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Dimensions of aging and their influence on physical activity

Wymiary starzenia i ich wpływ na aktywność fizyczną

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Abstract

Old age is a common and a universal phenomenon. It is difficult to define the beginning of the process of aging and entering the period of late adulthood. As time passes, the symptoms of aging become more and more visible. The work presents three dimensions of aging: biological, psychological and social. It demonstrates their influence on physical activity. It shows barriers the elderly people need to overcome or the situations they might be in. It also shows physical activity as one of the main components of the activation process of the elderly.

Key words: elderly, physical activity, aging.

Old age is a common and a universal phenomenon. It is the last phase of ontogenesis, which is inevitable for all the people. It affects beings in the world of plants and animals and people. The process of aging is the effect of cumulating genetic and environmental factors. It takes place in different ways and its pace and intensity of changes is individual and characteristic for everyone individually [1,2].

The notion of old age or senescence or the answer to the question what is old age is not easy. Even though, there is a set of factors describing the occurrence of senescence in society, this period is connected with the gradual loss of physical strength, more significant memory problems, and multimorbidity occurring in response to the lowered physical fitness. Old age, itself, is not anything unnatural in every person's life. It is a part of a long development process. In the understanding of old age there are two basic issues that need to be considered: aging as a process of changes taking place on the biological, psychological or social level or the old age understood as period in the life of a person having particular psychological, cultural and social characteristics [3,4,5].

Old age, similarly to adolescence, young age and middle age does not come suddenly. It is another stage of life, resulting from long-term and irreversible physiological process connected with the age of human body. It is difficult to define the beginning of the process of aging and entering the period of late adulthood. As time passes, the symptoms of aging become more and more visible. Aging has multiple and complex genetic, biological and environmental conditioning and in the particular stages of life it may proceed faster or slower [6,7]

Dimensions of aging

The symptoms of aging may be defined by means of age: metrical, social, biological or mental. [Metrical age is measured by the number of years, which is useful in defining age ranges and the corresponding developmental norms. Social age is connected with culture-

related factors and it pertains to social expectations as far as behaviour code is concerned in the period of late adulthood, possibilities of performing social roles and the level of activity which is characteristic for people of certain age. Legal results of recognizing the person as elderly include awarding pension benefits, as well as certain eligibilities and social prerogatives.

Biological age is, on the other hand, measured by estimating body's physical fitness and the level of changes that take place in the systems and organs of a given person. Mental age is expressed by the level of mental performance and the quality of psychosocial functioning [2,8,9].

The beginning of aging process and old age itself cannot be defined unequivocally. In both, psychological and medical literature, there is no consistent attitude concerning the criteria marking the beginning of aging and its periodization. Differences result from extending the average life span, diversifying aging tempo and inconsistent biological, social and psychological picture of the process of aging. The common beginning of old age is usually connected with reaching the age entitling the person to receive pension, i.e. 65 years. However, it is not precise as some groups of jobs (military service, police, and mining) connected with difficult conditions or extra risk allow people to retire earlier. The consequence of such a division is variance and there is another standpoint proving that the age of late adulthood starts

at the age of 55. According to the other research the liminal age is 70. However, according to WHO old age starts at the age of 60 [2,10,11].

WHO additionally specified three periods of the old age. First – early old age between 60 and 74 years. The next, called late old age, between 75 and 89 years. The last period characterizes people over the age of 90 and is called longevity. In this division the main point of consideration is the psychophysical fitness. However, it does not mean that the tempo of changes in given age groups is similar. When describing early old age it can be noticed that majority of people still retain relatively good physical condition, which reveals itself not only in independence in basic every day activities such as washing, preparing meals, but also doing sports, undertaking new challenges or meeting family. Additionally, in this period there is a lack of visible decline in physical fitness which appears in the period of late old age and manifests itself by dementia and senility.

There is also greater need for medical care and the support of other people while doing basic activities of everyday life [3,12].

