

## Interdisciplinary Intersections of Research on the Determinants of Aging



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**Abstract.** The article provides a review of current research analyzing the social determinants of the aging process, which begins as early as middle age and is the result of an individual's personal development. While scientists primarily note biological markers as its fundamental mechanisms, a trend has recently emerged toward understanding aging as a multifaceted process that includes social and psychological markers and is influenced by environmental factors that can be controlled by the will of the individual. In this regard, the issues of interdisciplinary approaches in studying aging as a bio-socio-psychological process, as well as identifying factors amenable to modeling, have gained relevance. Various classifications exist for the factors influencing the functional capacity of older adults. In most cases, they are divided into three groups: individual, social, and environmental. Factors not related to internal capabilities and health quality are usually classified as social determinants of health, which can be modified. In recent years, the idea of the possibility of constructing old age has developed, representing a set of strategies for creating and realizing an image of desired old age. This has opened a positive perspective for research and new vectors for social policy development, the goal of which is to create conditions for successful aging and healthy longevity. In the 21st century, the concept of successful aging has become an alternative to the idea of decline in old age and reflects a social demand, as the demographic shift has led to an annual increase in the number of people of retirement age. It is projected that by 2030, every sixth person in the world will be over 60 years old.

**Key words:** demographic shift, successful aging concept, modeling of old age, social determinants of aging, aging trajectories.

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### ***Introduction: new perspective on aging process***

Population aging represents a unique demographic shift affecting virtually all aspects of public life. By 2030, according to forecasts, every sixth person in the world will be over 60 years old, by 2050 the number of people in this age group will double to 2.1 billion people, and the number of people over 80 will triple, reaching 426 million people<sup>1</sup>. At the same time, the expected duration of healthy life may not change, which will lead to increasing number of years spent with poor health, reduced physical and mental abilities, and often in poverty and exclusion, which will have negative effects for the entire society. Already in 2017, according to

world statistics, the number of diseases related to aging accounted for 51.3% of the total global disease burden (Chang et al., 2019). The problem of the growth of neurodegenerative disorders such as Alzheimer's disease has become particularly acute. Therefore, maximizing healthy life expectancy is becoming one of the main tasks of public health.

The aging process is biologically complex and heterogeneous, and it is characterized by significant differences in people's life experiences, including physical, social, and psychological functioning (Cosco et al., 2017). Biological aging is described as a gradual or progressive deterioration of health, including functional impairment of physiological systems and diseases, which eventually leads to death (Lopez-Otin et al., 2013). Understanding the

<sup>1</sup> Ageing and health. World Health Organization. Available at: <https://who.int/news-room/fact-sheets/detail/ageing-and-health> (accessed: 14.08.2025).

biological foundations of the aging process itself and the ability to “manipulate” them are the basis for geroscience, according to which there is no fixed aging program; this process can be controlled (Kirkwood, 2017). Aging can be achieved with preserved health reserves, and longevity itself is not only the key to strong genetics, but the result of a purposeful fight against modifiable risk factors: environmental, behavioral, occupational, social, and biological.

Thus, aging has become not only a biological, but also a socio-behavioral phenomenon. Unlike biological aging, social aging is conceptualized as a process that is shaped by social factors and is subject to social construction (Kunkel, Settersten, 2021), in other words, it is the process of assuming new social roles and behavioral practices in the interaction between people and their physical and social environment.

Gradually, gerontological concepts began including data obtained by psychological and social sciences, which expanded the understanding of aging processes, and scientists are now talking about its different vectors: pathological, typical and successful. The term “active” aging is most often used to refer to successful aging (Walker, 2002; Fritzell et al., 2021; Tajvar et al., 2022), as well as “healthy”, “productive”, “harmonious”. If they are not completely synonymous, they are very close in meaning. The emergence of the successful aging concept has led to the search for determinants of compensatory mechanisms in old age, as well as to the fight against the stigma associated with aging. In Russia, following European countries, the concept of active aging and longevity has been consolidated, which has been operationalized and calculated since 2010 using the Active Aging Index (Sinyavskaya, Chervyakova, 2022).

