents form a bridge between siblings, and after their death, contacts between their offspring become completely voluntary and autonomous.

Siblings are bonded by a sense of closeness, even if their contacts are not frequent due to circumstances or geographical distance. The greatest closeness connects sisters, followed by sisters and brothers[48]. Brothers have the weakest ties. Relationships between sisters are intense, but also changeable, but brothers are more inclined to compete with each other and compare their achievements. Sisters are most willing to give emotional support to siblings. In general, siblings provide more psychological assistance (companionship, decision-making advice, raising self-esteem) than instrumental assistance (in caring for children, in everyday chores)[49]. The absence of a sister or brother can therefore be a serious breach of the personal support system.

To tell someone that they are like a brother or sister is an expression of the highest appreciation. Only the loss of a sibling makes one fully aware of the important space they have filled in one's social network. As Michele Van Volkom states[50], the death of a sister or brother has a great impact on other siblings and causes a rupture in their own sense of mortality. The death of a sibling is the loss of someone close, from the same parents and the same nest, sharing the earliest memories and experiences of childhood. The death of older siblings causes changes in the constellation of the family – the youngest child in the family in old age can become a nestor of the family.

47 V.G. Cicirelli, Feelings of attachment to siblings and well-being in later life, "Psychology and Aging" 1989, 4(2), p. 211–216.

48 L.K. White, A. Riedmann, When the Brady Bunch grows up: Step/half – and fullsibling relationships in adulthood, "Journal of Marriage and the Family" 1992, 54(1), p. 197–208.

49 V.G. Cicirelli, Sibling relationships in adulthood, "Marriage and Family Review" 1991, 16(3–4), p. 291–310.

50 M. Van Volkom, Sibling relationships in middle and older adulthood: A review of the literature, "Marriage and Family Review" 2006, 40(2/3), p. 151–170.

4.2. Work

Apart from higher financial resources compared to retirement benefits, work gives seniors a higher social status, access to social interaction, a sense of achievement and a structured lifestyle. Unfortunately, although older people are less likely to lose their jobs, it is harder for them than young people to find new employment if this happens. Stereotypes concerning lower professional abilities in old age limit the possibilities of seniors on the labor market – they experience demotivation and often decide not even to seek it. They are unable to promote themselves at the recruitment stage, write a good CV and successfully perform at an interview. They often spend their whole professional lives in one place of employment (mobility is characteristic for the younger generations in this respect), which significantly limits their professional flexibility and thus their chance to benefit from their work financially or in terms of health but also psychologically and socially.

Stereotypes about old age, aging and older people are present in every environment, including the workplace. There is a negative and positive component of these stereotypes. Older workers are perceived as less intelligent and competent than younger workers. They are particularly disadvantaged in the field of learning and development, as they are perceived as reluctant to absorb new technologies, more difficult to train, slower to process information, less able, flexible and creative. Employers in Poland cite a rich catalog of disadvantages of employees at an advanced age[51], drawing attention to their: lower education, lack of knowledge of foreign languages, reluctance to learn, low openness to novelties and low flexibility, weaker health, lower physical performance, difficulties with communication and lower soft competences necessary in contacts with clients, negative habits from the communist era of the Polish People's Republic (e.g. using company phones for private purposes, handling private matters during working hours), misunderstanding of the rules of capitalist markets, less creativity, weaker skills in modern technologies, reluctance to modern forms of team management. Employers often attribute to seniors the characteristics of *homo sovieticus*: the attitude of entitlement and lack of autonomy.

The image of a senior employee, in addition to the negative component, also includes positive elements. Older workers are perceived as friendly, caring and warm, more experienced and less mistaken, committed to quality, punctuality, able to stay in control in emergencies and show respect towards superiors. They are praised for their reliability, skills and ability to cooperate. Older employees can take initiative, are loyal to employers, have a network of professional acquaintances, high level of professional skills, strong professional ethics, and change employers less often.

51 Ł. Krzyżanowska, Homo sovieticus czy doświadczony pracownik? – opinie pracodawców o pracownikach w wieku 50+1, "Acta Universitatis Lodziensis. Folia Oeconomica" 2013, 291, p. 81–93.

At the same time, they are more expensive. Polish[52] and foreign[53] employers agree that older workers are loyal, dedicated and attached to work more than younger workers. Polish employers recognize their professional experience resulting from long-term practice, availability resulting from fewer family commitments, respect for work (possibly due to fear of losing it), lower push for career and promotion, inner peace and self-control, reliability, accuracy, responsibility[54].

Unfortunately, according to a study conducted by the American Association of Retired Persons (AARP)[55], positive traits attributed to older workers are not the ones most appreciated in the labor market. They are rated highest for experience, judgmental skills, commitment to quality, infrequent job changes, low absence and high punctuality. On the other hand, the characteristics for which seniors are rated the lowest are the ones sought after the most in the workplace, i.e: flexibility, acceptance of state-of-the-art technologies, ability to learn new things, physical ability to perform hard work.

Research achievements to date allow to at least partially address the negative image of older workers. For example, a British-American study[56] showed that the productivity curve peaks at 40-60 years of age, then declines, indicating that workers in the sixth decade of life are more productive than those in the third decade. Younger workers are more interested in promotion prospects, professional and personal development, while older workers pay attention to remuneration, working conditions, possibilities for leaves and absence[57].

The most important problem in hiring older workers considered by employers is their reluctance to learn and improve their skills, resulting from a lack of willingness to make this effort, and the conviction of their own sufficient competence or smaller capacity to acquire new knowledge, as well as a fear of change[58]. These opinions are often false and result from a failure to recognize the diversity of the old-age population. The difference in productivity between older and younger workers is lower than the differences within other age brackets. Seniors respond as well to training as do younger workers[59] and their reluctance to learn may be due to the simple conviction that since they do not have great prospects

52 P. Zientara, Employment of older workers in Polish SMEs: Employer attitudes and perceptions, employee motivations and expectations, "Human Resource Development International" 2009, 12(2), p. 135–153.

53 H. Magd, Management attitudes and perceptions of older workers, "International Journal of Contemporary Hospitality Management" 2003, 15(7), p. 393–401.

54 Ł. Krzyżanowska, Homo sovieticus..., op. cit. p. 81–93.

55 American Association of Retired Persons, Workers over so: Old myths, new realities, AARP, Washington DC 1995.

56 J.N. Cleveland, L.M. Shore, Work and employment, in: Encyclopedia of gerontology, Vol 2, ed. J.E. Birren, Academic Press, New York 1996, p. 627–639.

57 R. Schulz, T. Salthouse, Adult development and aging. Myths and emerging realities, Prientice Hall, Upper Saddle River 1999.

58 Ł. Krzyżanowska, Homo sovieticus..., op. cit. p. 81–93.

59 D. Graniewska, Warunki życia emerytów i rencistów w Polsce i w krajach Zachodnich. Uwarunkowania, problemy, tendencje, IPiSS, Warszawa 1999.

for promotion or a raise in old age, it is not worth investing time and effort in improving their competences[60].

The stereotypes present in the realm of human beliefs may be reflected in the decisions made and behaviors, consequently leading to discriminatory actions. Age discrimination in professional life may concern every aspect of a professional career: employment, vocational training, the course of professional work and retirement. Due to age, older people may be overlooked at the recruitment stage, in promotions, training, raises – all reserved for young employees considered cheaper and more promising. A well-known example of such legally sanctioned discriminating behavior is compulsory retirement based solely on calendar age, without any assessment of an employee's competence or willingness to continue working. It is worth emphasizing that compulsory retirement can harm the physical and mental health of older employees.

Research conducted in Poland shows that older people feel discriminated against in the workplace. The publication "STOP to Age Discrimination"[61] lists the examples of such discrimination: omitting older people at the recruitment stage solely on the grounds of age and overlooking older employees in promotions and training, age-related harassment in the form of humiliation, dismissal mainly on the basis of age, dismissal before acquiring the right to a 4-year protection period (a privilege protecting seniors from being dismissed from work during the period of up to 4 years before retirement) or not employing people close to acquiring this right, automatic dismissal of employees solely on the grounds of reaching retirement age, omitting pensioners when distributing shares resulting from company privatization. Ageism in the workplace leads to a perception that seniors are not worth investing in as they will soon retire anyway, and training will be less effective for them. They are not promoted, and no career paths are planned for them, they are not hired as new employees, at best they are offered to continue their employment[62].

Applying the calendar age criterion for assessing workability is harmful. As research shows (e.g.[63]), experiencing ageism in the workplace may lead to decreased effectiveness and stress, reduced job satisfaction, commitment and attachment to the workplace. Age discrimination is associated with lower mental well-being and lower overall life satisfaction, a sense of uselessness, powerlessness and low self-esteem. The perception of discrimination in the workplace causes frustration and failure to meet the basic need to be valued, losing a sense of competence,

60 Ł. Krzyżanowska, Homo sovieticus..., op. cit. p. 81–93.

61 B. Tokarz, Rynek pracy, in: Stop dyskryminacji ze względu na wiek, Akademia Rozwoju Filantropii, Warszawa 2005.

62 Ł. Krzyżanowska, Homo sovieticus..., op. cit. p. 81–93.

63 C. Orpen, The effects of perceived age discrimination on employee job satisfaction, organizational commitment, and job involvement, "Psychology: A Quarterly Journal of Human Behavior" 1995, 32(3–4), p. 55–56. T. Furunes, R.J. Mykletun, Age discrimination in the workplace: Validation of the Nordic Age Discrimination Scale (NADS), "Scandinavian Journal of Psychology" 2010, 51(1), p. 23–30.

social connection and inclusion in the workgroup. This in turn leads to the breakdown of relationships that could potentially be supportive.

Ageist beliefs are associated with underestimating older workers and not using their full potential, which is what employers and employees themselves miss out on. The idea that it is worthwhile to invest in older workers is convinced by research[64] conducted among organizations employing only people aged 50+. It is a fact that they gain 18% higher profits, 16% higher turnover, 40% lower absence rate and 60% lower inventory losses compared to similar organizations employing young workers.

The belief that older workers should give way to younger ones is a demonstration of advanced ageism, which, through seemingly caring rhetoric, justifies depriving seniors of professional space and the right to economic resources only because of their calendar age, a pretext, in fact, to fight for acquiring the resources which determine the position of power or authority. On the other hand, if one assumes that working seniors take away young people's work, one should also consider that old-age pensioners deplete young people's income from which their retirement benefits are financed. Seniors who remain on the labor market are generally perceived to be taking jobs away from young people, but when they retire, they become an economic burden for them. In this context, it would have to be acknowledged that older people have no place in society at all, especially those suffering from illness and disability, who additionally burden the health care or social welfare system. The conviction of the need for older people to move out of the labor market in favor of the younger generations is not justified – research[65] proves that young workers, due to a lack of sufficient qualifications and experience, often do not take over jobs made available by older people.

Not only employers and colleagues of older employees are subject to stereotypical thinking, but also the seniors themselves. In their case, succumbing to stereotypes can act as a self-fulfilling prophecy. It is the effect of the so-called stereotype threat that a person who adheres to certain stereotypes starts to behave in accordance with their content, regardless of actual conditions and their own qualities. In the labor market, employees who are convinced of the limitations inherent in their advanced age, such as in learning and professional development, will adapt their behavior to the stereotypes. It has been scientifically demonstrated that the decision to retire early can be postponed when older workers are exposed to positive stereotypes about their age[66].

Existing stereotypes make it difficult for older people to find and maintain fulfilling jobs, and for employers to hire good employees. Employers, employees

64 K. Segrave, Age discrimination by employers, Mc-Farland & Company, Jefferson, NC 2001.

65 K. Kaczmarek, Problemy aktywizacji zawodowej osób w wieku 50 lat w polityce rządu, in: Aktywność zawodowa i społeczna osób z grupy wiekowej 50+. Opracowania, analizy, badania, dobre praktyki, ed. Z. Olejniczak, Wyższa Szkoła Marketingu i Zarządzania, Leszno 2006.

66 M. Gaillard, D. Desmette, (In)validating stereotypes about older workers influences their intentions to retire early and to learn and develop, " Basic and Applied Social Psychology" 2010, 32(1), p. 86–98.

and society as a whole could benefit from reducing ageist beliefs and attitudes in the workplace. It is not a matter of promoting protectionist procedures, which are an expression of compassionate ageism, since they stem from the belief that older workers are weaker, less competent and therefore require special treatment. Compassionate ageism, as well as negative ageism, leads to a reduction of employees because both are based on false beliefs about mature age people.

4.3. Retirement

The institutionalization of retirement is a relatively new phenomenon in Western societies. It was conceived as a reward for years of effort and economic contribution to social welfare, as well as a form of support for seniors who are unable to work and a way to deal with unemployment and restructuring by removing older workers from the labor market to free space for younger people. In the past, people worked until the end of their lives, marked by death or disability. Forcing people to retire at a certain age regardless of the state of functional capacity is an invention of the industrial society. With time, however, workers began to retire at an ever-younger age, while life expectancy increased significantly. As a result, people now spend not a few percent of their lives in retirement, but a few dozen and it can span up to 1/3 of their lives. The burden on the pension system of having to pay out pensions for an ever-increasing number of citizens is therefore enormous, especially when there are not enough younger workers on the labor market. The social policy is therefore to encourage people over 50 to become professionally active and to delay their retirement as much as possible. A society that sends its citizens into early retirement must consider financial issues i.e., whether it can afford it and whether there will be a shortage of specialized workforce, as well as non-financial issues i.e., what kind of activity it offers retired seniors, how it intends to use their potential and competences.

Because Poland is characterized by the lowest level of economic activity in the 50+ age group among the European Union countries and low age of obtaining retirement benefits (in Europe, also in Poland, employees end their professional activity at the age of about 60)[67], encouraging seniors, including retired people, to continue working is both necessary and difficult. And although work in retirement sounds like an oxymoron, it is an increasingly common and desirable phenomenon nowadays.

Some seniors are convinced that they have worked hard enough in their professional life and are not in good enough health to continue to perform their professional duties. Early retirement from the labor market is also determined by

67 D. Kałuża, Trwałe wycofywanie się z rynku pracy – przejawy dyskryminacji ze względu na wiek, in: Człowiek dorosły i starszy w sytuacji przemocy, ed. M. Halicka, J. Halicki, A. Sidorczuk, Wydawnictwo Uniwersytetu w Białymstoku, Białystok 2009, p. 217–228.

the uncertainty of employment and chronic work fatigue. Bad atmosphere caused, among other things, by pressure to free workplaces for younger people, also has a discouraging effect on older workers. Retirement is induced by economic factors (adequate pension, financial security), the type of work performed (retirement as a way to escape from unsatisfactory work), gender (women are more likely to resign from work due to family obligations), health condition and functional limitations. In the case of Polish seniors, health and physical condition are the most important reasons for retirement (for 51% of women and 53% of men)[68].

The lack of social acceptance for working seniors, especially women, is, according to Piotr Szukalski[69], the most serious factor excluding older people from the labor market. Additionally, apart from the obstacles resulting from negative stereotypes and ageist attitudes, family issues, such as caring for one's own sick and functionally dependent parents or grandchildren, or the desire to spend more time with the family, may also pose a barrier for them to continue employment. When there is a lack of flexible work scheduling, the above reasons may be decisive for ending work and retiring. This is despite the fact that in Poland women receive lower pension benefits in comparison with men (in 2014 the average pension for women in Poland was PLN1653.03, an equivalent of circa USD450 while for men – PLN2394.84, circa USD650), which makes them more vulnerable to poverty and social exclusion in old age[70].

Many older people decide to continue working despite reaching retirement age. Research[71] carried out in 20 countries around the world, including Poland, revealed that only 20% of employees plan permanent professional inactivity, while 75% of them want to continue working, preferably part-time (70%), less often full-time (7%). The motivation to continue working is mainly: financial issues (25%), a need of enjoying quality time (22%), willingness to keep fit (21%), contact with other people and opportunities for mental stimulation (13%). As far as Polish seniors are concerned, financial motives only appear as second (21%), almost equal to the need for spending quality time (20%). The most important reason why Poles would like to continue their professional career at a later age is the desire to interact with other people (33%).

When planning initiatives aimed at professional activation of the 50+ group of employees, it is worth bearing in mind that they are motivated to stay in the labor market by the joy they get from their work, the satisfaction from using their

68 MPiPS, Dezaktywizacja osób w wieku okołoemerytalnym. Raport z badań, Departament Analiz Ekonomicznych i Prognoza Ministerstwo Pracy i Polityki Społecznej, Warszawa 2008.

69 P. Szukalski, ed., Przygotowanie do starości. Polacy wobec starzenia się, Instytut Spraw Publicznych, Warszawa 2009.

70 J. Petelczyc, P. Roicka, Sytuacja kobiet w systemie emerytalnym, Instytut Spraw Publicznych, Warszawaa 2015.

71 D. Kałuża, Z. Lewandowska-Szweda, Bariery aktywizacji zawodowej, in: The future of retirement. What people want, HSCB, London 2006.

skills and creativity, and the sense of professional achievements[72]. Older employees continue to work for financial reasons, for the sake of work itself and the traditional work ethos. The maintenance of professional activity is also stimulated by good education, very good or good health condition, long work experience, lack of pension as a basic source of income, knowledge of modern technologies or the responsibility of taking care of one's children and grandchildren[73]. In the case of employees burdened with family obligations, the flexibility of forms of employment e.g., part-time work, contractual work, work from home, self-employment, would mobilize seniors to continue employment.

Married couples experience higher satisfaction from retirement than persons without a spouse[74]. Admittedly, in its early stages there is a decrease in marital satisfaction, after which, after about two years, the situation improves[75]. Deborah B. Smith and Phyllis Moen[76] cite scientific reports indicating gender differences in retirement. For example, men, more than women, insist that wives should retire. This is probably because retired husbands whose wives are still active experience a fear of breaking the traditional division of roles. When the wife continues to work and her husband has already retired, tensions, conflicts, and reduced satisfaction with the marriage are more common. When deciding to retire, women more often than men take into account family matters, such as the illness of the parents they serve as primary carers in the available support system.

Current demographic and economic conditions require an extended presence of seniors in the labor market. The linear order of the life cycle divided into education, work and retirement is losing its validity today. The promoted idea of lifelong education aims at supporting further training or retraining and the sharing of professional and educational activities. At a mature age, professional work can interweave with retirement or be parallel to it. It is now in society's general interest to motivate older people to continue working and employers to employ seniors.

4.4. Free time

The term "free time" has many meanings. It is essentially characterized by its voluntary nature in form and content. In this sense, it means freedom from work and duties. But free time is also the freedom to do what one wants to do because free

72 R.L. Lord, Empirical evaluation of classical behavioural theories with respect to the motivation of older knowledge workers, dissertation, University of Alabama, Tuscaloosa, AL.2004.

73 Z. Wiśniewski, ed., Determinanty aktywności zawodowej ludzi starszych, Dom Organizatora, Toruń 2009.

74 E.J. Mutran, D.C. Reitzes, M.E. Fernandez, Factors that influence attitudes toward retirement, "Research on Aging" 1997, 19(3), p. 251–273.

75 P. Moen, J.E. Kim, H. Hofmeister, Couples'work/retirement transitions, gender, and marital quality, "Social Psychology Quarterly" 2001, 64(1), p. 55–71.

76 D.B. Smith, P. Moen, Retirement satisfaction for retirees and their spouses do gender and the retirement decision-making process matter?, "Journal of Family Issues" 2004, 25(2), p. 262–285.

time activities should bring subjective satisfaction. If one likes working in the garden, the activity will not be an obligation, but a pleasure. Gayle Hersch[77] speaks of free time as a state of mind – no activity is automatically a leisure activity, but rather is interpreted as such in the sense of fun. Free time involves taking up activities without commitment, it is a time to relax and do what one wants, regardless of work or daily obligations.

Retirement is the moment when leisure time is freed up to a large extent, although the feeling of its increase appears earlier. One in four people aged 45-54 believes that they have more free time than they did five years ago and so does almost every second person in the 55-64 age group, and, surprisingly, almost every third person in the 65+ age group does, too. This shows a downward trend and a change, probably dictated by a noticeable decline in functional capacity, in the subjective perception of free time in old age[78]. Free time increases in connection with such life changes as retirement, but also the empty nest syndrome and widowhood. A disability may be another turn in life that generates an increase in free time, as it excludes the seniors from activities that are functionally inaccessible to them and, on the other hand, limits their ability to spend their free time adequately.

Most longitudinal studies, which provide an opportunity to monitor changes in patterns of spending free time in a given period of life, indicate their stability, while it is quite common to observe a decrease in involvement in this field in late old age, especially in the face of shrinking resources and functional capacity[79]. Although seniors take an interest in new forms of satisfying leisure activities before retirement, the motivation to do so decreases with age. Having too much free time can lead to a sense of uselessness and general dissatisfaction. In many cases, free time is reduced to unrestricted and pointless consumption. The freedom to choose activities that occupy one' s leisure time should be exercised wisely – it requires creativity, discipline and knowledge of one's own needs and abilities.