Biological dimension

Biological changes in the late adulthood are the retrograde changes. The cause of these changes is a decline in reproductive abilities of cells and their gradual degeneration. It means that the process of aging takes place on the cellular level. Accumulation of these organic changes becomes visible around the age of 60. From the medical point of view the types of changes taking place in the human body during the aging process may be divided into two types. The first one is connected with the decline in physical fitness, whereas the second is its multipathology [3,13,14].

The notion of multi-pathology relates to the occurrence of a few ailments simultaneously. They are caused by prevalence of catabolic processes over the metabolic ones what leads to limitations in the functionality of organs. Diseases that occur most frequently in the old age include: infections, respiratory and digestive diseases, as well as motor organ and endocrine system disorders. Additionally, after passing the age of 65 the risk of falling mentally ill grows. Decline in the body's biological functions has negative influence on social and mental functioning. The effects of aging are so visible and significant for the functioning of the elderly that they are compared to the effects of adolescence processes in the period of youth [2,15,16].

Psychological dimension

Another indicator of the process of aging is a reduced memorizing ability that declines with age. Especially visible in this case are the changes that take place in rote and immediate memory. Also, in the case of long-term memory or the retrograde memory, the processes of recalling are weakened, however it is not as visible as in the case of immediate memory. The activity of memory processes that occur in the elderly determines the person's ability to learn and as a result it is a sensitive area that influences the person's self-esteem of their own cognitive abilities [2,17,18].

The above presented disorders are connected with the abnormal cognitive – behavioural functioning which manifests itself as difficulties with: memorizing or recalling certain events, difficulties with understanding, focusing attention, counting, orientation and

they may also be caused by senility. Senility results from progressive chronic brain disease characterized by numerous disorders of the cortex brain functions listed above. According to the American Psychiatric Society criteria, senility is diagnosed when, apart from memory dysfunctions, at least one of the following disorders occurs: aphasia, agnosia, apraxia and cognitive functions disorders. These disorders must also induce considerable difficulties with both social and professional functioning. Moreover, there must be a decline in the functioning level as compared to the previously observed condition. It is estimated that about 10 – 15 % of people in Poland over the age of 65 suffer from senility. The percentage grows with age and 40 % of population at the age of 90 suffers from senility [6].

The last effect of aging is the necessity of re-evaluating the attitude to one's own life. It is not always connected with the feeling of loss and anxiety, however the consciousness of bones becoming weaker leads to the unwanted, yet useful carefulness. In some other people such consciousness may lead to depression and mental breakdown [2,19].

Among changes that occur in the human body in the period of late adulthood there is also senses debility which is classified as a change in the perceptive –motor sphere. Among others, the processes of attention become weaker, in both selective attention and general ability to focus. Reaction time to visual and auditory factors is also extended as well as the time needed to perform simple and complex tasks. Slowing the reaction time is one of the most characteristic symptoms suggesting that the person has entered the period of old age. With extending the reaction time and slowing the activity tempo the general psycho-motor abilities decline [2].

Another determinant of the process of aging is a decrease in ability to memorize that declines with age. Especially visible in this case are changes that occur in the rote and immediate memory. Long-term memory is also subject to changes and the processes of recalling become weaker, however it is not as visible as in the case of immediate memory. The level of memory processes in the elderly person determines the person's ability to learn and it is a sensitive issue for the elderly people in the self-assessment of their cognitive abilities [2,21].

Social dimension

The main category describing the social situation of an elderly person is the notion of old age and the costs of aging. Situations and events that are connected with loss have very

strong negative influence on emotions. Additionally, when added to the situations of everyday life they may evoke critical events. They force a person to change their previous habits and attitude towards reality, re-evaluate their goals, to change lifestyle, not infrequently to introduce new concept or philosophy of life, therefore to adapt to and accept the development period they are in [22].

Critical events, which may influence person's functioning include: loss of health, fitness and physical activity, loss of the economic and social status, loss of close family and friends, loss of feeling needed, and the approaching perspective of death. The above mentioned events are the next challenge in the life of an elderly person that they have to cope with [23].