In 1997, J. Rowe and R. Kahn defined successful aging as a high level of cognitive and physical functions, involvement in life, and the absence of disease and disability (Rowe, Kahn, 1997). This

approach has been criticized for its narrow biomedical focus and unrealistic expectations of disease absence in old age. In 2015, the World Health Organization (WHO) proposed a more realistic concept of healthy aging as a continuous process of developing and maintaining functional abilities that ensure well-being in old age (Beard, Bloom, 2015). This definition shifted the focus from a disease-based approach to a function-based approach. At the same time, a view of aging as a quality of life in old age began developing in line with modern humanistic gerontology (Pashina, 2024). This concept is based on people’s subjective perception of the aging process; it means that in its mainstream, successful aging is defined as a state in which a person achieves a sense of well-being, high self-esteem of quality of life, and a sense of self-fulfillment even in conditions of illness and disability (Young et al., 2009).

Scientific concepts, as well as a large amount of research on how to promote healthy aging, have offered an optimistic view of addressing the challenges of aging, which has led to policy initiatives aimed at preventing physical deterioration with age by encouraging older people to stay physically active. Back in 2002, WHO documented the concept of “active aging” as “the process of optimizing opportunities for health, participation and safety to improve the quality of life as people age”<sup>2</sup>. At the same time, the word “active” refers not only to the ability to be physically active, but also to support the prospects of people’s participation in social, economic, cultural, spiritual and civic affairs to improve the quality of life. In the same year, the United Nations developed the Madrid International Plan on Aging<sup>3</sup>, which proposed a turn in the understanding of old age, free from obligations and work, toward old age, where an important role is

<sup>2</sup> Active ageing: A policy framework (2002). WHO reference number: WHO/NMH/NPH/02.8. P. 12.

<sup>3</sup> Madrid International Plan of Action on Aging, 2002. Available at: [https://www.un.org/ru/documents/decl\\_conv/declarations/ageing\\_program.shtml](https://www.un.org/ru/documents/decl_conv/declarations/ageing_program.shtml)

given to labor market participation and equal access of older people to consumer practices (Galkin, 2022). In other words, the Madrid Plan, unlike the earlier Vienna International Plan on Aging (1982), not only offers measures to meet the needs of the elderly, but also aligns the aging processes of society with its sustainable development. Twenty years later, WHO named 2021–2030 the decade of healthy aging, during which it is planned to undertake a number of coordinated and joint actions aimed at improving the lives of older people, their families and the local communities in which they live<sup>4</sup>. In Russia, however, since 2019, the Concept of an active longevity policy is being developed, and the Federal Project “The Older Generation” is designed to help ensure the well-being of elderly citizens and improve their quality of life<sup>5</sup>.

From the WHO point of view, healthy aging is the development and maintenance of functional abilities that ensure well-being in old age. Functional abilities are determined by a person’s own potential (i.e., the totality of all physical and mental abilities of a person) and the environment (physical and social) in which he or she lives. This concept assumes a view of a person as an active subject who implements a conscious approach to their lifestyle and preventive measures from an early age, but at the same time takes into account that the socio-economic resources and opportunities available to people throughout their lives strongly influence the ability to make the right choice regarding health and education, and support if it necessary. Thus, healthy aging is closely linked to social and economic inequality.

Problems concerning healthcare, education, employment, and earnings reinforce each other and accumulate over the course of lifetime. Cultural,

gender, and ethnicity are important factors of inequality and lead to completely different ways of aging, so in this article we want to emphasize the importance of including social factors in understanding the problem of aging along with biological and psychological ones, as well as to emphasize that aging is a multifaceted and individual process. And the study of risk factors and health protection will make it possible to implement the prevention of early aging. The problem remains how to increase social integration for all senior citizens and improve their quality of life. The concept of healthy aging should help to understand that it is necessary to prepare for it from the third decade of life, forming healthy habits and attitudes.

The article provides an overview of interdisciplinary research on the aging process with an emphasis on the social determinants of health. The method chosen is a descriptive review, which in foreign literature is referred to as a “narrative review” or “state-of-the-art” (Sukhera, 2022). It helps to synthesize different points of view and approaches to form and present the author’s view of the problem, depending on the context in which the review is conducted. In this case, we have focused exclusively on the description of interdisciplinary studies of the aging process, the authors of which adhere to the view that aging is a constructed process that can be influenced throughout life, and not only during old age itself, when it is too late to prevent abnormalities. This was done to identify the social determinants of aging that can be influenced and changed over the course of life, as well as to prove the possibility of including sociological aspects in a joint (interdisciplinary) methodology for analyzing the aging process, in particular the cognitive population aging as a multidimensional process influenced by many internal and external factors, and which, in such way, becomes not only a medical problem, but also an area of application of social policy efforts. The sources included in the review were selected based on keywords such as

<sup>4</sup> Decade of Healthy Aging. WHO. Available at: <https://who.int/ru/initiatives/decade-of-healthy-ageing> (accessed: 14.08.2025).