Free time activities

Studies[80] conducted among Polish seniors show that most often they engage in passive forms of rest, which makes them less visible in public space. They prefer home-based receptive and integrative activity focused on relations with family and relatives. They most often listen to music (93%), read books (89%) and watch TV (87%). Out of productive activity, they favor the care of grandchildren (83%). Nearly half of the respondents (46%), however, consider undertaking social work,

77 G. Hersch, Leisure and Aging, "Physical and Occupational Therapy in Geriatrics" 1990, 9(2), p. 55–72.

78 Centrum Badania Opinii Społecznej, Co Polacy robią w czasie wolnym, Fundacja Centrum Badania Opinii Społecznej, Warszawa 2006.

79 M. Janke, A. Davey, D. Kleiber, Modeling change in older adults' leisure activities, "Leisure Sciences" 2006, 28(3), p. 285–303.

80 D. Gierszewski, Aktywność seniorów formą obrony przed zagrożeniem wykluczeniem społecznym, in: Społeczne wymiary starzenia się, ed. A. Fabiś, M. Muszyński, "Biblioteka Gerontologii Społecznej", Bielsko-Biała 2011.

which shows the large unexploited potential of seniors in this area. Interestingly, social work seems remarkably unpopular, especially among professionally inactive seniors, which proves their strong social withdrawal and unused potential. People aged 65+ rarely belong to civic organizations and engage in activities for the benefit of others (11%)[81].

Research[82] carried out on 400 residents over 60 years old from the area of the Polish city of Łódź revealed that seniors most often have free time in the evening (49%) and most willingly spend it with their family (36%) and spouse (34%), then with friends and acquaintances (16%) and alone (15%). Outside the house, they like to stay outdoors on the plot (38%), with their family (34%), in the park (31%) and church (25%). It is interesting to compare the above data in cultural terms e.g., among Malaysian seniors, the most popular leisure activity is a conversation during leisure activities (79%), then, unsurprisingly, watching TV (75%)[83].

Different studies[84] confirm that media activity is the basic and common way of spending free time by older people in Poland (95% of them were most willing to spend time watching TV and listening to the radio). Only 12% of them participated in recreation and sport. Among the participants who regularly took up physical activity, the most popular were walking (53%) and cycling (40%). Women were most likely to spend their leisure time walking, cycling and exercising, while men took up activities in the order of popularity: cycling, walking, swimming, fishing[85]. The low involvement of seniors in physical activity, apart from health and capacity limitations, may indicate the lack of well-established habits in the current oldest generation in this field. Access to out-of-home activity for older people may be made difficult by the poor offer of available activities for them, but also by the inadequacy of means of transport to the needs of users with functional limitations and unfriendly environment for seniors, insufficient financial resources or health problems.

81 J. Czapiński, T. Panek (ed.), Diagnoza Społeczna 2009. Warunki i jakość życia Polaków, Rada Monitoringu Społecznego, Warszawa 2009.

82 B. Gosik, Formy spędzania czasu wolnego starszych osób. Przykład mieszkańców województwa łódzkiego, in: Jakość życia ludzi starych – wybrane problemy, ed. A. Janiszewska, "Space – Society – Economy", 14, Department of Population and Services Studies, Wydawnictwo Uniwersytetu Łódzkiego, Łódź 2015, p. 137–149.

83 H.S. Minhat, M.A. Rahmah, S. Khadijah, Continuity Theory of ageing and leisure participation among elderly attending selected health clinics in Selangor, "International Medical Journal Malaysia" 2013, 12(2), p. 51–58.

84 M. Halicka, J. Halicki, Czas wolny i aktywność społeczna ludzi starszych na Podlasiu na przykładzie badań w środowisku miejskim i wiejskim, in: Aktywność społeczna, kulturalna i oświatowa seniorów, Wyd. Wyższa Szkoła Administracji w Bielsku-Białej, Bielsko-Biała 2008, p. 47–59.

85 Główny Urząd Statystyczny, Uczestnictwo Polaków w sporcie i rekreacji ruchowej w 2008 r., Zakład Wydanicw Statystycznych, Warszawa 2009, https://stat.gov.pl/cps/rde/ xbcr/gus/kts_Uczestnictwo_pol_w_sporcie_w_2008r.pdf, (access 20.10.2018).

Gender differences reflected in free time activities

The question of spending time in retirement is particularly important for men, for whom professional deactivation is a turning point affecting their sense of identity – involvement in meaningful recreational activities can be a substitute for lost professional engagement and contribute to the restructuring of self-esteem. Men who are retired or close to retirement try to look for ways to spend their free time actively e.g., by participating in volunteer work, learning, developing new interests. They see old age as a time to contribute to the community and preserve their skills. Even in retirement, they try to participate in activities related to their past professional work. They do not perceive the free time they have gained only as their own space for entertainment but rather by using their professional skills, they try to work for the benefit of their community and their loved ones. Their free time is used to strengthen their sense of masculinity e.g., by taking care of their physical condition or maintaining their professional competence.

Research indicates differences in the approach to free time among older men and women. For women, it is a field of personal empowerment, self-care, expression, networking and a new sense of identity. Middle-aged and older women often look for time and space only for themselves and their favorite leisure activities. They engage in more varied engagements than men[86]. They are more likely to be involved in informal and social activities. They participate in free-time activities more often than men – with age, men reduce their involvement in all free-time activities, while women only limit their participation in sports and formal undertakings[87]. It is worth noting that with every generation entering old age the preferences for spending free time may change, and gender may be one of the factors determining it.

Differences in free time activities depend not only on the person's gender but also on other factors e.g., the likelihood of taking more leisure activities in old age is stronger in the case of younger, better-educated people, those who consider their health to be good or excellent, those with no restrictions regarding daily activities (ADL and IADL)[88]. Spending free time is also differentiated by socioeconomic status. It has been shown that higher-income seniors are more active in their free time than those with lower incomes[89]. In addition, having a spouse is also a factor in having a greater involvement in leisure time activities[90].

86 V.H. Menec, The relation between everyday activities and successful aging: A 6-year longitudinal study, "Journal of Gerontology: Series B" 2003, 58(2), p. 74–82.

87 D. Stanley, V.J. Freysinger, The impact of age, health, and sex on the frequency of older adults' leisure activity participation: A longitudinal study, "Activities, Adaptation and Aging", 19(3), p. 31–42.

88 L.A. Strain, C.C. Grabusic, M.S. Searle, N.J. Dunn, Continuing and ceasing leisure activities in later life: A longitudinal study, "The Gerontologist" 2002, 42(2), p. 217–223.

89 L. Verbrugge, A.C. Gruber-Baldini, J.L. Fozard, Age differences and age changes in activities: Baltimore Longitudinal Study of Aging, "Journals of Gerontology" 1996, 51(1), p. 30–41.

90 W.A. Satariano, T.J. Haight, I.B. Tager, Living arrangements and participation in leisure-time physical activities in an older population, "Journal of Aging and Health" 2002, 14(4), p. 427–451.

Productivity in free time

Retirement means gaining time off work, whose rational and beneficial management is quite a challenge. It is not about filling one's free time in any way, but about finding activities that will help to achieve personal fulfillment and give a sense of satisfaction. A well-deserved rest should not be reduced to "killing time", but to filling it with activities of positive individual meaning. Although seniors prefer more active ways of spending their time, in reality, they indulge in more passive forms of rest, such as watching TV. Such forms of spending time may be less rewarding than active rest or even work.

Free time in retirement is not only an opportunity to relax and be idle but also productive. Taking into account the consequences of the aging of societies, one should consider how to exploit the unquestionable, yet underestimated, the potential of older people to the pro-social sphere of activity and use their life and professional experience as well as the wisdom grounded in many years of life.

Such thinking is appropriate for the concept of productive old age. Productivity in late adulthood can help maintain a sense of competence in a functionally changing reality. Taking up passive forms of spending free time may be a sign of withdrawal and limitation of living space, while active forms allow seniors to make more of their presence in the world and draw from all physical, psychological, social and functional benefits attributed to the active aging model. It should be remembered, however, that passive forms of rest can also bring many benefits and are often too hastily considered as unproductive. According to psychological gerontological theories, time spent on reflection and reminiscence supports the achievement of wisdom, a sense of fulfillment, happiness and gerotranscendence. It should also be taken into account that time spent on self-care activities, sleeping, resting or shopping consumes a large part of a senior's day compared to younger generations, and their realization, although monotonous, can be important to maintain a sense of competence and functional adaptation to the shrinking resources of life.

Voluntary work in old age

Voluntary work is one of the active and productive ways of spending free time, which helps to adapt to new circumstances in life. As it has been proven[91], the following factors predispose people to undertake it in old age: high income and level of education, more free time, better health, the experience of volunteer work, a wide range of interests, a conviction of the possibility of making a significant contribution, female gender. Widows in particular are more likely to get involved in volunteer work. Women tend to see volunteering as an opportunity to help others, while men as a substitute for work. However, this desire to replace a lost role (e.g. of an employee or a spouse) is not the main motivating factor for volunteer work. Quite the contrary, it is more likely that married people, engaged in other

91 N.R. Hooyman, H.A. Kiyak, Social gerontology..., op. cit.

organizations, working part-time, will engage in volunteering, while unemployed older people are less likely to do so. Volunteering is part of an overall productive lifestyle. It is possible to involve older people in volunteering in their old age, but it is most effective immediately after they retire.

In old age, the basic type of voluntary work is related to the activities of religious organizations, followed by counseling, manual work, fundraising, commission/committee work, office assistance. Most seniors work in only one organization for several hours a week[92]. They are also present in hospitals, addiction centers, schools, museums and libraries. They work with sick children, disabled people, alcoholics and drug addicts. They usually transfer their professional life skills to voluntary work. As shown[93], seniors derive more psychological benefits from volunteering than younger volunteers i.e., more life satisfaction, better physical and mental well-being, sense of self-fulfillment and usefulness. This difference may result from older people attributing more importance to voluntary work than young people. Undoubtedly, volunteering provides seniors with meaningful social roles and organizations with experienced employees who can be relied upon at minimum cost.

Free time and health

Academic literature proves the positive impact of participation in free time activities on the physical, psychological, mental and social functioning of seniors. People who are more active in their free time achieve higher personal, physical, emotional, mental, spiritual and social well-being and satisfaction in life. Free time is considered a fundamental component of healthy aging. It was found[94] that in old age, physical activities, such as gardening or walking, were associated with better physical health, while physical activities of a social nature (e.g. telephone calls) were associated with better mental health.

Free time, often spent in the context of fun and entertainment, brings pleasant experiences and is an attractive addition to the daily routine. It is no surprise, therefore, that greater participation in those activities leads to greater mental well-being[95]. Involvement in meaningful pastimes allows for the expression of creativity, triggers a sense of achievement, competence, pleasure, happiness and joy. Free time positively influences the mood, with its changes lasting longer than the activity performed. It has been proven that engaging in mentally stimulating activities can also delay the onset of neurodegenerative changes in old age[96] and

92 Ibidem.
93 M. Van Willigen, Differential trends among elderly persons and implications for the future, "The Journals of Gerontology" 2000, 55(5), p. 298–307.
94 K.M. Everard, H.W. Lack, E.B. Fisher, M.C. Baum, Relationship of activity and social support to the functional health of older adults, "Journal of Gerontology: Series B" 2000, 55(4), p. 208–212.
95 K.L. Siegenthaler, Leisure and the elderly. Research update, "Parks and Recreation"1996, 31(1), p. 18–21.
96 M.R. Genoe, Leisure as resistance within the context of dementia, "Leisure Studies"2010, 29(3), p. 303–320.

reduce the risk of depression[97]. The use of free time by older people is becoming seriously considered as a form of fighting dementia in aging societies and as a tool to improve their mental functioning.

Participation in free time activities plays an important role in improving the quality and satisfaction of life among seniors (and also applies to solitary, non-social or even non-physical activities), which is positively related to successful aging. It is so because free time activities create a context in which physical, emotional or social functions can be improved.

Free time in the context of social integration

Free time is an opportunity for social interaction, developing positive social relations and gaining social satisfaction, and as a result, intensifying social integration. In Denmark, a study was conducted[98] on types of free time activities in relation to the sense of social connectedness among seniors. As it turned out, voluntary, cultural, holiday or sports activities, book reading, hobbies and shopping were successful predictors of social connectivity among seniors. However, watching TV, listening to the radio and spending time in front of the computer i.e., passive activities, were not connected with the sense of social involvement.

According to Robert D. Putnam[99], activities as popular among seniors as watching TV increase social isolation by occupying time for possible out-of-home activities such as meetings with other people. However, it is not known to what extent intensive TV viewing can lead to the loosening of social bonds and to what extent it is a consequence of social isolation that has been taking place so far. In his opinion, watching TV is a consumption activity (which requires only watching and experiencing), while productive activities (which are active and creative), often based on cooperation, lead to the strengthening of social bonds.

Free time can be an important tool in strengthening social integration in old age. It allows assuming different social roles and gain a personal and social sense of identity. Participation in social leisure activities results in better mental and physical functioning and the development of social support networks. The social support received can in turn significantly influence participation in leisure time activities. It has been found[100] that life partners play a significant role in participation in cultural and sports activities, parents in volunteer work and holiday activities, siblings in volunteer work and sports, children in cultural activities, book reading and shopping.

97 S.L. Dupuis, B.J. Smale, An examination of relationship between psychological well-being and depression and leisure activity participation among older adults, "Loisir et Societe" 1995, 18(1), p. 67–92.

98 V. Toepoel, Ageing, leisure, and social connectedness: How could leisure help reduce social isolation of older people?, "Social Indicators Research" 2013, 113(1), p. 355–372.

99 R.D. Putnam, Bowling alone: The collapse and revival of American Community, Simon & Schuster, New York 2000.

100 V. Toepoel, Ageing, leisure..., op. cit., p. 355–372.

Free time in the context of functional capacity

Limited functional capacity may be an obstacle preventing access to free time activities and the benefits of participating in them. On the other hand, these activities help to adapt to illness and disability. In this sense, a well-adapted physical environment is of paramount importance for seniors. Adapting the environment to the functional needs of seniors allows them to maintain their independence and quality of life. It has been shown[101] that older people who move around independently i.e., use public transport and walk or drive a car without being dependent on others, show a higher level of overall participation. Inability to move spontaneously in the vicinity of one's residence leads to a limitation of recreational activity. The same research has proven that higher participation in free time activities was associated with better functional capacity. Nowadays, there is growing popularity of the idea of a friendly environment for seniors and universal design, which meets the specific needs of users of public spaces with limited functional capacity. Appropriate equipment for handicapped seniors may also help them to return to performing their free time activities abandoned due to their functional limitations.

The study of how seniors spend time in retirement speaks a lot about mechanisms for adapting to old age. Faced with the need to spend a large amount of free time according to their preferences, older people can devote it to activities they have always desired but have never had time to do. Such an opportunity can have a liberating effect. On the other hand, they may be forced to withdraw from their favorite pastimes, due to such factors as financial or health barriers. According to Michael Bartalos[102], the choice of free time activities is not accidental, it is a way of adapting to the environment. In this sense, free time is composed of adaptive activities. Therefore, activities in free time can be seen as therapeutic tools to improve well-being in old age and as an opportunity to strengthen autonomy in life.

Leisure education is increasingly used as a strategy to support positive adaptation to functional changes characteristic of older age and to improve the quality of life of seniors and prevent disability in this age group. It has been shown[103] that leisure education can have a positive impact on health and well-being as well as satisfaction with life in old age. It can therefore be used as part of health-promoting preventive activities. It is intended to provide knowledge of rational and effective use of leisure time, although it should be admitted that it is difficult to make radical changes in this respect in old age, given the well-established habits (leisure time in old age is often a continuation of the patterns acquired at an earlier age). Education conducted at earlier stages of life, which, according to the proven

101 N. Dahan-Oliel, B. Mazer, I. Gélinas, B. Dobbs, H. Lefebvre, Transportation use in community-dwelling older adults: association with participation and leisure activities, "Canadian Journal on Aging" 2010, 29(4), p. 491–502.

102 M.K. Bartalos, Work, health, and recreation: Aspects of the total person, "Loss, Grief and Care" 1993, 6(4), p. 7–14.

103 M.S. Searle, Leisure education: Its effect on older adults, "The Journal of Physical Education, Recreation and Dance" 1994, 65(4), p. 36–41.

assumptions of the continuation theory, will benefit in old age, becomes more important. At present, active aging patterns are strongly promoted as the most beneficial in the individual and social dimensions. Active ways of spending free time should constitute the core of the program of educating to old age.

4.5. Social support

In old age, there is an upward trend in demand for social support due to ongoing regressive changes in health, loss of social roles, position and prestige, shrinking social networks, loneliness resulting from the empty nest syndrome and widowhood, lack of professional engagement or environmental architectural barriers. Aging people require not only informal support provided by family and a network of friends and acquaintances but also formal support in the area of handling their emotional, functional or social needs. As it turns out[104], social support for the involvement of seniors in activities that are the primary determinant of functional performance is more important than the physical environment adapted to their needs.

Benefits of social support in old age

Currently, the role of social support in the process of successful adaptation to the challenges of old age is becoming increasingly valued, thus strengthening the call for social activation of seniors. Social support for seniors provides many benefits to their physical and mental condition as well as functional capacity. The social support received significantly increases their resistance to diseases and has a positive impact on their health, which leads to a longer life[105]. It has been shown[106] that greater informal support received in earlier periods of life leads to lower health impairment later.

The sense of receiving support determines psychological well-being, for instance, it helps to cope with stress and relieves depression[107]. Moreover, the size of the social network is negatively correlated with the risk of mental disorders[108]. A large

104 K. Vik, M. Lilja, L. Nyga, The influence of the environment on participation subsequent to rehabilitation as experienced by elderly people in Norway, "Scandinavian Journal of Occupational Therapy" 2007, 14(2), p. 86–95.

105 A. Bowling, E. Grundy, The association between social networks and mortality in later life, "Reviews in Clinical Gerontology" 1998, 8(4), p. 353–361.

106 N.G. Choi, J.S. Wodarski, The relationship between social support and health status of elderly people: Does social support slow down physical and functional deterioration?, "Social Work Research" 1996, 20(1), p. 52–63.

107 D.W. Russell, C.E. Cutrona, Social support, stress, and depressive symptoms among the elderly: Test of a process model, "Psychology and Aging" 1991, 6(2), p. 190–201.

108 D. Bennett, J. Schneider, Y. Tang, S. Arnold, R. Wilson, The effect of social networks on the relation between Alzheimer's disease pathology and level of cognitive function in old people: A longitudinal cohort study, "The Lancet Neurology" 2006, 5(5), p. 406–412.

social network acts as a protective shield, perhaps because people living a rich social life are usually subject to intense physical, mental and social stimulation that acts as a preventive measure against mental disorders. Supporting relationships seem to provide a sense of security, allowing people to perceive themselves and the world more positively.

The higher the level of social support, the higher the functional capacity of seniors. Social support is associated with a lower risk of developing a disability, and it not only contributes to inhibiting the process of acquiring functional limitations but also reduces the level of an already acquired disability within the scope of everyday activities[109]. On the other hand, the condition of reduced functional capacity limits the possibilities of social interaction outside the home, which results in lower opportunities to strengthen the social bonds providing social support.

Family in the context of social support

The family is the primary source of support for older people. Most seniors who need support for their ADL and IADL activities receive it from the family, which is essentially a standard in Europe. In the UK, older citizens can first expect support from their spouse, then their adult children, followed by sisters and brothers, neighbors, grandchildren, cousins[110]. Older people with large families are more likely to receive support from children than seniors with few children. In this sense, children can provide a type of old-age insurance policy for parents. Moreover, the probability of receiving support is increased by the proximity of children's homes. It is also important to emphasize the reasons that motivate children to care for their parents, including a feeling developing during the years spent together, a sense of duty, a desire to show gratitude.

The importance of support received from children increases with age. However, research[111] has shown that children come to the aid of their aging parents experiencing a breakdown, but only until a certain point. When functional performance is already very limited and it is professional care that becomes desirable, children are less willing to provide support to the parent. It is worth noting that aging parents, especially from the highest age category of the oldest, are often cared for by adult children over 60 years of age, themselves already experiencing some health problems. Sometimes they provide simultaneous care services for their aging parents and growing grandchildren, making them the so-called "sandwich generation".

Spouses and children usually provide expressive and instrumental help, with the instrumental help of the children becoming more important with age. Daughters provide more help at home and in personal care. Sons offer more help with

109 C.F. Mendes de Leon, T.A. Glass, L.A. Beckett, T.E. Seeman, D.A. Evans, L.F. Berkman, Social networks and disability transitions across eight intervals of yearly data in the New Haven EPESE, "Journal of Gerontology: Series B" 1999, 54(3), p. 162–171.