The mechanisms enabling the elderly to adapt to new life circumstances include: disengagement theory, stress of senescence theory, activity theory. The first one – the disengagement theory states that not activity but the withdrawal from social life is a natural and a necessary need of a person in the period of late adulthood. The founders of this theory also claim that withdrawal and being passive are as necessary for the elderly people to gain mental balance, as full participation in social life is necessary for young people [2,24].

The second theory states that every critical event in life of an aging person, such as decrease in overall fitness or loss of the foregoing social and financial status, act as stress factors. They force a person to readapt and deprive them of their acquired features, simplify personality and expose their real nature and basic behavioural tendencies. As a consequence, aging person experiences recapitulation of the developmental cycle, which is manifested by putting importance on factors that were of importance in early childhood and by the need of general stimulation. Very characteristic behaviour which mirrors this type of tendency in the elderly is the behaviour that is compared to the lift metaphor, which says: "floor up, floor down". It means that even though the elderly person will learn new and better behaviour form, they instantly go back to the old tried form [2,25].

The last, third theory that refers to the activity of an elderly person, states that the natural process of aging enables the elderly to maintain foregoing engagement in everyday life and social functioning. It also states that the people aging optimally are those who despite their age stay active and present in social life. Being retired they find themselves alternative activities, substitutes of lost love, they make new friendships, they undertake certain physical activities and filling their time they still develop [2,25].

Physical activity in everyday life and its barriers

At the turn of last decades human life underwent significant simplification due to constant development of different types of technology and industry. At the same time, this simplification lead to significant decrease in physical activity and physical work. Progressive urbanization lead to visible decrease in the amount of green areas, pollution of waters and air and diminishing space that used to be recreational terrain. Civilizational facilities, development of TV, communication and mass media minimized physical activity undertaken by people in everyday life. Despite this, in recent years there has been a significant increase in the number of people engaged in different forms of physical activity that are not directly connected with their work [4,26].

Physical activity is an inseparable element of life. First movements of an infant, first steps of a child, playing football on the playground, running on a treadmill, playing tennis, everyday exercises. Moreover, physical activity is defined as any form of body movement caused by skeletal muscles. Energy expenditure while doing any of these activities is on a higher level than energy expenditure while resting [5,27].

One of the barriers that limits participation of the elderly in physical activity is a common stereotype of an elderly person as infirm, unable to cope with difficult everyday life situations. Additionally, according to the stereotype an elderly person has difficulties with daily routines and depends on others. However, a lot of research defies this opinion [6].

The next barrier is the conviction that in the elderly suffering from limitations or motor organ disorders physical training causes exacerbation of pain. Meanwhile, in majority of people physical activity has a reverse influence. Correctly selected exercises that are done properly do not cause exacerbation of changes but they can alleviate them at least partially [28].

The conviction that physical training should be long and exhausting is another barrier limiting physical activity among the elderly. However, the results of studies show that less intensive workout lowers the systolic blood pressure in the elderly people. Naturally, the most important thing for every person interested in taking up physical activity is assessing their general medical condition as some ailments and disorders are contraindication to certain forms of physical activity. It is a key aspect for the safety of the elderly doing any form of physical exercise [6,28,19].

Activation with physical activity

Systematic physical activity has positive influence not only on physical but also on emotional sphere. Physical activity helps to relieve stress and tension. Movement influences the mood and lowers the level of anxiety, which is caused by endorphin secretion. Release of these substances gives a person great mood and evokes positive energy, very often leading to euphoria. They also alleviate the pain. Simultaneously, physical activity has positive influence on the process of falling asleep. It is believed that physical activity is the most effective antidepressant measure [30].

The first activity to be done is the change of the point of view of an elderly person. The task that the elderly person has is a conscious and active care for their own fitness and health, so that they can perform social roles in good mental and physical condition [31].

Physical activity should be connected with socializing, taking part in different meetings in clubs for the elderly or other cultural events. Participation in different activities enables them to meet new people, make friends, and strengthen their self-confidence and the feeling of being needed and attractive [25,32].

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