<sup>5</sup> Eternal youth: How Russia is transitioning to active longevity. Available at: <https://www.gazeta.ru/business/2019/09/13/12647245.shtml> (accessed: 21.07.2025).

“designing aging”, “modeling aging”, “successful aging”, “healthy aging”, etc. in scientific libraries and databases Google Scholar, E-library, Pubmed, as well as using the “snowball” method. In total, we analyzed about 200 papers, of which 78 were the most relevant. Theoretical analysis methods were used to achieve this aim: induction, deduction, and synthesis.

### **Searching ways for aging healthily**

In the 2010s, the prevalence of healthy aging ranged from 12 to 37% in different countries and regions due to the lack of a standardized approach to its assessment (McLaughlin, 2010; Arias-Merino et al., 2012; Meng, D’Arcy, 2014; Feng et al., 2021). And although this problem is relevant for the whole world, only a few countries are actively preparing for the future, conducting massive interdisciplinary research in an attempt to find the key to a successful longevity, taking into account national characteristics. Large-scale studies of the aging population have been conducted, for example, in China, where a fifth of the world’s elderly already live today (Chen et al., 2022). Special emphasis is placed on the cognitive aspect of the aging process and its relationship to socio-economic factors such as social engagement, activity (Fu et al., 2018; Zhou et al., 2020) and income (Feng et al., 2020).

The results of modern research show that health in old age is the result of the cumulative effect of behavior and events in an earlier period, so it is necessary to pay attention to the practices and attitudes of the middle-aged population (starting from the third decade of life and up to 59 years<sup>6</sup>), who still have the opportunity to prepare for aging in advance (Lachman et al., 2015). In this regard, interdisciplinary groups of scientists are developing a new line of research to initiate primary or bottom-up prevention of aging, providing a guideline for

<sup>6</sup> In our work, we are guided by the WHO gradation, according to which the limits of the average age are 44–59 years, but since studies show that cognitive decline begins at the age of 35 (see, for example, Hartshorne, Germine, 2015), we consider it necessary to lower the lower limit to 35 years.

developing effective medical and socio-economic strategies to preserve youth to allow more middle-aged people to achieve a long and healthy life (Wang et al., 2024). The Chinese study shows that the trend toward healthy aging among the middle-aged population may change over time. This means that by improving certain parameters, it is possible to increase the likelihood of healthy aging.

It is also known about studies of population aging in Korea (Korean Longitudinal Study of Aging), Great Britain (English Longitudinal Study of Aging), Ireland (The Irish Longitudinal Study on Aging), Mexico (Mexican Health and Aging Study), Japan (Japanese Study on Aging and Retirement). To a greater extent, they are based on socio-economic statistics, as well as information about the cognitive functions of the population, since the purpose of such studies is to create the basic data necessary for the development and implementation of effective policies to anticipate and address the problems that arise in the aging process.

### **Designing the aging process**

In the 21st century, one-dimensional models of aging that focus on the idea of decline in old age have given way to developmental models that span the entire life span and examine how specific processes and strategies contribute to adaptive aging. In part, this shift was triggered by the contrast between the results, which clearly demonstrate a decrease in biological, physiological, and cognitive abilities, and evidence that people are generally satisfied with life in old age and experience relatively high levels of emotional well-being (Charles, Carstensen, 2010).

Although scientists primarily note biological signs as the fundamental mechanisms of aging, recently there has been a trend in gerontology toward understanding aging as a multifaceted process involving social and psychological signs, as well as being influenced by environmental factors. Therefore, the issues of interdisciplinarity in the study of aging as a biosociopsychological process

are being actualized. In this regard, the idea of the possibility of constructing old age, which is a set of strategies for creating and implementing its desired image, has been developing in recent years, which has opened up a positive prospect for research in gerontology (Belekhova et al., 2024). Mathematical modeling of aging has been of great interest for many years (Yashin et al., 2007; Akushevich et al., 2023). In addition to studying various aspects of the aging process, attention is paid to the mechanisms of adaptation to it, its various scenarios, taking into account the possibility of early prevention.