110 G.C. Wenger, The formation of social networks: Selfhelp, mutual aid and old people in contemporary Britain, "Journal of Aging Studies" 1993, 7(1), p. 25–40.

111 J. de Jong Gierveld, P.A. Dykstra, The long-term rewards..., op. cit., p. 49–69.

housekeeping and financial assistance. Daughters and sons also provide emotional support. Siblings and friends are primarily a source of expressive and social support, but also show short-term instrumental help in crisis situations[112].

According to Polish research[113], the family is the largest source of instrumental (88%), informational (87%), spiritual (84%), emotional (81%) and valuing (80%) support for seniors. Friends are a complementary source of social support for them. Anna Mirczak[114] observes that they often constitute an even stronger source of support for older people than the family because they are united by a community of similar experiences, ailments, closeness and mutual understanding as well as an opportunity to participate in social activities outside the home.

Social support and overprotectiveness

While appreciating all the benefits of the social support offered to the senior population, it is worth recognizing its darker sides. The results of research on the impact of excessive social support presented by Merril Silverstein, Chen Xuan, and Kenneth Heller[115] show that excessive social support can be harmful to older people because at a certain point it violates their sense of competence, autonomy, and control over the need to rely on others to meet their basic needs. At the same time, it generates excessive expectations. Indeed, most aging parents want to remain functionally independent as long as possible. Too much support is not appropriate for their real needs and level of competence, it causes inequality in exchange and even a feeling of guilt or low self-esteem.

The theory of social breakdown speaks about the negative effects of social support. It argues that its excess can lead to greater dependence of older people resulting in atrophy of skills and competences. It has been shown[116] that well-functioning seniors who receive the most frequent support are at the highest risk of acquiring disability in the future, compared to comparably healthy seniors who receive less support.

Social support in the context of gender

Women, who care more about social relationships than men, are more satisfied in their old age with the support provided by members of their social network and receive this support more often than men. Women are more concerned about the quality of interpersonal relationships in marriage as well, as a result of which

112 G.C. Wenger, Review of findings on support networks of older Europeans, "Journal of CrossCultural Gerontology" 1997, 12(1), p. 1–21.

113 P. Olejniczak, Wsparcie społeczne i jego znaczenie dla osób starszych, "Pielęgniarstwo i Zdrowie Publiczne" 2013, 3(2), p. 183–188.

114 A. Mirczak, Determinanty wsparcia społecznego wśród starszych mieszkańców wsi, "Labor et Educatio" 2014, 2, p. 189–203.

115 M. Silverstein, X. Chen, K. Heller, Too much of a good thing? Intergenerational social support and the psychological well-being of older parents, "Journal of Marriage and Family"1996, 58(4), p. 970–982.

116 T.E. Seeman, M.L. Bruce, G.J. McAvay, Baseline social network characteristics and onset of ADL disability: MacArthur studies of successful aging, "Journals of Gerontology: Social Sciences" 1996, 51(B), p. 191–200.

men are more likely to identify their wives as a source of support than women of their husbands and it is men who are more satisfied with the support they receive from their wives than women from their husbands[117]. Older men rely on their social network through their spouse, while women depend on a more diverse network of friends. Men strongly identify themselves with their professional work, which leads them to see themselves as redundant after retirement, and the progressive loss of functionality may result in them losing their sense of masculinity. Women who are more likely to widow, live alone, experience functional disability and have modest financial resources[118], may rely more on the help of relatives, while men are more dependent on their wives and, if unmarried, may experience greater isolation or be less able to care for themselves.

Marriage is a major source of support for older people, especially men. Of all family members, the spouse is most likely to be a confidant, companion and supporter[119]. Men are more likely to receive help from one person, usually the wife, while women can expect help from more people, such as children and grandchildren. Characteristically, husbands caring for their wives may experience a stronger psychological strain compared to wives in a similar situation, who are often more apt to do so.

The loss of social support as a result of the death of the spouse or divorce can cause health problems. Older people living alone and unrelated to an informal social group are more likely to receive formal support and are placed in care institutions. Their subjective perception of their well-being is lower and the difficulty of adapting to widowhood is greater than that of seniors with strong social ties[120]. Informal social support for the growing population of seniors is therefore an elementary yet underestimated determinant of their functional efficiency and autonomy in life.

* * *

The impact of physical activity on health and thus on life expectancy is widely known. However, less obvious is the impact of social activity in old age. Involvement in interpersonal relationships seems to be of fundamental importance for psycho-physical well-being. Interaction with another person prevents diseases and cures them. This surprising correlation is proven by research[121] conducted in a group of older people living in institutions and their communities. Participants

117 R.L. Kahn, Social support: Content, causes and consequences, in: Aging and quality of life, eds. R.P. Abels, H.C. Gift, M.G. Ory, Springer Publishing Company, New York 1994, p. 163–184.

118 B.M. Barer, Men and women aging differently, "International Journal of Aging and Human Development" 1994, 38(1), p. 29–40.

119 P.A. Dykstra, Loneliness among the never and formerly married: The importance of supportive friendship and a desire for independence, "Journal of Gerontology: Series B" 1995, 50(B), p. 321–329.

120 N.R. Hooyman, H.A. Kiyak, Social gerontology..., op. cit.

121 T.A. Glass, C. Mendes de Leon, R.A. Marottoli, L.F. Berkman, Population based study of social and productive activities as predictors of survival among elderly Americans, "BMJ" 1999, 319(7208), p. 478–483.

were asked about social activities (cinema visits, sports and recreational activities, travel and group meetings), productive activities (professional work, voluntary work, gardening, shopping, housework) and physical activities (exercising). Thanks to measurements carried out sequentially over a dozen or so years, it was found that social and productive activities, containing little or even no physical component (exercising), reduced the risk of all the examined causes of death with the same effectiveness as physical activities (exercises). Thus, more productive and socially active people lived longer than less active people, with active and productive activities reducing the risk of death among older people to a degree comparable to physical activity. It shows that participation in sport and social activities are equally important for seniors in terms of health. In this sense, physical activity undertaken in a group for the well-being of seniors would seem to be the optimal solution.

Other studies[122] evaluating the correlation between life expectancy and social activity with limited physical activity led to similar conclusions. They showed a protective effect of social activity in the context of experiencing mental injury or dementia in old age. This effect is likely to result from a strengthened social support system for socially active seniors, which is in itself associated with life expectancy. Moreover, social activity, which requires some physical activity, goes hand in hand with maintaining better health and functional efficiency.

The relationship between social and productive activity is strongest among the least physically active people, therefore activities of social engagement can be successfully used especially in a group of sick and disabled seniors – as an alternative to physical engagement programs. It can be considered that social activity is an important component of successful aging and as such should be included in planning preventive and interventional health care as well as functional capacity support programs in late adulthood.

122 S.S. Bassuk, T.A. Glass, L.F. Berkman, Social engagement and incident cognitive decline in community – dwelling elderly persons, "Annals of Internal Medicine" 1999, 131(3), p. 165–173.

Chapter 5
Functional efficiency and impairment of people at an advanced age

It is worth recalling the fate of the Trojan prince Titonos. The goddess Eos, who was in love with him, convinced Zeus to grant her loved one a gift of immortality but forgot to mention also his eternal youth. As a result, the immortal but aging Titonos suffered from numerous diseases, and progressive physical degradation led to the contraction of his body to such an extent that the loving Eos put it in a wicker basket. Thanks to her intercession, Zeus, having taken pity on him, turned Titonos into a cricket.

Never in history have people lived as long as they do now. However, it is difficult to judge whether a longer life will mean for seniors a longer period of health and efficiency or senile disability. It is not clear which scenario will be fulfilled for future generations – whether they will live long, experiencing serious disability only at the end of their lives (as the concept of compression of morbidity states) or whether milder disability will accompany them through a long period of old age (expansion of morbidity). According to some optimistic reports supporting the concept of compression of morbidity, younger senior cohorts live longer and with less disability[1], and physical disability in old age appears later than in the past[2].

Active life expectancy is a measure used to estimate the number of disability-free years that a person can expect before death. Growing longevity as a result of more and more effective medical interventions may be accompanied by an increase in disability, due to, among other things, insufficient investment in

1 K.G. Manton, X. Gu, G.R. Lowrimore, Cohort changes in active life expectancy in the U.S. elderly population: Experience from the 1982–2004 National Long-Term Care Survey, "Journals of Gerontology: Psychological Sciences and Sociological Sciences" 2008, 63, p. 269–281.

2 V.A. Freedman, G.M. Linda, R.F. Schoeni, Recent trends in disability and functioning among older adults in the United States: A systematic review, "Journal of the American Medical Association" 2001, 288(24), p. 3137–3146.

the treatment process and insufficient funding of prevention and, later, rehabilitation. Extension of life often means an extension of the period of disability that appears at the end of life. It is particularly true for women, who live statistically longer than men, that a longer life carries an increased risk of acquiring illness and disability. The success of medicine that manages to extend human life more and more successfully becomes its own failure when the gained years of life are marked by infirmity. It is, therefore, necessary to focus nowadays on improving its quality of life, the basic determinant of which is functional efficiency in old age, guaranteeing the maintenance of autonomy in life. The point is that healthy, efficient and active old age should last as long as possible and the last period of life burdened by illness and infirmity should be short and not so much linked to old age as to death. To "add life to years, not just years to life" remains valid.

In the struggle for healthy and efficient old age, it is important to change the stereotypical thinking that identifies old age with illness and disability as its inseparable feature. Nowadays it is clear that no one is ill just because they are old, but because of a specific disease that can and should be recognized and treated. Aging is a natural process, a disease is a pathological condition that can be prevented and remedied. Unfortunately, according to postmortem examinations of the bodies of old people, the dominant cause of their death is not so much old age itself as the accompanying diseases. In Poland, only 8% of deaths are caused by old age[3], which means that in the remaining cases death was premature as a result of pathological factors. However, old age may be a natural process, devoid of major functional difficulties. Present-day scientific achievements allow us to believe that sick and disabled old age is not nature's intention, and healthy old age is not an oxymoron.

5.1. The concept of functional ability and disability

Undoubtedly, the growing population of older people today is leading to an increasing number of older people with disabilities. Disability at the end of life gains in prevalence when a reduction in mortality is not accompanied by a reduction in morbidity in old age. The prevalence of longevity in the face of increasing incidence of chronic diseases with age must consequently lead to an increase in the absolute number of seniors struggling with the functional effects of these diseases, thus generating challenges in health care and rehabilitation. However, taking effective preventive or corrective measures requires the prior establishment of a coherent theoretical model of human functional ability and disability and an adequate conceptual framework.

3 L. Nowak, Sytuacja demograficzna ludzi starszych w Polsce w perspektywie do 2010 roku, "Gerontologia Polska" 1995, 3(3/4), p. 4–15.

5.1.1. Functional state

Knowledge of the functional state is used in rehabilitation, therapy and care for seniors at the stage of prevention, intervention planning, assessment of needs or evaluation of actions taken. It is essential for implementing individual and systemic actions aimed at improving the quality of life of people with disabilities. However, there are still definition barriers for the complex phenomenon of functional state, although the concepts of disability developed by the World Health Organization have significantly clarified the terminological confusion in this area and deepened the understanding of the concept of functional efficiency.

A person's functional state is not a constant value but is subject to continuous changes in the cycle of life and even the day or year. The capacity of a healthy and relaxed person to undertake actions is different from that of a person in a state of fatigue, sleepiness, illness or pregnancy in the case of women. The functional abilities of a child are different from those of an adult, although they are typical and normal for their age. Similarly, the functional efficiency of an older person is also specific, as it is associated with a certain limitation of the body's performance in the course of primary aging, but it should not cause disorders in the performance of daily activities. Difficulties in the daily tasks undertaken so far will always indicate a disability, which is part of the deteriorative trend of human aging. Pathological functional changes can be recognized precisely by the fact that they lead to a clear disruption of everyday functioning.

The functional state is related to the quality of human behavior, evaluated according to socio-normative and subjective criteria, and is a synonym of its behavioral competence[4]. The functional state is the ability of an individual to undertake daily activities required to satisfy his or her basic needs, fulfill normal roles and maintain psycho-physical well-being. It is the ability to perform basic (ADL) and instrumental (IADL) activities of everyday life – difficulties in this respect can be identified and measured by the so-called functional assessment. This evaluation may consist of objective (external) assessment, based on the measurement of actual human behavior, and/or subjective (internal) assessment, based on a person's opinion of their behavior. Although from a scientific point of view, objective measurement seems to be more reliable, in rehabilitation, subjective evaluation is of fundamental importance as it allows us to consider the patient's opinion in planning objectives and improvement, which is of great motivational importance for its effectiveness.

There are four dimensions of a functional state, including interdependent: functional capacity and functional performance, functional capacity utilization and functional reserve. Functional capacity means the maximum potential of an individual to perform daily activities in the physical, psychological, social and spiritual

4 M.P. Lawton, Functional status and aging well, "Generations" 1991, 15(1), p. 31–35.

dimensions of life. However, people do not rise to such a high, maximum level of their abilities on a daily basis. Functional performance, in turn, refers to the activities that people normally perform during their normal lives[5]. Of course, the level of everyday functioning depends on functional capacity. This can be measured objectively e.g., by maximum physical capacity tests, while functional performance can be measured in an objective (e.g. observation of the person performing tasks) or subjective way (self-assessment). The notion of functional reserves, in turn, means the difference between maximum capacity and actual performance. In this concept, reserves refer to latent capacities that can be used at the moment of an emerging need. Functional capacity utilization, meanwhile, is the extent to which a capacity is used at a certain level of realization. An increase in the capacity itself without a change in performance means an increase in reserves, observed in a higher tolerance for unexpected requirements in performance[6]. It can be argued that while treatment aims to increase reserves by maximizing functional capacity, rehabilitation focuses on increasing functional performance and functional capacity utilization.

Functional status is an important component of the overall health picture. After all, health is not only the absence of disease – a healthy individual should be able to perform a wide range of everyday tasks necessary for full participation in all areas of life. The impact of health on a person's life can be assessed by measuring his/her ability to perform tasks in his/her environment. Functional state assessment is of fundamental importance for rehabilitation and geriatric care because it allows determining the impact of a disease on a patient's everyday life, determining his or her perception of their quality of life. Moreover, it allows to estimate a person's need for rehabilitation and care services, as well as to monitor changes.

In professional literature there is a concept of functional health, being a certain variation of the functional state, whereby the functional state is a more general term, collective for the concepts relating to human functioning e.g., disability, functional efficiency. Functional ability is understood in a very similar way to the functional state – it is the ability to perform the basic and complex activities of everyday life, ensuring safe functioning and satisfying one's own needs. The criterion of functional efficiency is the degree of autonomy in life, or, in other words, the degree of dependence on others i.e., the need for forms of formal (institutional) and informal support (relatives). According to the WHO[7] concept, functional efficiency embraces an individual's internal capacity (including physical, social, psychological and mental abilities), their environment (home, local community, society) and interactions between them. The term "functional health" in turn emphasizes the impact of the disease on the functional state of a person. At the core

5 N.K. Leidy, Functional status and the forward progress of merry-go-rounds: Toward a coherent analytical framework, "Nursing Research" 1994, 43(4), p. 196–202.

6 N.K. Leidy, Using functional status to assess treatment outcomes, "Chest" 1994, 106(6), p. 1645–1646.

7 World Health Organization, World report on ageing and health, WHO, Geneva 2015.

of creating the concept of functional health was the belief that objective health indicators, such as a specific diagnosis, say little about a person's ability to lead a normal life. It is particularly important in the field of rehabilitation to know the impact of health disorders on a person's habitual activities.

An evaluation tool developed by Sidney Katz[8] played a significant role in promoting the concept of functional health. This tool enabled the physician to calculate the level of autonomy of the patient's performance of individual basic activities of daily living (ADL), such as eating, maintaining hygiene, etc. by predicting the patient's level of autonomy. Seeing the need to develop a tool with more comprehensive functions, M. Powell Lawton and Elaine M. Brody[9] created a category of instrumental activities of daily living (IADL) and a tool that detects the level of functional health among people who manage well with self-service activities, but less well with more complex activities such as preparing meals, shopping, doing laundry, money management, moving around the house, and making phone calls. These are the functions that first become impaired in the process of acquiring a disability. Self-service functions are the last ones to deteriorate – the inability to undertake them means a serious disruption of the ability to lead an independent life and a strong dependence on formal and informal assistance in meeting basic needs.

Many older people assess their quality of life by taking into account their ability to perform daily tasks, social activities or leisure activities. In a subjective perception, the functional state is more important to a sick person than the clinical picture of the diseases they experience. It is usually not the disease itself that is the focus of the patient's attention, but its impact on his or her own life. It is not infrequent that the reason for a visit to the doctor's office is precisely the ailments experienced so strongly that they disrupt daily functioning. Sometimes weak symptoms of a disease do not motivate to undertake treatment, although they signal a health problem. Occasionally, even bad test results are not a sufficient argument to visit a doctor when they are not accompanied by negative functional consequences. The functional state is therefore a starting point in diagnostics, while at the same time, in the subjective perception of patients, high functional efficiency is also a goal of undertaken treatment.

If one of the main objectives of health care is to maintain or improve the quality of life, to which the term health-related quality of life refers, medical actions should focus on improving the patient's health and functioning. In such a case, doctors, besides assessing the state of health, would assess their patients' functional state to a basic extent and, aware of the difficulties they experience in everyday

8 S. Katz, A.B. Ford, R.W. Moskowitz, B.A. Jackson, M.W. Jaffe, Studies of illness in the aged. The Index of ADL: A standardized measure of biological and psychosocial function, "Journal of the American Medical Association" 1963, 21(185), p. 914–919.

9 M.P. Lawton, E.M. Brody, Assessment of older people: Self-maintaining and instrumental activities of daily living, "Gerontologist" 1969, 9(3), p. 179–186.

life due to disease, could indicate the possibilities of improving their functioning e.g., directing patients to appropriate rehabilitation or treatment facilities. The result of treatment measured in terms of improvement of everyday functioning is the most important factor for the patients to achieve full success of medical interventions.

5.1.2. Disability

The concept of functional efficiency can be understood as the ability to perform daily activities, changing in the person's life cycle, depending on the influence of psycho-physical (internal) and environmental factors i.e., their physical and social (external) environment. Functional disability, in turn, refers to difficulties in performing basic (ADL) and instrumental activities of daily life (IADL). It is a narrower term than the concept of disability, focusing on problems in the everyday functioning of a person, which are the focus of rehabilitation, therapy or special pedagogy aimed at supporting the development of persons with special educational needs.

The World Health Organization responded to the need to systematize the terminology related to the notion of disability and to create a common language and conceptual framework for functional state and functional efficiency. It proposed a coding system for the information collected in this area, which defines elements of functioning to make reliable and comparable measurements and interpretations of the functional state. The definition of disability adopted by the WHO within the International Classification of Impairments, Disabilities and Handicaps (ICIDH)[10] in 1980 distinguishes three relevant dimensions of performance disorder:

- impairment, meaning loss or disorder of psychological, physiological or anatomical structure or function;
- disability, which refers to any limitation or incapacity to perform activities considered normal for a person as a result of damage;
- handicap, which indicates the disadvantage to a person caused by an illness limiting or preventing him/her from fulfilling roles considered normal for that person.

The newer model of disability according to the WHO – International Classification of Functioning, Disability and Health (ICF)[11] – has further emphasized the role of the environment as a barrier preventing full participation in society. This model is a synthesis of different perspectives and applies to all people, not only those with disabilities. It abandons the rigid alienation of disability from the human life cycle

10 World Health Organization, International Classification of Impairments, Disabilities and Handicaps, Geneva 1980, http://apps.who.int/iris/bitstream/handle/10665/4 1003/9241541261_eng.pdf;jsessionid=0759B-74D4230966C69D1C9E22158930A?sequence=1 (access 20.10.2018).

11 World Health Organization, The International Classification of Functioning, Disability and Health (ICF), Geneva 2001, https://www.csioz.gov.pl/fileadmin/user_upload/ Wytyczne/statystyka/icf_polish_version_56a-8f7984213a.pdf (access 20.10.2018).

and deprives it of exclusive medical connotations, giving it a more universal and multidimensional meaning.

The ICF model introduces these definitions:

- body functions – physiological or psychological functions of body systems;
- body structures – anatomical body parts, such as organs, limbs and their components;
- impairments – problems in body function or structure, such as significant deviation or loss due to illness or injury;
- activity – the performance of a task or action by an individual;
- activity limitations – difficulties a person may have in performing an activity;
- participation – inclusion in everyday life situations;
- participation restrictions – problems that an individual may experience in engaging in everyday situations.

The ICF provides a framework and classification schemes to describe health in the broadest sense. It focuses on 1) functions and structures of the body, 2) activities (related to the tasks and activities undertaken by the individual) and participation (involvement in everyday situations) and data on environmental factors. It describes human functioning and its limitations as a result of dynamic interaction between the body, the individual and its environment. These dimensions are more interactive and dynamic rather than linear and static. They apply to all people regardless of their health. The language used by the ICF is neutral as far as etiology is concerned, with the emphasis put on functions rather than on medical condition.

Each of the three dimensions above (body functions and structures, activities and participation) is expressed in positive and negative terms: a person can perform activities or show limitations. This model also points to environmental factors that can serve as barriers or facilitation for the individual's participation in society. It clearly distinguishes between illness and disability. People with disabilities need not be ill. The medical diagnosis does not necessarily imply restrictions in activity and participation. Multidimensional relationships underline the complexity and diversity of the state of disability.

Until now, definitions presented disability as a phenomenon that only affects a particular group of people. Now, according to the ICF, disability is a common feature of the human condition. It is a state which, as a continuum, to some extent has significance in the lives of all people in different periods of their lives, and not just an isolated group traditionally considered to be disabled. It is a universal human experience of limitation of one's activity or participation in society for various reasons. In this perspective, disability can be spoken of regardless of one's health.

By promoting its concepts of disability, WHO has a major impact on the public perception of the subject. Until now, the medical model of disability which sees the causes of performance deficiency in an individual and their biomedical condition has been and still is most widely known and established in social awareness in many communities. However, the functional and social model of disability is

gaining in popularity, currently promoted by the WHO, and transcending the notion of disability towards more universal meanings, specific to each individual.

The medical model, with a long tradition in science and medicine, has a strong benefit of objectivity. Intuitively adopted by society, it dominates in shaping the social perception of disability as well as attitudes towards people with disabilities. In this model, disability is a pathology, a disorder, a dysfunction, a defect, an anomaly and a deviation in the individual. This model allows us to categorize people according to the disability experienced and to call them "blind", "mentally ill", etc., concealing the truth about them as individuals. It ignores the social aspect of disability and individuals with the same diagnosis receive an identical plan of treatment and medical rehabilitation, regardless of individual differences in their needs or resources[12].

The functional and environmental models, represented by the latest WHO concept of disability, are interactive. They recognize the importance of biological factors, but also accept the environmental impact on the formation or aggravation of the disability. It is not entirely embedded in the person with a disability, but in his or her environment and their functional requirements, so the causes of disability are also found in this physical and social environment.

The functional model of disability emphasizes the functional needs of the person and the requirement to adapt the environment to them. In this perspective, the lack of environmental adaptation is the reason for disability and the interventions are aimed at modifying the environment and its functional conditions to the needs of individuals with disabilities and, preferably, following the principle of universal design, creating an environment for all its users, regardless of their health or abilities.

While it is difficult to determine what a disability is and there is still a lack of definition uniformity, describing the disablement process[13] is no easier task. Indicating the etiology of disability requires taking into account the highly individualized characteristics of the individual and the characteristics of their physical and social environment as well as determining the pathological primary and secondary states in the context of interactions between them. Among the personal factors determining the functional (in)efficiency of a person, the following should be taken into account: the health condition (objective and subjective evaluation), psychological and mental predispositions, the lifestyle. It is also necessary to take into account the size and quality of the social network, social support and the conditions of the physical environment e.g., its adjustment to the visual, auditory or motor needs of users.

12 J.F. Smart, The power of models of disability, "Journal of Rehabilitation" 2009, 75(2), p. 3–11.
13 L.M. Verbrugge, A.M. Jette, The disablement process, "Social Science and Medicine" 1994, 38(1), p. 1–14.

A very interesting study[14] has been conducted on this subject, trying to provide answers to the question: What makes older people think of themselves as disabled individuals? It was found that people with a weaker health condition were more likely to perceive themselves as disabled, and negative functional changes strengthened their perception of their disability. The breakthrough moment in acquiring the identity of a disabled person was receiving home medical care and ceasing to drive a car. Apart from health factors, the perception of oneself as a disabled person was also influenced by social factors – people with more living children, more satisfied with social life, with a larger social network, were much less likely to consider themselves as disabled. Moreover, it turned out that the social network slowed down the rate of accepting the disability label, despite existing health problems. At the same time, negative changes in the size or satisfaction with the social network accelerated the process of considering oneself as a disabled person, probably because the presence of family and friends strengthens one's identity unrelated to the disability and drawing from the social resources helps to compensate for the effects of progressive reduction of functions. Self-perception as a person with a disability likely starts to develop when this buffer is exhausted and no longer helps to maintain existing levels of function and social engagement.

5.2. Prevalence of old-age disability

Seniors constitute the majority in the community of disabled people – nearly 60% of this population falls into the 60+ age category[15]. Due to the increased incidence of various impairments, the frequency of disability increases with age, especially among the oldest seniors. Therefore, the problem lies not only in the process of the aging of the society but also in the phenomenon of aging of the elderly population itself, which is caused by the extension of human life and the rapid growth of the group of the oldest seniors. As a result, the prevalence of age-related disability also significantly increases, which is illustrated by Polish data: in the 60-79 age group, disability affected about 40% of people, while in the 80+ range it affected almost 50%[16]. The results of the study therefore indicate a high prevalence of disability in activities of daily life (ADL) among people of advanced age. It proves inadequacy in the prevention, diagnosis and treatment of common diseases among older people. Diseases such as arthritis, osteoporosis, diabetes, dementia or heart disease have already reached pandemic proportions. Every third Polish senior

14 J.A. Kelly-Moore, J.G. Schumacher, E. Kahana, B. Kahana, When do older adults become "disabled"? Social and health antecedents of perceived disability in a panel study of the oldest old, "Journal of Health and Social Behavior" 2006, 47(2), p. 126–141.

15 Główny Urząd Statystyczny, Stan zdrowia ludności Polski w 2014 r., Zakład Wydawnictw Statystycznych, Warszawa 2016.

16 M. Miller, A. Gębska-Kuczerowska, Ocena stanu zdrowia ludzi w starszym wieku w Polsce, "Gerontologia Polska" 1998, 6(3–4), p. 18–23.

is a disabled person[17], only every fifth of them is fully capable of daily activities. Most respondents require assistance in at least one activity of daily life[18].

Seniors over the age of 75 encounter the greatest difficulties when doing intensive housework and shopping on their own (almost one in two persons) and moving around outside the house, handling their own money, preparing meals and bathing (almost one in three persons). Those who are not able to perform daily life activities most often benefit from the help of family members living in the same household, and less often from the help of relatives living separately[19]. The 100-year-olds surveyed had the greatest difficulty in bathing and sphincter control[20].

Older age disability most often results from illness (among which the most common are chronic joint diseases – 41%, hypertension – 31% in men and 45% in women, bone diseases – 36%, ischemic heart disease – 29%, atherosclerosis – 25%) or accidents – 15%. Nearly half of the senior population considers dysfunction of movement, vision or hearing as the main cause of the experienced physical disability. The reduction in mobility outside the home and its direct vicinity is reported by one in four seniors and is more common among residents in rural areas and women[21].

An important risk factor for the emergence of a disability, when considering demographic indicators, is, obviously, age itself but also the female gender. Disability affects older women more often than men. They are more likely to experience chronic, impairing diseases than men, which is usually explained by their statistically longer lives and greater risk of acquiring chronic conditions in advanced old age. However, epidemiological data show that women are more vulnerable to health problems even compared to their male peers. According to sample data, the percentage of women with two or more disease units amounts to 45% for the age range 60-69, 61% for the range 70-79 and 70% for the age range 80 and above. For men, this percentage is, respectively: 35%, 47% and 53%[22]. The Polish study[23] conducted on 100-year-olds to measure their functional efficiency in ADL revealed that 32% of the respondents (26% of women and 6% of men) were disabled, 37% (33% of women and 4% of men) were partially disabled, and 20% (10% of women and 10% of men) were fully able. Thus, longer living men presented

17 World Health Organization, World health report 1998, WHO, Geneva 1998.

18 B. Bień, B.Z. Wojszel, J. Wilmańska, B. Politańska, Epidemiologiczna ocena rozpowszechnienia niesprawności funkcjonalnej u osób w późnej starości a świadczenie opieki, "Gerontologia Polska" 1999, 7(2), p. 42–47.

19 B. Bień, B.Z. Wojszel, i in., Epidemiologiczna ocena..., op. cit., p. 42–47. B. Wojszel, B. Bień, Wielkie problemy geriatryczne..., op. cit. p. 32–38.

20 A. Skubiszewska, K. Wodzyńska, i in., Ocena sprawności funkcjonalnej..., op. cit., p. 151–155.

21 L. Jabłoński, J. Wysokińska-Miszczuk, Podstawy gerontologii i wybrane zagadnienia z geriatrii, Wydawnictwo Czelej, Lublin 2000.

22 P.W. Ries, Current estimates from the National Health Interview Survey. United States 1984, "Vital and Health Statistics" 1986, 10(156), p. 1–191, Government Printing Office, Washington.

23 A. Skubiszewska, K. Wodzyńska, A. Szybalska, P. Ślusarczyk, K. Broczek, M. Puzianowska-Kuźnicka, G. Olędzka, M. Mossakowska, Ocena sprawności funkcjonalnej warszawskich stulatków w zakresie podstawowych czynności życia codziennego – wyniki wstępne, "Gerontologia Polska" 2014, 3, p. 151–155.

better efficiency than their female peers. Significantly, the 100-year-olds surveyed turned out to be more fit than those who participated in similar studies a dozen or so years earlier[24].

In the light of the above data, it is advisable to take systemic preventive measures towards disability in old age, due to its prevalence and profoundly impairing effects on disabled seniors, their families and the entire society facing the challenges of aging in an individual and demographic context. The increase in the percentage of seniors with various disabilities is one of the most important challenges for social policies in the field of pathological aging prevention, diagnosis, treatment, rehabilitation and care.

5.3. Reasons for loss of ability in old age

From the historical perspective, we can see how much the list of diseases determining the health and efficiency of societies has changed. At the beginning of the 20th century, infections (e.g. tuberculosis, influenza) or parasitic diseases were dominant. This was followed by an increase in the prevalence of chronic diseases. Today, it is mainly chronic diseases that are responsible for disability in old age. Almost 75% of people aged 65+ are affected by at least one chronic disease, a half – by at least two[25]. On average, Polish seniors report several chronic diseases (3.5) compared to 1.8 among the total population of the country[26]. According to epidemiological data, arthritis (80% of people over 75 years of age), arterial hypertension (60-70%) and ischemic heart disease (30%) are the most common diseases in old age. Every fifth person over 65 years of age suffers from type II diabetes, and one in four people have symptoms of chronic obstructive pulmonary disease. Older women are more frequently affected by constipation and urinary incontinence[27].

Among old age diseases most strongly associated with loss of efficiency are the so-called great geriatric problems: dementia, depression, sensory disorders, cardiovascular diseases, mobility disorders or urinary incontinence. According to data from the Polish Central Statistical Office (GUS)[28], the diseases that contribute to disability in old age (60+) the most are (in order of prevalence): cardiovascular

24 B. Wizner, A. Skalska, A. Klich-Rączka, K. Piotrowicz, T. Grodzicki, Ocena stanu funkcjonalnego u osób w starszym wieku, in: Aspekty medyczne, psychologiczne, socjologiczne i ekonomiczne starzenia się ludzi w Polsce, ed. M. Mossakowska, A. Więcek, P. Błędowski, Termedia Wydawnictwa Medyczne, Poznań 2012, p. 81–95.

25 E. Calkins, C. Boult, et al, New ways to care..., op. cit.

26 Główny Urząd Statystyczny, Stan zdrowia ludności Polski w 1996 roku, Zakład Wydawnictw Statystycznych, Warszawa 1997.

27 M. Makara-Studzińska, K. Kryś-Noszczyk, Oblicza starości – przegląd piśmiennictwa, "Psychogeriatria Polska" 2012, 9(2), p. 77–86.

28 Główny Urząd Statystyczny, Stan zdrowia i potrzeby osób niepełnosprawnych w Polsce w 1996 r., Zakład Wydawnictw Statystycznych, Warszawa 1997. Główny Urząd Statystyczny, Rocznik Statystyczny Ochrony Zdrowia 1997, Zakład Wydawnictw Statystycznych, Warszawa 1998.

diseases, damage and diseases of the locomotor system, neurological diseases, damage and diseases of the sight organ, damage and diseases of the hearing organ, mental illnesses, mental disability. What is important, however, is that the strong correlation between health and disability can be modified by factors not directly related to the disease e.g., physical activity that significantly counteracts the decline in functional efficiency.

Seniors' daily performance is also affected by the state of their mental functioning – weakening of mental functions is associated with loss of autonomy in old age and as such cannot be treated as natural at this stage of life. Similarly, depression, which occurs in old age, is wrongly considered as a normal state, and therefore in many cases remains undiagnosed and untreated, even though it severely damages functional skills. Depression may contribute to disability and also appear as a result of a disability already acquired for other reasons. Memory disorders also have a serious impact on daily functioning.

Dysfunctions of daily functioning in old age most often have complex etiology but also extensive consequences. Such a surprising cause as well as an effect of acquired disability is alcohol abuse, a problem more frequent in the population of seniors than it is commonly believed. It affects 2-6% of elderly people, even up to 10% of men and 3-5% of women[29]. Due to unusual symptomatology, it is sometimes overlooked in this age group. The symptoms of alcoholism, such as aggravated specific health problems, balance and coordination disorders, falls, memory problems or states of confusion, are often associated with advanced age rather than alcohol abuse in the case of seniors. This addiction in old age is also difficult to detect because seniors often consume alcohol systematically (without entering periodic instances of "bender drinking"), in solitude, carefully hiding their addiction from their environment. Alcoholism is rarely diagnosed and treated also because addicts usually deny the problem. Moreover, some seniors live alone, which significantly weakens their social control over their consumption behavior.

Because alcoholism among the seniors is an unrecognized problem (the phenomenon of alcoholism among young people has been of greater interest so far), it is difficult to obtain precise statistical data on this subject. It is believed that it affects even 5-60% of seniors living alone[30]. Older men have a greater tendency to drink more alcohol than women, however, although women drink smaller quantities and less frequently, they are more likely to start drinking in old age, especially if they experience loneliness[31]. Widowed people are also most susceptible to alcohol addiction, as well as those seniors who tend to employ avoidance strategies in the face of life's challenges, especially as there is no shortage of such

29 A.A. Zych (ed.), hasło – alkoholizm a starzenie się, [in:] Encyklopedia starości, starzenia się i niepełnosprawności, A-G, Stowarzyszenie Thesaurus Silesiae – Skarb Śląski, Katowice 2017.

30 M.T. Marcus, Alcohol and other drug abuse in elders, "Journal of ET Nursing" 1993, 20(3), p. 106–110.

31 B. Habrat, Problemy związane z piciem alkoholu przez osoby starsze, "Postępy Nauk Medycznych" 2011, t. XXIV, 24(8), p. 701–704.

challenges in old age. Alcoholism in old age occurs mainly due to stress or loss of experience related to aging or to relieve mental or physical pain. It is enough to mention the problems of loneliness and social isolation, widowhood, lack of social support, loss of health, disability, professional deactivation, excessive free time, loss of high social status, financial difficulties.

Older people are more susceptible to alcohol due to physical changes occurring in an aging organism, such as the decrease of water levels and muscle tissue, as well as the reduction of kidney and liver functions. Alcohol is metabolized slower, stays in the body longer, and its level can be toxic after consuming even small amounts. The same quantity of alcohol consumed by seniors leads to an approximately 20% increase in its concentration in blood[32]. It is particularly dangerous to combine alcohol with medications that may also be metabolized slower by the liver and remain in the body for longer. In combination with alcohol, their effects may be weakened or enhanced e.g., alcohol unpredictably intensifies the effects of sedatives, which may endanger mobility and consciousness.

Regular consumption of alcohol in old age may lead to deterioration of health. Alcohol can cause a decreased appetite (drinking alcohol means consuming so-called empty calories), and consequently undernourishment (poorer absorption of certain vitamins and micro-elements), in turn leading to anemia or changes in the mental state. Alcoholism can cause liver damage, pancreatitis and coronary arteries at any age, but the impact of alcohol on the brain is particularly dangerous in old age, due to the natural and possible pathological changes that occur in its cognitive functions. Longer alcohol addiction increases the risk of neurodegenerative changes, but it should be noted that symptoms of alcoholism can be confused with those of dementia. Psychiatric problems such as anxiety disorders, depression, memory problems or addiction to medicines may appear. Mental disorders, depression or anxiety may cause a tendency to abuse alcohol, but they may also be the cause of alcohol abuse. Studies have shown that alcohol was responsible for 1/3 of suicides committed by older people[33].

Drinking harms health and functional efficiency. Seniors who abuse alcohol are more likely to develop motor disorders, fall and suffer fractures. The risk of a person suffering from cardiovascular disease and impotence is also quite high[34]. Such symptoms as burns, cuts, bruises, abrasions, falls, traffic and household accidents, but also apathy or aggression, may result from excessive alcohol consumption. This is compounded by disorders in family and social life. The use of alcohol increases the likelihood of senior violence and acts of aggression can be the result

32 Ibidem.

33 Williams M.E., The American Geriatrics Society's complete guide to aging and health, Harmony Books, New York 1995.

34 S.R. Gambert, Alcohol abuse: Medical effects of heavy drinking in late life, "Geriatrics" 1997, 52(6), p. 30–37.

of both over-consumption and attempts to reduce it[35]. The consequences for health, mental, social and functional conditions make preventive, diagnostic and treatment actions towards alcoholism in old age imperative.

Pain is one of the less obvious, often overlooked, yet very common and severely impairing causes of reduced daily functioning among seniors. As many as 85% of older people have health problems predisposing them to feel pain[36]. The more advanced the age, the greater the probability of experiencing pain, which affects 25% of seniors aged 61-70, 29% aged 71-80 and 40% after 81[37]. Most of them complain about joint, leg and spine pains. In one study[38] women mentioned musculoskeletal pain as the main reason for their disability in terms of daily life activities and movement. While heart disease and strokes have the strongest impact on life expectancy, it is musculoskeletal disorders such as arthritis, spinal and hip damage that have the greatest impact on restrictions of activity. Pain most often occurs as a result of an experienced illness but may predispose to certain diseases, such as depression, which in turn may increase pain sensitivity and intensify the experienced discomfort. In the light of the above data, it should be noted that most seniors constantly experience pain and yet are not subject to specialist intervention specifically addressing it.

Pain experience may be associated with sleep disorders common in the senior population, leading to impairment of daily functioning. Poor sleep is very often associated with poor health. Besides, insomnia may be partially caused by a lack of exposure to light. Intensified exposure to light may lead to an improvement in sleep pattern due to increased release of melatonin, the hormone responsible for regulating sleep, which decreases with age. Sleep disorders can also occur as a result of chronic diseases, mental disorders, medication (especially polypharmacy), alcohol and caffeine abuse, sedatives or changes in the 24-hour rhythm of life.

With age, it is not so much the need for sleep that decreases, but the ability to sleep. Older people are more sleepy and tired during the day, which means they do not get enough sleep at night. Numerous studies have shown that 25-45% of older people complain about insomnia. Difficulties in falling asleep include extending this process from 10 minutes in young people to 20-25 minutes in people aged 70. There may be more frequent and longer night-time awakenings and an inability to fall asleep again[39]. The rhythm of sleep is shifted – sleepiness appears earlier in the evening, about 7-8 pm, with waking up occurring after about 8 hours, which is

35 Jaroszewska E., Starość i agresja – osoby starsze jako ofiary oraz sprawcy przemocy, "Problemy Polityki Społecznej. Studia i Dyskusje" 2012, 17, p. 113–129.

36 R.M. Gallagher, S. Verma, J. Mossey, Chronic pain. Sources of late-life pain and risk factors for disability, "Geriatrics" 2000, 55(9), p. 40–44, 7.

37 A.J. Cook, M.R. Thomas, Pain and the use of health services among the elderly, "Journal of Aging and Health" 1994, 6(2), p. 155–172.

38 S.G. Leveille, L. Fried, J.M. Guralnik, Disabling symptoms: What do older women report?, "Journal of General Internal Medicine" 2002, 17(10), p. 766–774.

39 N. Coni, W. Davison, S. Webster, Starzenie się, Wydawnictwo Naukowe PWN, Warszawa 1994.

about 3-4 am. If sleep occurs at 10-11 pm., waking up will still occur at 4:00-5:00 am. Irrespective of the time of going to sleep, seniors still wake up at the same time[40]. Sleep disorders impair concentration, reaction time, memory, and general functioning. Symptoms of sleep problems can be so strong that they can be interpreted as signs of dementia.