There are different classifications of factors affecting the functional capabilities of the elderly (Zhang, Wang, 2025). In most cases, the factors are divided into three groups: individual, social, and environmental. Individual factors include demographic data (age, gender, marital status, education level, and income level), internal capabilities (activity function, sensory function, cognitive function, psychological state, state of vitality and adaptability, etc.), and health characteristics (physical and mental health, diseases, lifestyle, coping methods, physical activity, body weight, healthy habits, etc.). Social factors include social status, social participation and relationships, social security, public services, etc. Environmental factors include economic conditions, living environment, social and political environment, etc. In research, these factors are grouped in different ways, but in most cases, those that do not relate to internal abilities and quality of health are classified as social determinants of health.

Russian researchers O.Yu. Strizhitskaya and M.D. Petrash examined biological, psychological, and environmental factors from the point of view of their modelability, which is understood as the possibility of creating, controlling, and eliminating certain mechanisms depending on their role in the design of aging (Strizhitskaya, Petrash, 2022). The authors present that the mechanisms of subjectivity are at the heart of the possibilities of constructing

aging, and adequate and positive ideas about one's own old age serve as the basis for forming strategies. Genetic and physiological mechanisms are not absolute predictors of aging and can be partially modified, but not modeled, since a person cannot completely exclude or change them. Psychological and social factors can only be modeled conditionally, and a variety of environmental factors are considered the most flexible for modeling, allowing significant adjustments to aging trends. The fact that the increase in life expectancy in the 20th century became possible primarily due to environmental factors (lifestyle, medicine, social security, etc.) confirms the authors' conclusions. And this suggests that there are various factors and mechanisms that a person can use to accumulate resources for a long-term active life, and the activation of such resources requires the initiative of the person themselves.

But opportunities to engage in activities that can increase the likelihood of healthy aging are not always fair and may depend on social and environmental factors beyond human control. This can lead to an uneven distribution of cumulative advantages or disadvantages throughout a person's life and have a strong impact on the trajectory of their aging. Therefore, a thorough study of how the various socio-economic indicators that WHO has identified as a broad group of social determinants of health (SDH) affect healthy aging as a multidimensional concept may have important implications for health and social policy.

The search for the causes of "unequal" aging has led to increased interest in the interaction between cumulative socio-economic inequality and biological aging. P. Gellert and E. Alonso-Perez proposed a taxonomy of aging models, dividing them into four classes depending on the type of relationship between biological and psychosocial factors and their impact on health: mediation, regulation, interaction, independence (Gellert, Alonso-Perez, 2024).

Below, we will take a closer look at modifiable factors, as well as their effect on the biological signs of aging.

### **Social determinants of health and biological aging**

In 2005, WHO identified SDH as the structural factors and conditions of daily life that significantly contribute to health inequities. The SDH is classified into five domains: access and quality of healthcare, access and quality of education, social context, economic stability, as well as the area of residence and man-made environment (Zhang, Zhang, 2023). Thus, the term “social determinants” serves as a short description of the social, political, economic, environmental and cultural factors affecting health.

From WHO’s point of view, health indicators are subject to the law of social gradient: the lower the socio-economic well-being of a territory, the lower the incomes, educational achievements, health status and healthy life expectancy of its population<sup>7</sup>.

Of particular relevance in this regard are studies on the impact of the SDH on cognitive functions and intelligence (Marmot et al., 1991), which is understood as a complex hierarchy of skills reflecting the interaction between the social context and the individual throughout life. Socio-economic factors serve both as factors and defenses for cognitive health. As a rule, the higher the socio-economic status of a person, the higher the cognitive performance and the slower the cognitive decline (Brunner, 2005). For example, food insecurity (Portela-Parra, Leung, 2019) and unfavorable housing conditions demonstrate a negative relationship with cognitive performance (Cobb-Clark, Kettlewell, 2021). Limited access to healthcare is a serious risk, which can delay the diagnosis and treatment of cognitive disorders

(Mullins, 2021). There is also a detrimental relationship between long-term unemployment and cognitive indicators: decreased literacy, memory, executive functions, and information processing speed (Vélez-Coto et al., 2021). The mechanisms underlying these effects are multifaceted and include the psychological burden of unemployment, which contributes to stress and negatively affects brain health over time.

On the contrary, access to green spaces throughout life can slow down cognitive decline later in life (Cherrie et al., 2018). But the education level plays a crucial role in the state of cognitive health. People with higher levels of education and income demonstrate significantly better cognitive performance: improved working memory and executive function (Nutakor et al., 2021), the same applies to attention (Pengpid et al., 2019) and delayed verbal tasks (Chen et al., 2021). The educational level primarily shapes cognitive skills by contributing to individual differences in memory, executive function, and information processing speed, which are established in early adulthood and persist into old age, contributing to sustained cognitive performance over time (Lövdén, 2020).