Pharmacotherapy is an often overlooked but serious cause of daily functioning disorders among seniors. Multiple morbidity, characteristic for older people, is associated with polypharmacy i.e., the use of extensive pharmacological therapy. Seniors take between 3 and 8 medications on average, mainly: analgesics, diuretics, cardiological and sedative medicines[41]. Unfortunately, instead of the expected improvement, multi-drug use often results in functional impairment e.g., depression, delirium and may cause falls. It is a risk factor for adverse drug reactions – 5.6% for two medications used concurrently, 50% for five medications and 100% for eight medications[42], which means that the higher the number of medications used the higher the risk of drug complications. Multi-drug use may cause the so-called drug cascade i.e., a situation in which the side effects of the applied pharmacotherapy are treated with subsequent drugs. The drug cascade, on the other hand, triggers multi-medication therapy and causes the risk of further adverse drug effects, such as iatrogenic geriatric syndromes i.e., diseases resulting from the previous treatment of other diseases. The problem of multi-drug use in the senior population is aggravated by the availability of many medications outside the pharmacy, over the counter, beyond medical knowledge and control. Self-treatment may result in an overdose e.g., popular paracetamol is available in many medicinal products with different trade names that may unknowingly be used together, ultimately exposing the patient to liver function impairment.

Multi-drug use can lead to a risk of drug addiction, which is difficult to detect due to the existence of a fluid boundary between necessary and excessive pharmacotherapy. The addictive effect is particularly demonstrated by-products used in mental disorders, osteoarthritis, chronic pain syndromes and vegetative disorders. Sedatives and sleeping pills, analgesics and laxatives are overused the most frequently[43]. Additionally, drug addiction is induced by difficulties and challenges characteristic of older age, such as illness and disability, chronic pain, insomnia, mourning, stress, anxiety, loneliness, social exclusion. This condition is less visible and more difficult to detect than in younger age groups and its symptoms, such as

40 S. Ancoli-Israel, Sleep problems in older adults: Putting myths to bed, "Geriatrics" 1997, 52(1), p. 20–30.
41 D. Ksiądzyna, A. Szeląg, Specyfika farmakoterapii pacjentów w podeszłym wieku, "Psychogeriatria Polska" 2013, 10(3), p. 115–126.
42 K. Wieczorowska-Tobis, A. Rajska-Neum, Pułapki farmakoterapii geriatrycznej, "Terapia" 2010, 10(247), p. 24–27.
43 D. Ksiądzyna, A. Szeląg, Specyfika farmakoterapii pacjentów w podeszłym wieku, "Psychogeriatria Polska" 2013, 10(3), p. 115–126.

falls, undernourishment or cognitive disorders, are often confused with dementia and infirmity[44].

Drug addiction is a component of a wider problem i.e., non-compliance. Non-observance of medical recommendations is particularly characteristic of depression, vision and mobility disorders and dementia. This means that non-compliance is largely due to disregarding the possibilities and functional limitations of the patient e.g., difficulties with dosing liquid drugs (e.g. vision disorders, shaking hands), memory problems. It is also difficult for the patient to follow an extensive, complicated and incomprehensible treatment plan, especially if it is carried out under the direction of several specialists acting in separation.

Non-compliance with doctor's recommendations may be unintentional e.g., dosage errors or intentional e.g., failure to realize prescriptions, selective use of drugs, reducing or increasing doses, shortening or prolonging the duration of pharmacotherapy, with the former resulting mostly from the appearance of side effects, and the latter being especially true of analgesics and sedative drugs. Similarly, psychoactive substances prescribed by doctors have a strong addictive effect. In the population of seniors, it is rare for them to consciously misuse drugs (increase doses, combined with alcohol). The addiction usually starts with individual cases of inappropriate drug use (e.g., borrowing from another person), then turns into periodic use, ending with permanent abuse[45].

Pharmacomania may lead to hypochondriac tendencies – about 10-15% of elderly people worry too much about their health and overestimate the level of their illness[46]. Hypochondria may be a symptom of hidden physical, mental, social, or functional problems in old age and allow people to seek help in a socially acceptable way. Excessive concern for one's health accompanies depression, anxiety and dementia in old age in particular, and is also associated with pharmacomania. This disorder may lead to taking unnecessary medications or undergoing unnecessary medical treatment, the side effects of which may indeed impair one's health and functioning. Paradoxically, hypochondriacs are exposed to shortcomings in medical services, which may minimize real health problems.

5.4. Effects of functional impairment in old age

It is difficult to indicate a specific moment at which a disability occurs when the functional state exceeds the limit of a norm recognized subjectively and objectively. The disability arises in a gradual way, especially at the very beginning, as it

44 O. McFarlane, K. Kędziora-Kornatowska, Przyjmowanie leków w późnej dorosłości – potrzeba edukacji zdrowotnej, "Rocznik Andragogiczny" 2017, 24, p. 213–222.

45 Ibidem.

46 W.R. Cunningham, J.W. Brookbank, Gerontology: The psychology, biology, and sociology of aging, Harper&Row, New York 1988.

can take place outside the person's awareness and elude superficial objective observation. A situation in which the actual functional impairment remains unnoticed is referred to as subclinical disability, meaning a state of sustained self-sufficiency despite the presence of functional limitations. The improvement of impaired functioning is achieved through unconscious compensation mechanisms. For example, prolonging the duration of a challenging activity may be a compensation strategy that guarantees its success, and as long as the additional time is not unnaturally long, the activity may be considered as not causing problems at the level of consciousness.

Without a doubt, a progressing disability is associated with the shrinking of the functional space i.e., gradual disabling of subsequent activities inaccessible in terms of efficiency. It is a negative process in the context of functional efficiency, although from the perspective of adaptive processes the strategy of " winning by losing" may have certain benefits i.e., maintaining the highest possible level of competence by narrowing the scope of activity. As a result, a person maximizes control over their own smaller world. Over time, however, a deepening disability is not without consequences at the level of individual functioning, leading to disorders at the biological, psychological, social and daily activity level, and ultimately to the limitation of one's life autonomy.

With age, due to health and functional problems, the demand for medical, care and social services increases. Older disabled people remaining in their own environments require formal care, provided by specialized nursing and medical services, as well as informal care, provided by members of the nearest social network, mainly family and friends. In Poland, it is customary that an older person requiring assistance is cared for by his or her family. Mild restrictions may require occasional help e.g., in weekly house cleaning while in more severe conditions advanced help is needed in daily life activities several hours or even 24 hours a day. Generally, family assistance is sufficient in cases of difficulties in performing instrumental activities of daily life (IADL), but specialized assistance becomes necessary in the face of severe disability that makes it impossible to perform self-care activities (ADL), which are essential for maintaining one's autonomy in life.

Almost half (46%) of Poles aged 65 and over require assistance in at least one instrumental ADL[47], which shows the scale of the need for functional support for seniors state-wise. The demand for formal and informal care provided to seniors with disabilities is growing rapidly as this subpopulation expands.

In a situation of increased demand for care services provided to seniors, the problem arises of burdening the carers i.e., most often the spouse and adult children. Spouses provide care for a disabled husband or wife, often experiencing their own health problems, children, in turn, combine the role of carers for their disabled

47 B. Bień, Stan zdrowia i sprawność ludzi starszych, in: Polska starość, ed. B. Synak, Wydawnictwo Uniwersytetu Gdańskiego, Gdańsk 2002, p. 35–77.

parent with that of caring for their own growing children and often with simultaneous professional work, thus becoming the so-called "sandwich generation".

It is worth noting that although women are more likely to provide care for the oldest and youngest generation when they themselves experience a disability, they receive fewer hours of informal care than do men in a similar situation[48]. This difference may be explained by the fact that older women more often live alone, and yet even when living with their spouse, they receive significantly less care than men experiencing similar functional limitations.

If spouses and adult children are the primary carers of seniors, then the issue of providing care for childless seniors emerges, especially in the future, given the increasing proportion of couples not wishing to have children or the migration trends of young people that weaken intergenerational ties and opportunities for direct assistance to the oldest members of the family. The declining potential for family care, combined with the increasing number of people reaching old age, will generate a growing demand for formal care, including 24-hour care homes.

Disabled seniors who cannot count on sufficient formal and informal care are exposed to the risk of deprivation of their own needs that are not satisfied due to their limited functional efficiency. In contrast, failure to meet their needs may result in the deepening of their health problems and their disability. The inability to take care of oneself leads to an increase in health problems. Functional disability, for example, directly affects the course of diabetes, limiting the ability to follow medical recommendations and apply medications correctly. Similarly, physical disability increases the risk of developing heart disease, regardless of other risk factors associated with it. Disability also causes falls and fractures, which have additional negative consequences for functioning and health.

Disability in old age is strongly correlated with the risk of developing depression. However, the relationship between the illness and disability is not direct, since it is not so much the condition itself that causes depression, but its functional effects associated with impaired daily functioning. Improvement in functional capacity usually leads to a reduction in depression.

Decreased functional efficiency can lead to difficulties in proper eating, which can also lead to a deterioration in health. Undernourishment among old-age people can in turn affect psychological functioning, causing anxiety, depression or problems with concentration, but also a tendency to fall and damage to the body. If a person does not feel competent due to the functional limitations they experience, they will, for instance, be more likely to rely on unhealthy snacks and semi-prepared food, usually less nutritious than home-made meals. For this reason, it is worthwhile to offer disabled as well as lonely seniors a home delivery service.

48 S.J. Katz, M.U. Kabeto, K.M. Langa, Gender disparities in the receipt of home care for elderly people with disability in the United States, "JAMA" 2000, 284(23), p. 3022–3027.

Disability limits the possibilities of social involvement and maintaining and developing interpersonal relationships e.g., due to difficulties in mobility, sensory perception (impaired sight, hearing) or verbal communication. It is known that social activity is beneficial for health and its reduction leads to a deterioration of health and a further deepening of functional inefficiency. Disability restricts the possibility of full inclusion in social life, but on the other hand, it is the physical and social environments that contribute to social isolation, as they are often not adapted to the needs of people with disabilities and share negative stereotypical beliefs about disability and old age, sometimes resulting in discriminatory behavior.

A disability may increase the tendency to lead a sedentary lifestyle due to fear of accident and injury, which, combined with a poorly balanced diet, may result in further deterioration of health. In this perspective, rehabilitation appears to be an intervention leading not only to improved functioning but also to improved health. It is also an important element of preventive actions aimed at secondary diseases and injuries to which disabled seniors are exposed as a consequence of primary conditions. This may be illustrated by the example of a blind person who, as a result of the loss of sight and inability to perform daily life activities themselves, does not engage in physical and social activity, which may lead to the development of depression, coronary artery disease or malnutrition, which then becomes a source of further clinical disorders. In addition, an inappropriate dosage of drugs prevents effective pharmacotherapy.

Consequently, disability is associated with an increase in the costs of medical care e.g., the rate of hospitalization is about 2-3 times higher for seniors with severe disabilities compared to their non-disabled or slightly disabled peers[49]. In the case of older people with disabilities, the cost of medical care is 3 times higher per capita than that of non-disabled seniors[50]. Taking into account that old-age patients in Poland occupy almost 50% of hospital beds, compared to 70% in France and 80% in Sweden[51], it is quite a challenge to provide adequate medical care to sick seniors in view of the growing process of population aging. The growing demand for institutionalized care services should be taken into account, as it is a disability that is the main reason why seniors live in nursing homes.

Being a measure of health, disability significantly increases the risk of death. The greater the disability, the higher the risk. The fact that disability shortens life is evidenced by the example of a 75-year-old person without functional limitations, who can expect to live 5 years longer than people with limitations in basic activities of daily life (ADL) and more than 1 year longer than people with limitations

49 V. Mor, V. Wilcox, R. William, J. Hiris, Functional transitions among the elderly: Patterns, predictors, and related hospital use, "American Journal of Public Health" 1994, 84(8), p. 1274–1280.

50 A. Pope, A. Tarlov, eds., Disability in America: Towards a National Agenda for Prevention, Institute of Medicine, National Academy press, Washington DC 1991.

51 G. Lamura., M.G. Melchiore, S. Quattrini, C. Balducci, B. Bień B, Geriatric care in six European countries. Should Europe support family carers?, "Hospital" 2004, 6, p. 49–50.

in terms of mobility. The life expectancy of a 75-year-old person with ADL disability is similar to that of a functionally independent 85-year-old person, whereby a 75-year-old person will spend long years of life with a disability. The conclusion can only be one – a more functional patient is less likely to die.

Significantly, as a series of careful studies have shown, functional disability is correlated with mortality, which is independent of physical health[52]. For this reason, two people with the same health problem may have different prognoses for the future, but a more efficient patient can expect to live longer. As a matter of fact, the degree of disability is a stronger indicator of mortality than the number of disabling diseases that a person experiences[53]. Rehabilitation activities should therefore be appreciated, as they have a direct impact on the functional capacity but also, as it turns out, on the length of a person's life. In this sense, the improvement of impaired functioning is an activity that improves both the quality and length of patients' lives. It would therefore be worthwhile to take into account the assessment of the state of functional efficiency in medical diagnostic and therapeutic procedures and to include rehabilitation interventions in a comprehensive health care plan.

5.5. Improvement of functional disorders among older people

The process of acquiring a disability is called disablement. It is generally a process of losing abilities, skills needed in daily functioning and taking up activities customary for a given person. The opposite process of disablement is the process of enablement, which means allowing a person to recover, maintain or acquire skills needed in daily life. This process includes rehabilitation, which restores functional abilities and allows a person to undertake daily activities customary for them.

Longitudinal studies[54] show that it is possible to improve the state of disability in old age, which proves that the process of acquiring disability does not have to follow the path of linear decline towards the continuous aggravation of functional disorders, without the possibility of improvement. Functional recovery is achieved by means of formal services and informal, individual remedial actions.

In the first period after acquiring a disability, seniors try to deal with the arising limitations on their own (informal actions). Through their own intelligence and

52 L.J. Ferruci, J.M. Guralnik, A. Baroni, Value of combined assessment of physical health and functional status in community-dwelling elderly: A prospective study in Florence, Italy, "Journal of Gerontology: Series A"1991, 46(2), p. 52–56.

53 S.M. Albert, M.G. Cattel, Old age in global perspective: Cross-cultural and cross- -national views, G.K. Hall & Co, New York 1994.

54 V. Mor, V. Wilcox, et al, Functional transitions..., op. cit., p. 1274–1280. G.A. Kaplan, W.J. Strawbridge, T. Camacho, R.D. Cohen, Factors associated with change in physical functioning in the elderly: A six-year prospective study, "Journal of Aging and Health" 1993, 5(1), p. 140–153.

creativity and with the involvement of the social support system: 1) they modify their previous ways of performing certain activities (e.g. visually impaired people read with text in hand, closer to the eyes, at an appropriate angle to the light, instead of leaning over the text); 2) they use adaptive equipment (e.g. illuminated magnifying glasses for reading, book stands for reading at the right angle); 3) modify the physical environment (e.g., replace bulbs for stronger ones); 4) benefit from supportive aids (e.g., in advanced states of disability, shopping or preparing meals to maintain their ability to live autonomously in their own homes). Unfortunately, they also often rely on addictive help, eagerly provided by loving and caring relatives, which, however, involves providing help even in those areas where the senior could still be independent. Only a small part of disabled seniors decides to undertake formal, institutionalized improvement measures and benefits from available rehabilitation services.

5.5.1. The concept of rehabilitation

Rehabilitation is: "(...) a set of coordinated comprehensive activities, particularly in organizational, therapeutic, psychological, technical, training, educational and social contexts, aimed at achieving – with the active participation of people with disabilities – the highest possible level of functioning, quality of life and social integration"[55]. Rehabilitation focuses on the improvement of functional disorders i.e., the ability of a person to perform daily activities, in the context of maintaining their independence and quality of life. Rehabilitation takes into account functional limitations and their medical foundations, which in turn are considered in a broader psychological and social dimension. Currently, rehabilitation consists of: "(...) a holistic approach and realization of the individual needs of the human being", which translates into taking into account the entire psycho-physical and material needs of people with disabilities, satisfied by realizing a program of physical, mental and social improvement"[56].

If in the light of the WHO concept, disability, linked to the limitation of function, activity and ability to participate in social life, is a universal state, experienced by all people in different ways and to different degrees at different stages of life, then rehabilitation, which is aimed at supporting the state of a person's functional independence, also gains broad universal significance. In this perspective, it goes beyond the framework of formal interventions, covering all activities aimed at maintaining or regaining the efficiency of daily functioning. It is a life-long process, aimed at achieving an optimal level of functioning for a given person. Rehabilitation acts at the stage of preventing functional disorders and aims at their total or partial reduction.

55 A.A. Zych, Słownik gerontologii społecznej, Wydawnictwo Akademickie Żak, Warszawa 2001.
56 R. Pichalski, Podstawy rehabilitacji zdrowotnej, zawodowej i społecznej, APS, Warszawa 2002, p. 23.

It is worth noting the distinction between the terms of revalidation and rehabilitation, which often appear in the field of special pedagogy and are sometimes used interchangeably. In the opinion of J. Pańczyk, if: "The task of revalidation is to restore the disabled person to the full norm (...) the task of rehabilitation is to restore the disabled person to the possibly full life. In this case, there is no possibility, as is in the case of revalidation, to return to the norm"[57]. Revalidation is therefore most often referred to in the case of social maladjustment or partial deficits, while rehabilitation is mentioned especially in the context of improving people with visual, auditory, motor and intellectual disabilities. In the case of older people, it is important to distinguish between restorative rehabilitation, which restores lost functions, and maintenance rehabilitation, which aims to preserve and strengthen functionality. These terms to some extent refer to the definitions of revalidation and rehabilitation.

In adulthood, rehabilitation effectively focuses on maintaining or regaining efficiency to the maximum possible extent, very rarely undertaking habilitation activities consisting of learning to perform a given activity for the first time. In this case, the prefix "re" does not apply, because there is no return to the lost efficiency, but rather an acquisition of new activity. This type of rehabilitation is appropriate for children with disabilities, who are not so much learning to perform lost activities again but are only learning and mastering them for the first time.

Rehabilitation should be applied in all age groups, in the case of a single disability and multiple disabilities of any degree. In order for improvement actions to be effective, it is necessary to recognize the actual rehabilitation needs of older people, possible only if the bio-psycho-social specificity of their functioning is known both in terms of an age category and individuals. Rehabilitation needs are highly individualized, therefore their realization must be accompanied by an analysis of the patient's broader functional context. Ready-made plans or improvement programs will find selective application among seniors. Older people need a holistic, deeply humanistic rehabilitation, responding to their real needs and abilities.

5.5.2. Prevalence of rehabilitation in old age

Due to the high prevalence of disability in old age, the need for rehabilitation in this age group is enormous. Unfortunately, the participation of seniors in rehabilitation is very low, which leads to the conclusion that in most cases the rehabilitation needs and, consequently, the functional needs of seniors remain unmet and perhaps even unrecognized.

57 J. Pańczyk (ed.), Pedagogika specjalna. Psychopedagogiczne i medyczne studium terminologiczne, Instytut Wydawniczy Związków Zawodowych, Warszawa 1991, p. 117.

According to government data[58], in the case of physical rehabilitation, the percentage of older people with disabilities was only 18.2%, with the number decreasing with increasing age and reaching only 10% in the group of 75-year-old seniors. Rehabilitation was used more than twice as often by older urban residents than by rural residents. People with neurological disorders (27.2%) and locomotor disorders (24.4%) were the most frequently rehabilitated. Almost every fifth person had difficulty in moving, which made it difficult to reach the rehabilitation facility. Another serious obstacle was the lack of financial resources. Unfortunately, it would be right to say that seniors' own beliefs were the most serious obstacle to their participation in rehabilitation – 29% of older people did not see any indications or need for rehabilitation, despite the frequent occurrence of diseases reducing their ability to function independently. According to the Central Statistical Office (GUS) data[59], the obstacles related to rehabilitation included, in the order of the most common: lack of financial resources, lack of declared need for rehabilitation, lack of possibilities in the place of residence, disbelief in effectiveness, lack of impediments, poor work of the facility, difficulties in moving around, cumbersome formalities, lack of time for oneself, lack of strong will, fear of procedures, lack of equipment and unresourcefulness.

The high popularity of physical rehabilitation (24.4% for people aged 50-59 and 8.7 for people aged 90 and over) is noteworthy in comparison with other types of rehabilitation: social (2.1% and 0.4% respectively), professional (0.6% and 0.1% respectively) and other forms of rehabilitation (4.5% and 2.3% respectively)[60]. Unfortunately, despite the high prevalence of visual and auditory disabilities in older age, a small percentage of seniors benefit from rehabilitation dedicated to those with sensory disabilities. According to New York data[61], only 6% of respondents aged 45 years and over who reported vision impairment benefited from some kind of rehabilitation services, with 1% of respondents at that age participating in sight rehabilitation as well as rehabilitation of daily life and recreational activities and 2% reporting using psychological care to emotionally adapt to a loss of vision. The most common reason for not using rehabilitation services was unawareness of their existence. The lack of knowledge of seniors with disabilities about the availability of rehabilitation services makes it impossible for them to undertake improvement actions, despite indications.

The phenomenon of the reluctance of disabled seniors to engage in formal remedial actions is quite common and does not only concern Poland. For example,

58 Ministerstwo Pracy i Polityki Socjalnej. Biuro Pełnomocnika do Spraw Osób Niepełnosprawnych. Wydział Integracji Osób Niepełnosprawnych i Rozwiązań Systemowych, Osoby niepełnosprawne w Polsce. Opracowanie analityczno-teoretyczne, Warszawa 1998.

59 Główny Urząd Statystyczny, Stan zdrowia i potrzeby osób niepełnosprawnych w Polsce w 1996 r., Zakład Wydawnictw Statystycznych, Warszawa 1997.

60 Ibidem.

61 The Lighthouse Inc., The Lighthouse National Survey on Vision Loss: The experience, attitudes, and knowledge of middle-aged and older Americans, The Lighthouse Inc., New York 1995.

the majority of American seniors with visual impairment, who rarely move independently, are not interested in spatial orientation and mobility training[62]. The reluctance of older people with disabilities to improve their own functioning may indicate their insufficient awareness of the effectiveness of rehabilitation undertaken in old age. Perhaps there is a strong conviction that rehabilitation activities carried out in old age are ineffective and that disability at this age is a normal and unavoidable state that must be accepted. Unfortunately, this stance is also shared by older people themselves. This is the basic obstacle not only in undertaking rehabilitation activities but even treatment. As far as medical care personnel is concerned, this belief may build negative attitudes towards older patients, manifesting itself, for example, in hindering access to rehabilitation, considered pointless in this age category. If a disability is considered a natural consequence of the aging process and rehabilitation is considered ineffective, it is difficult to speak of a conviction to undertake any activity in order to recognize and meet the rehabilitation needs of older patients. It would be desirable if practitioners could recognize the basic rehabilitation needs of their patients and have sufficient knowledge about local rehabilitation services.

Reluctance towards rehabilitation may also result from the difficulty of admitting to oneself and the social environment having more serious health and functional difficulties. The denial of acquired limitations is particularly appropriate for those seniors who have lived a healthy life to date and acquired a disability later. In their case, wishful thinking is dominant, often far from a rational judgment of the situation. Undertaking formal actions requires that one's own functional state be considered limited, which is a big challenge especially at the initial stage of adapting to disability. Undertaking an improvement requires accepting the current limited functional possibilities, but also adjusting one's own sense of identity, strongly shaped in the course of life to date. A person who has enjoyed full functional capacity for most of his or her life feels a lot of resistance to entering the role of a disabled person, a resistance often resulting from a stereotypical understanding of disability and fear of negative reactions of others.

Adults are exposed to a higher risk of depression resulting from developing a functional disability, creating a mental barrier against undertaking active improvement. Amy Horowitz and Joann P. Reinhardt[63] have shown that depression prevents seniors with impaired vision from starting and continuing rehabilitation, meaning that older people with depression benefit from it to a lesser extent. However, when they do decide to participate, their performance is weaker than that of older people with no symptoms of depression. And yet, rehabilitation can have

62 R.G. Long, L.B. Boyette, H. Griffin-Shirley, Older persons and community travel: The effect of visual impairment, "Journal of Visual Impairment and Blindness" 1996, 90(4), p. 302–313.

63 A. Horowitz, J.P. Reinhardt, Vision loss and late-life depression: Researching the critical links, "Aging Today" 2000, 21(6), p. 9–10.

a positive impact on reducing disability and depression. It has been shown[64] that a decrease in functional disability is associated with the reduction of depression.

The reasons for the low prevalence of rehabilitation among seniors may be very simple, including the difficulties in reaching the rehabilitation facility, especially if it is expected from a person not yet treated. Children requiring rehabilitation may usually depend on their parents while older people with reduced mobility, who are unable to move around on their own may not always benefit from a means of transport organized by their spouse or their own adult children. The ability to move around using public transport may be one of the objectives of rehabilitation and should be taken into account when planning the location of the facility for those who are immobilized at the time.

The reluctance to increase one's own activity and efficiency may also appear in a situation when the disability and dependence provide certain gratification e.g., financial (benefits) or emotional ones. Improving the functional condition may raise concerns, most often unjustified, about the loss of financial support or the interest, care and support shown by family and relatives. In addition, people may not be willing to take up training because the vision of regaining independence may shake their inner sense of security. In contrast, others may not be willing to allow others to help them, something they see as a violation of their personal values or social position.

5.5.3. The specificity of rehabilitation needs in old age

Due to the different functioning of elderly people at biological, psychological and social levels, which is reflected in the process of natural and pathological aging, it is important to stress the uniqueness of the rehabilitation needs of seniors. There is talk of "special needs" of older people because of the different problems they face and their greater complexity than in the case of younger people. Older people with disabilities also have their "special educational needs", which are met in the course of training and rehabilitation undertaken within the framework of special pedagogy dedicated to old-age persons – special geragogy, or more broadly, "special rehabilitation needs" implemented within the system of formal and informal improvement.

The specificity of the rehabilitation needs of seniors requires adequate methods of the rehabilitation process. "Certain differences in the rehabilitation procedure should be taken into account in children and adolescents as well as older age persons"[65]. Undoubtedly, the rehabilitation of older people is different from that of those at young age. Its objectives, the methods and facilities used, or even the manner of communication to some extent need to be adapted to an older

64 M. Von Korff, J. Ormel, W. Katon, E.H. B. Lin, Disability and depression among high utilizers of health care, "Archives of General Psychiatry" 1992, 49(2), p. 91–100.

65 G. Chojnacka-Szawłowska, K. Szabłowski, Rehabilitacja, Medyczna Agencja Wydawniczo Informacyjna, Warszawa 1994, p. 27.

patient. Unfortunately, the needs for rehabilitation of seniors are not well recognized, and the oldest age group of disabled people still remains outside the mainstream of medical, social and rehabilitation care.

Although rehabilitation has quite a long tradition, knowledge about the specifics of working with older patients is modest. There is no doubt that there is a need to adapt procedures, methods and techniques for improving children and people of working age, while it is still not obvious that there is a requirement to modify the training to the specific needs of seniors. And it is known that the condition for inducing motivation to undertake educational or improvement activity is to adapt the proposed training to the real needs and capabilities of participants, including those in advanced age. These needs should be recognized beforehand. The specificity of seniors' needs, including rehabilitation needs, results from the conditions of their life in the bio-psycho-social and functional sphere. The inclusion of this specificity in rehabilitation at the systemic or methodological level allows older people to achieve comparable results as in younger age groups[66].

The function is a "product" of biological, psychological and social forces acting together. The assessment of specific rehabilitation needs should therefore take into account the complexity of bio-psycho-social as well as functional problems faced by disabled seniors. Sometimes they concern so many different aspects that it is difficult to know where a given problem begins. In old age, there is an overlap of the effects of the damage suffered, the natural changes inherent in the aging process and/or additional disease changes, which makes rehabilitation more complex. In the case of the frequent multiple disabilities in old age, it is essential to know which damage causes the dominant disability. The determination of the main disorder itself is more difficult than in young people, sometimes even impossible, because seniors often experience many chronic conditions. Moreover, the functional consequences of multiple advanced age diseases interact with each other and exacerbate the state of functional disability. In addition, there is an unusual course of health disorders and complications – more frequent among seniors and more difficult to cure. The effect of compensation mechanisms is also limited because, apart from the main damage, other systems may also suffer from functional impairment and not take over the compensation functions.

Rehabilitation of older people is also often hindered by a specific psycho-social situation, such as depression, anxiety, loneliness, lack of social support or sufficient financial resources. The loss of efficiency in the case of seniors is part of the overall context of loss experienced at an advanced age e.g., health, work or members of the social network, thus deepening the scope and complexity of its physical, mental and social consequences. The loss of efficiency is perceived in the context of other losses related to old age and is, therefore, felt more acutely. There is an overlap of the effects of disability with the psycho-social effects of aging, which

66 B. Kemp, K. Brummel-Smith, J. Ramsdell, Geriatric rehabilitation, Little Brown, Boston 1990.

results in intensified losses. The rehabilitation needs of seniors are therefore complex and require comprehensive action.

The assessment of the functional condition of seniors with disabilities should take into account the time of the suffered impairment. The functioning of seniors who have entered the old age as people with disabilities with already developed adaptation strategies and those who have lived most of their lives as fully able people, and who in their old age have to face challenges resulting from both disability and old age. A person who was born with or acquired a disability in early childhood will have different rehabilitation needs than someone who experienced a disability at the stage of his or her professional career or retirement. These two functionally different situations of disabled seniors are described by the following terms: "disability with aging". and "age with disability"[67]. Remedial measures should be designed to address the rehabilitation needs specific to these two categories of older people with disabilities.

In most cases, it is the patient's functional assessment in the doctor's office that should be the first link in the rehabilitation of seniors. It should encompass the evaluation of the ability to perform daily activities, vision, hearing, mobility, mental state (especially perceptual abilities), emotional state (especially towards depression), urination, nutrition, social support and the physical home environment. The setting of goals for rehabilitation should be based on in-depth analysis and assessment of the specific needs of patients prior to any remedial action. A wrong assessment of the needs of a disabled senior, or even omission thereof, will result in a mismatch of the implemented improvement measures. This assessment, carried out by a group of specialists, should be both objective and subjective, as it is necessary for the disabled person to participate in setting the goals for their improvement. Rehabilitation is intended to respond to the participant's needs and these are difficult to determine clearly without an insight into the patient's own perspective. Taking into account the patient's opinion at the stage of planning the rehabilitation allows increasing the effectiveness of the actions taken subsequently.

Specific rehabilitation needs of disabled seniors are revealed as early as at the stage of setting the objectives of the treatment, which must be integrated with the patient's individual preferences for improving his or her own impaired functioning. It is therefore recommended that they should be preceded by an in-depth analysis and identification of patients' needs. These objectives should encompass a broader perspective of individual physical, mental, social and functional needs. It is particularly important to develop, in parallel, a support system for seniors with disabilities and their families, due to the isolation, depression or burnout syndrome they experience in connection with the provided care. The objectives

67 L.M. Verbrugge, L-S. Yang, Aging with disability and disability with aging, "Journal of Disability Policy Studies" 2002, 12(4), p. 253–257.

of rehabilitation of seniors can be aimed at their professional activation, as well as the adaptation of their home environment, external surroundings or the workplace.

Rehabilitation goals should be set by an interdisciplinary team of specialists and the patient him/herself – a specialist in the field of their own abilities and needs, for whom individual rehabilitation goals are only a part of larger, more complex life objectives. The patient who is described as unmotivated in the course of rehabilitation is often a person whose needs have not been taken into account[68]. The effectiveness of the therapy depends on the extent to which the patient was included in setting its goals. Only rehabilitation planned in accordance with the specific needs of disabled people can lead to their real satisfaction. Older people require a process of rehabilitation modified to their own needs as a separate age group, experiencing the combined effects of natural and pathological aging, but also because of deepening individual differences with age.

The primary goal of rehabilitation for older people shared at the level of subjective interests and objective standards, is to regain and/or maintain autonomy in life to the maximum possible extent. In the case of seniors, the success of the effects of rehabilitation can be achieved by raising the level of functioning without regaining full efficiency or by maintaining it at a stable level in the event of additional damage or changes in life, such as the death of a spouse acting as a carer, which requires renewed training. Seniors should be able to benefit from continuous support or undertake further training if their life, health or functional situation changes.

The place and time of planned appointments should also be adjusted to the individual needs of seniors. Preference will be given to a familiar environment that is accessible in terms of architecture, communication and mobility, taking into account the possibilities of public transport. It is also desirable to have rehabilitation provided in the patient's home. On the other hand, such remedial sessions organized out-of-home, in a larger group give the possibility of socialization, which in the case of older people is an important motivational stimulus. Meetings of seniors with similar problems provide an opportunity to exchange experiences in the sphere of physical, mental and functional life, and are also a chance for social activation. The time of training should be determined on the basis of patients' preferences concerning e.g. the period of physical well-being during the day, functioning in specific weather conditions (e.g. fear of moving in rain or snow, tearing in windy weather), traffic intensity or avoiding moving outside the house at nightfall.

Moreover, the very methodology of working with older people with disabilities requires adaptation. In training that includes an educational element, the principles of andragogy (adult education), geragogy (education for older people) and special geragogy (special pedagogy for older people) should be applied. It is important

68 F.U. Steinberg, Medical evaluation, assessment of function and potential, and rehabilitation plan, in: Rehabilitation of the aging and elderly patient, eds. G. Felsenthal, S.J. Garrison, F.U. Steinberg, Williams&Wilkins, Baltimore MD 1994, p. 81–96.

that the instructor respects the knowledge, skills and experience of the adult student, around whom the entire rehabilitation process is focused.

In the course of rehabilitating seniors, appropriate adaptive techniques and rehabilitation aids are used. Ready patterns and solutions may not prove useful e.g., classic white cane techniques should be modified in case of memory problems or pain in wrist joints. Sometimes it is necessary to refer the patient to additional therapy or treatment of, for instance, depression, a program of exercises correcting gait and balance disorders, body posture, or improves coordination and increases muscle strength. It may be desirable to modify the aids themselves e.g., white stick holders for people with arthritis, and magnifying glasses mounted on a stand or in spectacle frames in case of unstable hands may also prove more effective. Additional rehabilitation aids are also used e.g., laser sticks or a simple support stick accompanying a white stick in case of more severe vision and gait disorders. In the case of blind but physically fit seniors, a guide dog providing safe and efficient mobility can be an exceptionally apt solution, and own company and physical activity (necessary daily walks) combined with social activation, which is particularly important in older age with an increased risk of social isolation and loneliness.

Additionally, raising seniors' efficiency requires the adaptation of their immediate environment. For visually impaired people, for instance, it may be necessary to: modify lighting (e.g. choose the right type of light, install additional light sources), remove sources of glare (e.g. by covering smooth, reflective tops), use contrast and colors (e.g. marking changes on the ground, such as the beginning of stairs). For all seniors, the apartment should be rearranged to minimize the risk of injury (e.g. falling due to slippery surfaces), unstable walkways or cables and wires removed. It is believed that elderly people expect smaller changes in their own homes and habits than young people, so individually tailored designs should be used, taking into account patients' suggestions.

Rehabilitation, which takes into account the different rehabilitation needs of participants of the oldest generation at the level of system structures, program assumptions and detailed rules of instruction and rehabilitation techniques can effectively address these needs. The effectiveness of rehabilitation is the basic factor that motivates older people to undertake it. On the other hand, including the dynamically growing group of disabled seniors in the rehabilitation system and their effective improvement is one of the main tasks of the aging society.

* * *

Old age and chronic disability have rarely coexisted until now, so services for people with disabilities in advanced age are still poorly recognized, understood and implemented. In theory and practice, the field of disability operates in isolation from the field of old age and is addressed by separate specialists and institutions. There are many professionals competent in the area of aging and old age (gerontology), and there are numerous specialists working in the area of disability

(rehabilitation and special pedagogy). There are few, however, who know how to work with older people with different kinds of disabilities. Specialists working in the sector of services dedicated to seniors are sensitive to issues related to ageism, but less to prejudices concerning disability. They often lack knowledge about the field. On the other hand, professionals in the market of services for people with disabilities lack competence in working with older people and the ability to recognize and meet their specific abilities and needs. Separate functioning of these two sectors of services: old age and disability make it difficult to create and implement combined services for seniors with disabilities.

Demographic reasons, however, lead to the integration of the sector specialized in old age with the sector specializing in disability. Due to the growing number of older people, functional limitations and disability appear to be one of the most significant challenges of the new millennium. As the process of aging of societies proceeds, its effects, also in the economic sense, will be felt both at the micro and the macro level, therefore all preventive and intervention activities aimed at detecting the mechanisms of emergence of disability and effective methods of improving the impaired functioning will become more important.

Chapter 6
Anticipating old age

Old age is a challenge for people, disabled old age is a twofold challenge. The very process of aging in its natural course, connected with many changes in biological, mental or social life, requires a strong engagement of adaptation mechanisms. Adaptation to old age, which in its pathological course is strongly connected with deterioration of the functional state, also means adaptation to diseases and disabilities acquired with age, which demands intensification of adaptation resources. Of all the difficult situations characteristic of old age, the loss of efficiency and independence in life is one of the greatest challenges. It has been calculated[69] that as many as 80% of women in late adulthood would rather die than experience a loss of independence and the quality of life associated with it.

There is still an open question about the relationship between adaptation to old age and adaptation to disability, which runs along two paths: when a disabled person enters old age and when a person acquires a disability in old age. It is not known to what extent old age hinders successful adaptation to disability and to what extent disability disturbs adaptation to old age itself. In fact, little is still known about the mechanisms used by older people in coping with the difficulties of this period of life.

6.1. Adaptation to old age

People in late adulthood are at risk of losing their health and efficiency, physical attractiveness, independence, their spouse, siblings, friends, neighbors, physical proximity to children and grandchildren, work and financial security, social and

69 G. Salkeld, Quality of life related to fear of falling and hip fracture in older women: A time trade off study, "British Medical Journal" 2000, 320(7231), p. 341–346.

economic status, opportunities to do productive work, social usefulness, mental capacity, self-esteem, control, intimacy, privacy. As a result, they are faced with such difficulties as: widowhood, loneliness, poverty, boredom and monotony, suffering, a sense of weakness, despair, fear for the health and their own life or social exclusion. Dealing with these difficulties is the greatest challenge in old age.

This period of life witnesses the accumulation of losses in a relatively short time. A negative balance of gains and deficits may cause adaptation difficulties, and the prospect of their further accumulation on the downward spiral of opportunities in life can lead to crises, potentially damaging to the mechanisms of coping with the encountered challenges. Overcoming a crisis requires making an adaptive effort, which is difficult because in old age there is an intensification of losses with a simultaneous decrease in adaptive resources. In addition, in old age, a person is less able to cope with difficult situations – it takes more time to undertake an adaptive response and to return to the initial state of balance. It is also worth noting that coping with numerous difficult situations in old age is further complicated by the lower availability of rewards in the form of pleasure and satisfaction for the undertaken behavior. For seniors, these reinforcements are no longer easily achievable (e.g. the presence of friends), do not work as well as they used to (e.g. food no longer tastes as good), or do not work at all (e.g. mountain expeditions). The solution is for seniors to find new reinforcements – new interests, behaviors, friends[70].

"Aging is a source of new, difficult tasks for an individual and the way one responds to them and how they are solved determines the process of internal and external adaptation."[71] Adaptation to old age can be understood as the ability to maintain the quality of life in a situation of experiencing increased losses in life[72]. Adaptation to old age is actually an art: "(...) dealing with everyday problems by controlling the prospect of aging and the quality of life in a cumulative experience of loss of essential values."[73] In a functional context, adaptation enables to maintain a balance between one's own resources and the requirements of the environment in the process of personal development throughout the cycle of life.

People in older age feel "(...) that time has passed them by, that their experience belongs to a world that no longer exists, and that they as people are obsolete and their experience without value or meaning. These people, who often feel "ignorant" because they lack formal educational credentials. Are only a mirror image of other

70 M. Plumb, Psychological aspects of the aging process, p: Working with the elderly. A training manual and teaching guide, eds. E.S. Deichmann, M.V. Kirchhofer, Potentials Development, New York 1985, p. 11–25.

71 O. Straś-Romanowska, Późna dorosłość. Wiek starzenia się, in: Psychologia rozwoju człowieka, tom 2, ed. B. Harwas-Napierała, J. Trempała, Wydawnictwo Naukowe PWN, Warszawa 2008.

72 P.B. Baltes, M.M. Baltes, Psychological perspectives on successful aging: The Model of Selective Optimization with Compensation, in: Successful aging: Perspectives from the behavioral sciences, eds. P.B. Baltes, M.M. Baltes, Cambridge University Press, Cambridge 1990, p. 1–34.

73 Adaptacja do starości wg P.B. Baltes i M.M. Baltes, in: Leksykon gerontologii, ed. A.A. Zych, Kraków 2007, p. 13.

old people who glorify the past as a defense mechanism for coping with an uncertain present and a threatening future. (...) The economy and the technological system of our society place decreased importance on life experience and tend to favor skills and knowledge that must be continually updated to avoid obsolescence. Outside the technological sphere, in the domain of customs, values, and family life, old people also find themselves at a disadvantage: their life experience is of less and less value in a world of rapid social change. If old people try to preserve lessons derived from life experience, they are in part simply trying to preserve themselves and their sense of who they are. Yet this very attempt at self-preservation can destroy the possibility for growth and adaptation in the present."[74] On the other hand, there is a phenomenon of disowning the past – i.e., treating it as if it were nonexistent, engaging in new activities, focusing on the present and future. This is a popular approach in countries where the cult of youth dominates, encouraging the avoidance of the problems of old age rather than confronting them. The past represents there what is obsolete and what must be rejected[75]. The culture of youth requires proving the equal value of both older and younger people. Unfortunately, even seniors themselves are subject to it, as they want to remain relatively young for as long as possible, considering older age to be of less value. Consequently, they deny their age, and denial is a form of defense against everything that stereotypical old age is expected to represent, such as: illness, disability, ugliness, poverty, loneliness, non-productivity as well as negative character traits, such as bitterness, nosiness, parsimony or pessimism. It is no surprise that in this dualistic division along the line between a good youth and a bad old age, nobody wants to grow old, and the constant pursuit of everlasting youth is increasingly stimulating in the fields of medicine and science, while also being used in marketing and business.

Adaptation is connected with the process of coping, involving the mental, functional and emotional spheres of a person in demanding and stressful situations. Richard S. Lazarus and Susan Folkman[76] propose probably the best-known typology of coping strategies. They distinguish between 1) problem-focused strategies, where a person actively confronts a problem and manages a stressful situation and 2) emotion-focused strategies, where a person tries to regulate their emotional responses to a problem (e.g. depression, anger, shame) and thus minimize the threat. Problem-focused coping strategies occur when a person is convinced that they are capable of changing the problem. If it proves impossible, they will rather try to change their perception of the problem and give it a different meaning using emotion-focused approaches.

With age, there is an increasing tendency to make changes in oneself rather than in the problem, which means that emotion-focused strategies are more likely to be

74 R.H. Sherron, D.B. Lumsten, Introduction to educational gerontology, Hemisphere Publishing Corporation, Washington DC 1990, p. 25.

75 Ibidem.

76 R.S. Lazarus, S. Folkman, Stress, appraisal and coping, Springer, New York 1984.

used. While it is known that coping is related to human personality traits, which are highly stable throughout the life cycle, older people have shown a tendency to use affective strategies that prioritize problem-focused behavioral approaches over problem-focused ones[77]. They prefer to remain in control of the problem by changing their own reactions to stressful events, rather than seeking to change the situation itself by solving problems.

Older people use more affective coping strategies, such as seeking social support, making positive judgments and keeping a distance, while young people have a stronger tendency to focus on the problem and are therefore more likely to confront, seek information and solve problems. This is a typical older age orientation to positive emotions. This tendency is also observed in the case of younger people with a short time perspective of their own life e.g., people suffering from cancer are less likely to apply problem-focused strategies but are more inclined to apply emotion- and spiritual-focused approaches[78].

Older age is associated with better emotional regulation and balance, mood stability, greater control of impulses, and a more positive assessment of conflict situations. When young, middle-aged, and older persons were asked in a study[79] to describe their solutions to example problem situations, older persons were more likely to use passive, avoidance and denial strategies in emotionally significant circumstances than younger persons. However, when the situation was not emotionally charged, differences in age did not occur.

Emotion-focused strategies were considered to be too broad for one category, and therefore were divided into affective coping strategies, aimed at regulating the emotional response to a problem, and escape coping strategies, aimed at avoiding a problematic situation[80]. Research[81] conducted in a group of visually impaired seniors showed that increased use of escape strategies (e.g. avoidance of worrying) was more strongly associated with adaptation compared to affective strategies (e.g. crying). Problem-focused strategies, on the other hand, did not affect adaptation at the present time but had a positive impact over a longer time span.

Unfortunately, affective strategies, which are the most popular among older people, are linked to a weaker return to functional performance after an illness. This is because, among other things, a strategy that focuses on emotions allows to regulate the affective states associated with the disease but does not motivate

77 Ibidem.

78 R. Kausar, M. Akram, Cognitive appraisal and coping of patients with terminal versus nonterminal diseases, "Journal of Behavioural Sciences" 1998, 9(1–2), p. 13–28.

79 F. Blanchard-Fields, Y. Chen, L. Norris, Everyday problem solving across the adult life span: Influence of domain specificity and cognitive appraisal, "Psychology and Aging" 1997, 12(4), p. 684–693.

80 E. Kahana, T. Fairchild, B. Kahana, Adaptation, in: Research instruments in social gerontology. Clinical and social psychology, Volume 1, eds. D.J. Mangen, W.A. Peterson, University of Minnesota Press, Minneapolis MN 1982, p. 145–159.

81 A. Horowitz, J.P. Reinhardt, R. McInerney, E. Balistreri, Age-related vision loss: Factors associated with adaptation to chronic impairment over time, Final Report submitted to the AARP Andrus Foundation, The Lighthouse Inc., New York 1994.

to undertake constructive actions aimed at recovery and efficiency. Research[82] on chronic pain has shown that affective coping styles (i.e., those that try to alleviate discomfort by changing the perception or assessment of the problem) are associated with increased depression, stronger pain and greater functional impairment. Proactive coping, on the other hand, has been associated with lower functional disability and depression and greater social support. Depression is positively correlated with functional disability, and it may be concluded that proactive strategies can provide less functional disability among seniors. Taiwanese research[83] has also shown that avoidance strategies increase the adaptive difficulties while seeking support anticipates better adaptation to disability in old age.

Aging is a heterogeneous process, and coping with old age problems is highly individualized. However, there are studies showing that based on the current state of health and lifestyle it is possible to predict the adoption of more successful coping styles in old age. Aging can be seen as a lifelong process, as proposed by the life course theory, which emphasizes the value of combining the various phases of life and considering the current states in terms of lifelong perspective[84]. According to research[85], men with better health and a higher socioeconomic status (which protected them from certain stresses) but also with a more stable marriage and a healthier lifestyle experienced the most successful aging. Their good adaptation in old age resulted from a more stable course of life in general, not just from stability at its current stage.

Current scientific achievements allow assuming that old age is in fact a result of lifelong experience. Seniors with a positive balance in their marriage and family, professional and social life present a rather constructive attitude towards the outside world and their own old age, while those who adopt a passive attitude during their life may be more inclined to depend on their children, grandchildren or other relatives in old age[86]. This tendency confirms the validity of the assumptions made in the continuity theory. Preserving the satisfaction of life largely depends on the person themselves and their ways of dealing with encountered problems. The strongest indicator of life satisfaction in old age is the satisfaction which is experienced in earlier years. Those who have successfully overcome a crisis in life retained a strong sense of self-esteem and self-confidence, have a good chance to meet the challenges of old age e.g., loss of efficiency and maintaining independence.

82 N.S. Endler, K.M. Corace, L.J. Summerfeldt, J.M. Johnson, P. Rothbart, Coping with chronic pain, "Personality and Individual Differences" 1993, 34(2), p. 323–346.

83 H.-C. Hsu, H.-J. Tung, Coping strategies and adaptation for the disabled elderly in Taiwan, "Geriatrics and Gerontology International" 2011, 11(4), p. 488–495.

84 G.H. Elder, Jr., Life Course and Human Development, in: Handbook of child psychology, ed. W. Damon, Wiley, New York 1998.

85 R. Crosnoe, G.H. Elder, Successful adaptation in the later years: A life course approach to aging, "Social Psychology Quarterly" 2002, 65(4), p. 309–328.

86 A. Kotlarska-Michalska, Starość w aspekcie socjologicznym, "Roczniki Socjologii Rodziny", XII, Adam Mickiewicz University Press, Poznań 2000, p. 147–159.

There are common psychological responses to the occurrence of a disability and other critical life experiences in old age, such as forced abandonment of a valued job or the death of a loved one. Seniors, however, can experience them more severely than younger people, which is due, among other things, to the need to adapt to the many losses experienced in old age in a relatively short time. The course of a person's adaptation to the challenges of older age, including disability, is determined by one's inner conditions (e.g. health, personality, intelligence, emotionality, motivation, temperament) and external conditions which are no less important (e.g. social support, social position, physical and cultural environment). Although the effects of the loss of functional abilities are specific to each individual, we can speak of some common reactions. These include despair, anxiety, anger, irritation, rebellion, helplessness, retreating from people, complaining about health, lower self-esteem, guilt, the meaninglessness of life, shame, self-pity. In the first stage after the loss of efficiency, two intense bivalent tendencies, "to" and "from" i.e., the desire to withdraw from previous activities and at the same time to continue them – are also observed among many older people. A disability shatters the existing mental structure – the image of the self dies, so the period of emotional adaptation to the loss of efficiency is compared to the period of mourning after the loss of a loved one. What is more – a person with an acquired disability must die in his or her own perception as a non-disabled person and change their self-image as well as rebuild their own self-esteem.

In the process of emotional adaptation to the loss of efficiency, three phases can be distinguished: shock, depression and adaptation. In the phase of shock, a person experiences feelings such as denial, stupor, confusion and disbelief. Denial can take the form of unrealistic hope for recovery and last for many years, making it impossible to start rehabilitation. The phase of depression involves such emotions as despair, anger, regret, a sense of meaninglessness, lack of confidence or even thoughts of suicide. During this time, people consult many specialists and the anger they experience may be directed at health professionals, a family member or themselves for detecting a health problem at too late a stage. Adaptation is characterized by the acceptance of a new reality, new needs and circumstances, which is a prerequisite for making an effective effort to improve one's own impaired functioning and is strongly linked to the desire to learn new skills and use rehabilitation aids. Successful adaptation to a disability is facilitated by high-quality support received from family members and friends. For example, research[87] conducted on people with spinal cord injury has shown that life satisfaction is not related to the degree of injury, age, period or even the level of disability in daily life activities, but rather to work, a social role and recreation i.e., the areas of life that are often limited in the case of older people with disabilities. Therefore, there is

87 J. Krause, Longitudinal changes in adjustment after spinal cord injury: A 15-year study, "Archives of Physical Medicine and Rehabilitation" 1998, 73(6), p. 564–568.

a strong emphasis on the importance of non-medical factors in the process of convalescence – it has been shown[88] that in the case of hospitalization resulting from a hip fracture, those who live with someone and have a network of social relations out of the home have the greatest chance to return home. Adaptation to old age is shaped by various bio-psycho-social influences a person is subject to in the course of their life.

Adapting to old age also means adapting to a major change in life, the loss of a job and entering a more or less expected and planned retirement, which marks the symbolic beginning of old age. This adaptation to the retirement of somebody leaving the labor market primarily involves the process of shaping a new personal and social identity. It is a transition from a well-defined role of a productive, efficient and active person to an undefined and ambiguous role of an economically unproductive, often even dependent person. This occurs on psychological (personal emotions, behaviors and attitudes in response to the new situation), social (change in interpersonal interaction) and financial (reduced income) levels. The moment of retirement is a crisis-generating event (entailing e.g., the loss of prestige, lowered social status, the loss of sense of usefulness, loneliness, lack of meaningfulness of life) and requires a special adaptation procedure[89].

In the initial period of leaving work, seniors catch up on housework and household activities, devote more time to their own interests and the often neglected needs. There is a dominant feeling that they no longer have to do anything but can still do a lot. They establish a new daily routine on their own terms. According to Robert Atchley[90], the period of retirement initiates a time of enthusiasm, when a person makes up for the backlog of activities they have always wanted to do (e.g. travel) or have not had time to do before (e.g. home repairs). After some time, however, there comes a time of disappointment i.e., deprivation of illusions about the role of a retired person, followed by a phase of reorientation involving realizing expectations regarding retirement, then a phase of stability of the role of a retired person and the final phase related to illness and disability. Research[91] shows, however, that the time of enthusiasm does not last long, since, for both women and men, the overall well-being is most markedly reduced during the first 6 months of retirement, although great individual differences within the elderly population must be taken into account. Some people enter retirement without too much turmoil, others even feel happier than before.

According to the continuity theory, pensioners who undertook meaningful activities before retirement will continue to enjoy them in retirement. In this perspective, the issue of a fulfilling retirement is determined by an earlier lifestyle. According

88 R.L. Craik, Disability following hip fracture, "Physical Therapy" 1994, 74(5), p. 387–398.

89 A.A. Zych (ed.), term – adaptacja do emerytury, [in:] Encyklopedia starości, starzenia się i niepełnosprawności, P-Ś, Stowarzyszenie Thesaurus Silesiae – Skarb Śląski, Katowice 2017.

90 R.C. Atchley, Social forces and aging, Wadsworth, Belmont CA 1997.

91 V. Richardson, K.M. Kilty, Adjustment to retirement: Continuity vs. discontinuity, "International Journal of Aging and Human Development" 1991, 33(2), p. 151–169.

to the activity theory, seniors should maintain the same high level of commitment as they did in their earlier years. However, over time, retired people experience more and more losses in the field of social life and their own functional capabilities, and therefore the active model of old age requires them to apply more and more advanced strategies for adapting to the emerging limitations.

As a result of withdrawing from professional life, an older person faces the challenge of devising a new model of functioning in many areas, such as, for example: managing free time, establishing a new daily routine, establishing new relations with family and friends. For people who identified themselves primarily with what they do in their professional life, the loss of a job can mean a loss of identity – on an adaptive level it is comparable to the experience of a loss of health or a spouse.

It should be stressed, however, that although retired people face many of the losses inherent in old age, they generally remain satisfied with life. This paradox of old age is also visible in financial terms – older people are more financially satisfied compared to young people, despite often having a lower level of income, in fact even when they reach a very low level[92]. High satisfaction with low incomes can be a sign of seniors' ability to adapt to their own needs and aspirations and to choose the right reference group in order to maintain their well-being. It may also result from their lower financial needs and the perception of a positive contrast between current and past childcare expenses. Older people cannot actively change their financial situation and therefore change their own perception through passive actions[93].

Well-being, which is a sign of positive functioning in the environment in accordance with one's own potential and external requirements, is a sign of a person's successful adaptation. According to Joanna Kucharewicz[94] successful adaptation is the basic component of the sense of well-being. In the process of adaptation to old age and achieving well-being in that time, personal resources, such as the sense of self-efficiency, self-esteem and optimism play an important role[95] as do objective living conditions, such as the socio-economic status, health, relationships with family and friends, a warm and caring environment in childhood, intensive learning, absence of disorders in early adulthood and lack of psychiatric assistance[96]. This means that one can prepare for a successful old age.

According to Małgorzata Halicka[97], satisfaction in old age is mainly influenced by health, functional efficiency, family and economic situation, activity and social

92 G.I. Olson, B.I. Schober, The satisfied poor, "Social Indicators Research" 1993, 28(2), p. 173–193.

93 T. Hansen, B. Slagsvold, T. Moum, Financial satisfaction in old age: A satisfaction paradox or a result of accumulated wealth?, "Social Indicator Research" 2008, 89(2), p. 323–347.

94 J. Kucharewicz, Psychologiczne aspekty procesu adaptacji do starości – kierunki badań, "Społeczeństwo i Edukacja. Międzynarodowe Studia Humanistyczne" 2015, 16(1), p. 227–236.

95 M. Finogenow, Psychologiczne uwarunkowania zadowolenia z życia w wieku emerytalnym, "Polskie Forum Psychologiczne" 2008, 13(2), p. 82–95.

96 J. Kucharewicz, Psychologiczne aspekty..., op. cit.

97 M. Halicka, Satysfakcja życiowa ludzi starych, Akademia Medyczna w Białymstoku, Białystok 2004, p. 34–40.

contacts. A study[98] conducted at Polish universities of the third age showed that the highest level of satisfaction is seen by seniors in: relations with friends and acquaintances (91.8%), then in the achievements in life (87.1%), ways of spending free time (average 81.4%), family relations (81.1%), themselves (79.1%) and the financial situation of their own families (77.3%). Currently, a new model of living in old age is emerging, which integrates increased physical, mental, recreational and life autonomy and self-fulfillment.

More than half of older people believe that all that is best in life is already behind them, while almost half believe that they still have much to do[99]. When people were tested in their early and late old age, it turned out that the most rewarding period in life was "now". When asked about the most satisfying period in their lives, younger seniors most often pointed to the decade of their 50s. Answering the same question asked 14 years later, they almost equally pointed to the decades of the 20s, 30s, 40s and 60s as the most satisfying. The younger and the older seniors considered childhood and adolescent years as the least satisfactory periods[100]. These results contradict the common view that people idealize their childhood and youth with age. In this sense, Ronald H. Sherron and D. Barry Lumsten[101] provide an accurate definition of successful aging – to age well is to repair the past and prepare for the future by living in the present.

6.2. Successful aging

The concept of successful old age seems paradoxical as it is based on the combination of words that are mutually exclusive at first glance. Old age, burdened with numerous negative stereotypes, is generally associated with a loss and an end, while success brings to mind prosperity and profit – values that are desired, but not associated with advanced age. The popularization of the concept of successful old age should be considered as an attempt to reach the essence of human old age and discover its true nature.

Some people seem to age exceptionally well in terms of physical and mental well-being. Why, however, is old age generally perceived as successful, achieved only by few? What makes old age, which concerns all living beings, reachable in its successful form, for only some? What is the predictor of a successful aging process? The question about the etiology of successful aging is in fact a question about the formula for successful aging.

98 E. Bonk, S. Retowski, Emerytura – ulga czy udręka? Postrzeganie emerytury na przykładzie słuchaczy Uniwersytetów Trzeciego Wieku, "Gerontologia Polska" 2013, 21(1), p. 25–31.

99 M. Makara-Studzińska, K. Kryś-Noszczyk, Oblicza starości – przegląd piśmiennictwa, "Psychogeriatria Polska" 2012, 9(2), p. 77–86.

100 D. Field, Looking back, what period of your life brought you the most satisfaction, "International Journal of Aging and Human Development" 1997, 45(3), p. 169–194.

101 R.H. Sherron, D.B. Lumsten, Introduction to educational..., op. cit.

Scientific literature does not provide an unambiguous definition of the term "successful old age", nor does it provide commonly accepted methods of measuring it. Although "successful aging" is the most commonly used term in relation to a good old age, there is no clear definition, and the existing ones are still subject to critical analysis. Successful aging is sometimes replaced by alternative terms such as productive aging, independent aging, active aging, healthy aging, positive aging, etc., which actually increases its ambiguity.

The origins of the idea of successful aging can be found as early as in Cicero, who formulates the following recommendations for good aging: care for your health, be moderate in eating and drinking, and be able to think and be independent[102]. This idea did not become popular until the 20th century. Robert J. Havighurst[103] was the first to develop the concept of successful aging as a state in which an older person experiences maximum satisfaction from life without causing a serious burden to society. Since then, scientists have tried to define successful aging from different perspectives. However, it is still difficult to achieve full consensus in this matter, which is probably due to the fact that the very process of human life and aging is too complex to be covered by a theory that exhaustively covers the full spectrum.

In the light of the first gerontological theories, successful aging was perceived in a one-dimensional way e.g., activity or withdrawal was taken as the basic condition for successful aging, while the socio-cultural context in which individual aging occurs was neglected. According to the activity theory, the prerequisite for successful aging is the maintenance of a high level of individual engagement in life, and, according to the withdrawal theory, it is, conversely, a gradual departure from the previously performed functions and activities. Withdrawal from social life as a developmental need of a person in old age is to allow us to prepare for the challenges of old age. The next wave of conceptualization of successful aging took into account the physical, mental, psychological and social aspects of human life. Following the model of John W. Rowe and Robert L. Kahn[104], successful aging was to be achieved through a combined effect of the low probability of illness and disability, high mental and physical functioning and active participation in personal relationships and productivity.

The first concepts of successful aging drew on the biomedical model of disability, emphasizing freedom from illness in old age, long life, health and physical and mental efficiency. However, the medicalization of older age led to treating it in terms of abnormality and pathology. The concept of "successful aging" then evolved into more multidimensional meanings, measurable in objective and subjective terms. The original concept of successful aging, derived from the model created by Rowe and Kahn, was found to be too restrictive, mainly due

102 A. Bowling, The concept of successful and positive aging, "Family Practice" 1993, 10(4), p. 449–453.
103 R.J. Havighurst, Successful aging, "The Gerontologist" 1961, 1(1), p. 8–13.
104 J.W. Rowe, R.L. Kahn, Successful aging, Oxford University Press, New York, NY 1998.

to the juxtaposition of disease and normal aging instead of perceiving successful aging as a positive added value. According to this model, people with disabilities were by definition incapable of aging successfully. A disability acquired earlier or later in life essentially condemned them to further unsuccessful existence.

More universal meanings for successful aging were sought, just as the notion of disability began to evolve in a similar direction – as a state characteristic of different periods of life and to different degrees for all people. Over time, the conceptualization of successful old age appreciated the psycho-social perspective, emphasizing mental and social well-being, adaptation, control, productivity, competence, mental and social functioning, and the development of potential. Successful old age started to be associated with the ability to function in the physical, mental, emotional and social spheres. In fact, successful aging has ceased to be treated as a condition exclusively measurable in objective terms, but as a process of adaptation of a clearly subjective nature.

For example, in the model created by Paul B. Baltes and Margret M. Baltes[105], successful aging was recognized as a process of adapting to increasing biological and environmental requirements associated with aging. The model takes into account the individual experiences of a person and explains how people maximize their profits while minimizing losses in achieving important life goals. According to this model, an individual applies life management strategies in response to the losses experienced in old age. He or she can optimize their chances of achieving desired goals by choosing activities and interests that match their skills and can compensate for their own limitations. In the light of this theory, selection is based on the choice of satisfying and available areas of functioning, compensation allows for the use of alternative ways and means to maintain the existing level of functioning and optimization for improvement of areas considered as priorities.

According to one of the most recent theories (mid-range theory of successful aging)[106], referring to Lars Tornstam's gerotranscendence theory, successful aging refers to the individual's perception of the desired result in the process of adaptation to the cumulative physiological and functional changes associated with the passage of time while experiencing spiritual communication and a sense of meaning in life. The mechanisms of functional ability (physical health, mobility), intrapsychic factors (creativity, low levels of negative affectivity, personal control) and spirituality (spiritual perspective and religiousness) are linked and act together. They can lead to gerotranscendence – a positive developmental process of redefining the self, relationships with others and a new understanding of fundamental existential questions related to successful aging.

105 P.B. Baltes, M.M. Baltes, Psychological perspectives..., op. cit., p. 1–34.

106 M. Flood, A mid-range theory of successful aging, "Journal of Theory Construction and Testing" 2006, 9(2), p. 35–39.

Nowadays, successful aging is quite commonly considered as a process, often associated with adaptation, rather than a state. Recent Israeli research[107] shows that successful aging is seen by seniors as a three-phase process: I. Preparation – this phase begins in early adulthood and lasts several decades. It is characterized by an effort to build a stable physical and social environment and develop various personal resources. II. Preservation – refers to older age, when people cope with various changes typical for this period, they continue their investment efforts, but their goal is to preserve the quality of their earlier life and acquired resources as long as possible. III. Resilience – refers to seniors who have had more negative life experiences and losses. This phase requires acceptance of change and loss, faith and a positive view of the present. In the human life cycle, there is a shift from the predominantly behavioral strategies in phase I to the behavioral and cognitive-emotional strategies in phase II, followed by cognitive-emotional strategies in phase III. In this perspective, successful aging is a life-long process and life-long investment.

The very process of aging can be seen as a continuum of achievements[108]. At its beginning there may be people with small functional limitations, and at its end, there may be individuals with serious disorders. A person may move along this axis in both directions e.g., the acquisition of a disability would position an individual further away, but rehabilitation could bring them back to their original position. In this perspective, successful aging is dynamic. This concept emphasizes the importance of monitoring the functional state of a person throughout his or her life cycle and detecting any changes in this regard, then initiating interventions aimed at preventing further decline and/or regaining lost functions.

Nowadays successful aging is a multidimensional structure. According to the World Health Organization model[109], disability is linked not only to the presence or absence of disease but also to mobility and social participation. The model of the deficit of diseases in measuring successful aging has been abandoned in favor of adopting an elaborate conceptual construct that includes a component of life satisfaction, physical and mental health and the quality of life. Increasingly, not only life expectancy but also the quality of life is being emphasized in the context of successful aging.

Maintaining the quality of life in the face of losses inherent in old age is at the heart of the concept of successful old age. Longitudinal Australian studies[110] show that people age at different levels of well-being and that those who age most

107 G. Nimrod, I. Ben-Shem, Successful aging as a lifelong process, "Educational Gerontology" 2015, 41(11), p. 814–824.

108 K.A. Lowry, A.N. Vallejo, S.A. Studenski, Successful aging as a continuum of functional independence: Lessons from Physical Disability Models of Aging, "Aging and Disease" 2012, 3(1), p. 5–15.

109 World Health Organization, International Classification of Functioning, Disability and Health: ICF, WHO, Geneva 2000.

110 G. Andrews, M. Clark, M. Luszcz, Successful aging in the Australian Longitudinal Study of Aging: Applying the MacArthur Model Cross-Nationally, "Journal of Social Issues" 2002, 58(4), p. 749–765.

successfully not only live longer but also enjoy a higher quality of life. Israeli studies[111] conducted over a period of 12 months have shown that seniors have the ability to shape their quality of life in a situation of impaired health and functioning, using appropriate adaptive resources.

There is a growing gap between the views of scientists and seniors themselves on successful old age. There are discussions about the extent to which it is an objectively measurable condition and how much it depends on subjective perception. It seems, however, that its understanding by older people is more complex than presented in academic terms. William J. Strawbridge et al[112] compared the subjective measurement of successful old age with the measurement made according to criteria proposed by Rowe and Khan. As it turned out, objectively successful old age was achieved by only 18.8% of the participants, while subjectively 50.3% of the respondents considered their old age to be successful. Of the people who were objectively assessed as not aging successfully, 47.3% said they were aging successfully. In other studies,[113] comparing the views of researchers and older people themselves on successful aging, 92% of seniors rated themselves as experiencing successful aging compared to 5% who met the requirements for successful aging set by researchers. This shows that older people use different criteria for assessing successful aging than the measurement tools developed through academic reflection and scientific exploration. It is still unclear where the truth lies in the divergence between the expected objectivity of science and the subjective perception of seniors themselves.

Research[114] conducted among sick and disabled seniors in long-term care facilities showed that from their point of view, successful aging meant being friendly, having a sense of humor, helping others, adapting to change, having fun whenever possible. Similarly, in the subjective evaluation of older people living in their environments[115] positive aging most often involved: positive attitude, a sense of humor, appreciation of what one has, gratitude, financial security, lifelong learning, spirituality. When evaluating successful aging, other active seniors pointed at: interactions with others, a sense of purpose, self-acceptance, autonomy. Still,

111 H. Tovel, S. Carmel, Maintaining successful aging: The role of coping patterns and resources, "Journal of Happiness Studies" 2014, 15(2), p. 255–270.

112 M.J. Strawbridge, M.I. Wallhagen, et al, Successful aging..., op. cit., p. 727–733.

113 L.P. Montross, C. Depp, J. Daly, J. Reichstadt, S. Golshan, D. Moore, D. Sitzer, D.V. Jeste, Correlates of self-rated successful aging among community-dwelling older adults, "American Journal of Geriatric Psychiatry" 2006, 14(1), p. 43–51.

114 L.W. Guse, M.A. Masesar, Quality of life and successful aging in longterm care: Perceptions of residents, "Issues in Mental Health Nursing" 1999, 20(6), p. 527–539.

115 J. Reichstadt, C.A. Depp, L.A. Palinkas, D.P. Folsom, D.V. Jeste, Building blocks of successful aging: A focus group study of older adults' perceived contributors to successful aging, "The American Journal of Geriatric Psychiatry" 2007, 15(3), p. 194–201.

other research results[116] emphasized the importance of acceptance and adaptation to change as necessary for successful old age.

Success is a relative, socially shaped concept, gaining meaning in a specific cultural context. However, what is characteristic, people of different cultures who took part in the study[117] agreed that good old age was most strongly linked to health and financial security. In other research[118] conducted among Japanese seniors, it turned out that for them successful aging meant optimal functioning in the areas of physical and psychological health, mental functioning, socialization, spirituality, financial security. Americans associated this notion with self-sufficiency and the ability to live independently, whereas the inhabitants of Hong Kong could not understand why someone might want to be self-sufficient in old age. They did in turn connect successful aging with the family's commitment to meeting their financial, mental and physical needs. The Chinese considered successful aging to be a matter of how others perceived them, while Americans linked it to their own perception of the world.

Given the above, it is worth making an effort to understand what successful aging means in the subjective perspective of the seniors experiencing it, and then, on a theoretical level, to discuss how older people should age if they are to do so in a way objectively considered successful. The universal standards set by Rowe and Kahn were based on the pattern of aging of the longest living, healthiest and most efficient group of seniors. There were ambitious attempts to improve normal aging, shared by the majority of the population, to the level of successful aging. The assumption was that normal aging was considered unsuccessful. As a result, the model minority of successfully aging seniors was to set standards for the normally aging majority, with successful aging being determined by criteria specific to young rather than old age. While it is certainly beneficial to promote healthy, efficient, active and productive old age, objections must arise from the resulting negation of the pattern of adaptation to old age for those seniors who are more passive, reconciled with their own disabilities, accept the prospect of approaching death and, at the same time, express their satisfaction with their current quality of life, even if the majority would consider it unsatisfactory. This raises the question of how much the concept of successful aging is to serve seniors themselves and how much it is to respond to the political and economic demand for effective and productive citizens of the oldest age categories.

116 M. Von Faber, A. Bootsma-Van Der Wiel, E. Van Exel, J. Gussekloo, A. Lagaay, E. Van Dongen, D.L. Knook, S. van der Geest, R.G. Westendorp, Successful aging in the oldest old: Who can be characterized as successfully aged?, "Archives of Internal Medicine" 2001, 161(22), p. 2694–2700.

117 J. Keith, C.L. Fry, A.P. Glascock, C. Ikels, J. Dickerson-Putman, H.C. Harpending, P. Draper, The aging experience: Diversity and commonality across cultures, Sage, Thousand Oaks, CA 1994.

118 G.Y. Iwamasa, M. Iwasaki, A New Multidimensional Model of Successful Aging: Perceptions of Japanese American older adults, "Journal of Cross-Cultural Gerontology" 2011, 26(3), p. 261–278.

The lack of a consensus on the definition of successful aging makes it difficult to measure the prevalence of successful aging. One study[119] analyzed the data from 28 other different quantitative studies – the average percentage of people meeting the accepted criteria of successful old age was 36%, but the range of data ranged from 0.4% to 95%, which was, among other things, a result of differences in definitions. As it turned out, disability and/or physical functioning were the most common definition component of successful old age. The difficulties in defining successful aging are revealed by further empirical data showing the percentage of older people considered to have aged successfully, which ranges from 12.7% to 49%[120]. As demonstrated, although there is no doubt about the existence of successful aging, the world of science and the world of subjectively experienced old age have many criteria for defining, evaluating and measuring it. It seems that it is still difficult to capture the universal dimension of successful aging.

6.3. Active aging

The increase of life expectancy combined with the economic well-being of relatively young pensioners makes the new generation of seniors seek fulfillment in old age. Financial independence and leisure time encourage them to adopt a new lifestyle. Activity appears to be an area for self-fulfillment, social inclusion, preventive healthcare, but also for consumer behavior.

Nowadays, the notion of active aging, which appeared in the 1990s and emphasized the relationship between activity and healthy aging, competes with successful aging. The concept of active aging was developed in strong opposition to the withdrawal theory, which recommends reducing activity with age in order to prepare both the individual and the society for his/her final departure, perceived as limiting and pessimistic, even harmful on an individual and social level. The concept of active old age has grown out of a redefinition of the negative image of old age and evolved from burden to benefit.

Active aging is sometimes associated with successful aging. As the two terms are increasingly used as synonyms it is an expression of full acceptance of the activity theory. However, this broadly promoted may turn to be too wishful about the expected benefits. Stephen Katz[121] points out that active aging can represent idealized old age. There is no positive correlation between activity and success in old age. Excessive linking of successful old age to activity can create a false and overly positive image of old age, free of illness and disability, which is unattainable

119 C.A. Depp, D.V. Jeste, Definitions and predictors of successful aging: A comprehensive review of larger quantitative studies, "American Journal of Geriatric Psychiatry" 2006, 14(1), p. 6–20.

120 N.M. Peel, R.J. McClure, H.P. Bartlett, Behavioral determinants of healthy aging, "American Journal of Preventive Medicine" 2005, 28(3), p. 298–304.

121 S. Katz, Busy bodies: Activity, ageing, and the menagement of everyday life, "Journal of Ageing Studies" 2000, 14(2), p. 135–152.

for many seniors. The concept of active old age propagates an old age tailored to the fashion of youth, assuming that the attributes of young age i.e., attractive appearance, health, high level of activity and social engagement are preserved until the end of life. Nowadays there is even an imperative to be active in old age – activity is to be a universally desirable state in this period of life.

Active aging was first defined in 2002 by the World Health Organization in the Active Aging brochure, a policy framework as: "(...) the process of optimizing opportunities for health, participation and security in order to enhance the quality of life as people age."[122] The WHO states that the basis for active aging is health, participation (cultural and social activity, being a valued member of society) and security (economic security, mental well-being and a sense of security). According to the WHO, the word "active" means continuing to participate in social, economic, cultural, spiritual and civic events, and not just the ability to be physically active and continue to work. In this perspective, active aging is a multidimensional concept, combining the issues of activity, health, independence and productivity in old age in terms of quality of life[123].

According to the WHO, active aging is possible by adapting the environment to the specific needs of seniors and therefore recommends developing age-friendly cities[124]. Active aging refers to the concept of a "society for all", in which everyone is valued and has the opportunity to participate in daily-life activities. There is an emphasis on individual and institutional responsibility for active participation in social life, which is an expression of the realization of the social model of disability. The theoretical and practical development of the concept of senior-friendly environments shows appreciation of the important role of the environment in adapting seniors to the challenges of old age.

Active aging can be considered a political concept – it has been reflected, among others, in activities undertaken by the European Union. It was created as an essential component of the global strategy in response to the process of aging societies. Active aging concerns the physical, psychological and social spheres of human functioning, combining physical health, free time, social roles and activities, psychological well-being, finances, work, functioning and autonomy in life.

According to the Organization for Economic Cooperation and Development (OECD) active aging is: "(...) the capacity of people, as they grow older, to lead productive lives in society and economy. Active aging implies a high degree of flexibility in how individuals and families choose to spend their time over life – in work, in learning, in leisure and in caregiving"[125]. In turn, according to the European Commission, active aging is a coherent strategy to enable successful aging in

122 World Health Organization, Active aging: A policy framework, WHO, Geneva 2002, p. 12.
123 World Health Organization, Health and ageing. A discussion paper, WHO, Geneva 2001. World Health Organization, Active ageing: From evidence to action, WHO, Geneva 2001.
124 World Health Organization, Global Age-Friendly Cities: A Guide, WHO, Geneva 2007.
125 Organization for Economic Co-operation and Development, Maintaining prosperity in an ageing society, OECD, Paris 1998, p. 84.

an aging society, which in practice should mean lifelong learning, longer employment, later, gradual and active retirement and involvement in capacity-building and health improvement measures[126].The emphasis here is on prolonged economic and professional activity (longer work, later retirement) and inclusion in socially productive activities (e.g. voluntary work and providing care). Similarly, the Council of the European Union states that active aging is: "(...) creating opportunities for staying longer on the labor market, for contributing to society through unpaid work in the community as volunteers or passing on their skills to younger people, and in their extended families, and for living autonomously and in dignity for as much and as long as possible"[127]. In political terms, active aging has a clear economic, individual and social dimension.

Active aging means taking a proactive attitude in maintaining health, physical and mental activity, taking up professional and voluntary work and engaging in family and social life. In reality, however, many seniors reduce their activity, also physical e.g., by walking shorter distances as they get older. It is not known to what extent it is caused by biological changes and to what extent it is an element of a change of lifestyle, dictated by a decrease in overall life activity. There is no doubt, however, that the effects of reduced physical activity are highly negative and may lead to a decrease in health and functional efficiency. The demand for activity, however, does not disappear with age but changes and requires sustaining, as evidenced by the rewarding effects on physical and mental health and functional efficiency.

It has been calculated that genes are responsible for 25% of a person's aging while environmental conditions account for the remaining 75%[128]. In comparison with the biological resources with which a person is born, the environmental influences, which are highly controllable and modifiable, are therefore of paramount importance for individual aging. Old age, which can be regulated with great success, is therefore a major challenge for aging citizens, entire societies and governments. Especially in its pathological course, associated with illness, disability or social isolation, does it require effective preventive and corrective measures. The implemented social policy should be focused on providing conditions conducive to successful and active aging, which at the executive level means access to adequate health care, rehabilitation and therapy, education, social support networks and inter-generational solidarity or adapted physical environment (architecture, engineering, transport). Its true goal is to increase and use the potential of the oldest citizens, which should be recognized and appreciated in the era of aging societies.

126 European Commission, Delivering Lisbon. Reforms for the enlarged Union. Report from the Commission to the Spring European Council, COM 29 final/2, Brussels 2004.

127 Council of the European Union, Council conclusions on active ageing, The council of the European Union, Luxembourg 2010. https://www.consilium.europa.eu/uedocs/cms_Data/docs/pressdata/en/lsa/114968. pdf (access 20.10.2018).

128 T.B.L. Kirkwood, The biological science of human aging, in: Age and Ageing, ed. M.L. Johnson, Cambridge University Press, Cambridge 2005.

Old age, despite the many difficulties it entails, can foster personal happiness and fulfillment. Excessive focus on the losses experienced during this period of life and an attempt to stop one's own development in the stage of youth make it impossible to reach a state of full maturity, wisdom and internal integration in old age[129]. "Aging is a natural and a valuable part of human existence, as is childhood, youth and middle years. Each stage of life encompasses development as well as a loss, opportunities and limitations, having something to give and receive and is a period of acquiring certain rights as well as assigned duties "[130].

The beauty of old age is defined by, among other things,[131] the possibility of gathering the fruits of one's life, the satisfaction of starting a happy family, good upbringing of children and having grandchildren, the joy of professional success, a period of peace, independence and free time, the possibility of developing one's own interests, helping others within organizations, foundations, associations, self-help groups, the possibility of assuming new family roles (grandmother/grandfather, mother-in-law/ father-in-law) as well as social ones (juror, local government member, etc.), the function of bearing family, religious and patriotic values and gaining favorable conditions for spiritual development. Old age offers a chance to learn and understand oneself more fully in the context of one's whole life. S. Steuden[132] points to the positive aspects of aging, which include: retirement (gaining free time that can be devoted to desired activities), the possibility of greater involvement in family life, the possibility of providing assistance to adult children (participation in raising grandchildren, running the household), reorganizing life goals (with health, a sense of usefulness and belonging at the forefront), reshaping the relationship between spouses (a new quality of married life), intensifying holistic thinking (expressing personal maturity and wisdom, recognizing the needs of others). Z. Woźniak[133] sees in old age balance, crisis, but also triumph, therefore it manifests itself as a value, a challenge and a task – individual for everyone.

Successful aging is the measure of proper adaptation to the challenges of old age and is enjoyed by most older people, generally satisfied with their lives. This satisfaction seems to be stable and is related to such living conditions as the socio-economic status, good health or positive relations with family and friends[134].

129 W. Wilowski, O dwóch obliczach starości, in: Profile starości, Wydawnictwo Miejskie, Urząd Miasta Poznania. Wydział Zdrowia i Spraw Społecznych, Poznań 2000, p. 78–85.

130 Z. Woźniak, Pokłosie Międzynarodowego Roku Seniora'99 wyzwaniem dla polityków i zobowiązaniem społeczeństwa wobec najstarszego pokolenia, in: Profile starości, Wydawnictwo Miejskie, Urząd Miasta Poznania. Wydział Zdrowia i Spraw Społecznych, Poznań 2000, p. 12.

131 A. Nowicka, Starość jako faza życia człowieka, in: Wybrane problemy osób starszych, ed. A. Nowicka, Oficyna Wydawnicza Impuls, Kraków 2006, p. 17–25.

132 S. Steuden, Szczęśliwi po pięćdziesiątce, Wydawnictwa Akademickie i Profesjonalne, Warszawa 2009, p. 47–50.

133 Z. Woźniak, Starość. Bilans – zadanie – wyzwanie, Wydawnictwo Naukowe Wydziału Nauk Społecznych UAM, Poznań 2016.

134 A.A. Zych, Leksykon gerontologii, Oficyna Wydawnicza Impuls, Kraków 2010.

A.A. Zych[135], in whose opinion "graceful aging" i.e., one that is successful, active, dignified and healthy, is not available to everyone, also mentions the factors that condition it. Those are: good genes, proper diet and lifestyle, gerontological prophylaxis, health-promoting behaviors, hygiene of aging and old age, medical advances, and above all, a rational lifestyle. According to E. Dubas[136] the basic component of a successful old age is the lifelong acceptance of oneself and one's destiny, which is in fact the result of a mature affirmation of life. Successful old age is an art that is acquired throughout life. It is the result of a lifelong process of self-development and, at the same time, a developmental task and an opportunity for further growth. The period of mature adulthood therefore demands a proactive attitude and adaptability in order to achieve successful old age for personal and social benefit.

135 A.A.Zych, Piękni osiemdziesięcioletni, czyli paradygmat "starzenia się z wdziękiem" a realia życia, in: Realność złego starzenia się. Poza polityczną i społeczną powinnością, ed. L. Buliński, Wydawnictwo Adam Marszałek, Toruń 2015., p. 139–156.

136 E. Dubas, Starość znana i nieznana – wybrane refleksje nad współczesną starością, "Rocznik Andragogiczny" 2013, t. 20, p. 135–152.