Most modifiable risk factors and defenses against cognitive decline and dementia show gender differences in their rate and/or manifestation of risk, and these differences are often more pronounced in developing countries. V. Gilles and colleagues studied how age-related cognitive decline, estimated using a spatial navigation video game, varies among participants from 39 countries (Gilles et al., 2024). The authors found that the social, economic, and environmental well-being of older people, as measured by the Quality of Life Index of Older People, is negatively associated with age-related declines in spatial abilities, and gender differences in spatial navigation skills increase with age, especially in countries with large gender inequalities.

<sup>7</sup> Social determinants of health. WHO. Available at: <https://who.int/ru/news-room/fact-sheets/detail/social-determinants-of-health> (accessed: 15.08.2025).

### **Behavioral aging factors**

The next group of factors subject to change is related to behavior and lifestyle. Behavioral factors such as physical activity, a healthy diet, and stress management have already been shown to modulate the aging process and age-related changes in health (Picard, 2011).

Behavioral factors include, first of all, nutrition and dietary preferences, which over the years form the body structure and availability of micro / macronutrients; second, physical and athletic activity, which provides the necessary level of energy expenditure, metabolic health and physical tone; further, compliance with sleep patterns that allow the body to recover and rest; and adherence to bad habits that have a destructive contribution to the level of future health.

A clear example of the influence of lifestyle on the quality of health was found in the study of the links between diabetes, the SDH and cognitive tests. People struggling with diabetes showed better cognitive performance compared to participants who did not have the disease, which the researchers attributed to the proactive lifestyle of the former. This lifestyle includes a healthy diet, regular exercise, blood glucose control, and more frequent medical monitoring and treatment, which together can help maintain cognitive performance and mitigate cognitive decline (Dove et al., 2021).

Another example related to behavioral practices is the accumulation of cognitive reserve (CR) (Lachman, Agrigoroaei, 2010), which allows preserving cognitive functions. Physical activity, training and education, regulation of emotional state, and involvement in social activities are identified as mechanisms contributing to the preservation of these functions (Agrigoroaei, Lachman, 2011). To date, many CR studies have been conducted, and conclusions about the effects of digital transformation on human cognitive functions are of particular interest. In particular, there is evidence that the use of digital devices for

various purposes (reading, accessing social networks, gaming, and other activities that require great cognitive effort), and not just for communication, has a positive effect on the CR (Liang et al., 2023). There is evidence of the benefits of using digital devices for the elderly, including slowing cognitive decline, strengthening social networks, implementing basic daily activities and supporting health services (Jin et al., 2019), which became relevant during the COVID-19 pandemic and is especially noticeable in dynamically developing Asian countries, such as Malaysia (Pazim et al., 2021). Of particular interest to us is the conclusion that the quality and volume of social networks in which a person is included strongly influence the CR. Interpersonal relationships provide access to a variety of social stimuli, which enhances the brain's ability to cope with damage to neurons (Perry et al., 2022).

### **Social interactions as aging factor**

Social relationships are recognized as a key element of well-being and have a cumulative impact on health throughout a person's life, playing an important role in adaptation and mental well-being (Bardhan, 2024). However, the relevance of social relations to the study of aging has not always been as widely recognized as it is today. Social relationships have an emotional or psychological component that determines their importance, as well as a true cause-and-effect relationship with such objective results as, for example, the development and course of diabetes, heart and vascular diseases, brain stroke outcomes, immune system reactions, life expectancy, and the risk of death caused by any cause (Lebedev et al., 2024).

R. Kahn and T. Antonucci developed a model of social convoy based on research on attachment and social roles (Kahn, Antonucci, 1980). The term "convoy" is used to describe the duration and nature of social relationships, and special attention is paid to emotional intimacy (Antonucci, 2001). According to the model under consideration,

people are surrounded by other people who support them and who move together throughout their life cycle. Social relationships differ in proximity, quality (positive/negative), function (help, affect, exchange) and structure (size, composition, frequency of contacts, geographical proximity). The structure, function, and quality of convoys depend on personal (e.g., age, gender) and situational (e.g., role requirements, norms, values) characteristics, while having a significant impact on health and well-being.

The way in which social exchange processes are related to biological aging has been studied in detail in the research of the group of J.P. Kiecolt-Glaser. They investigated how social support within married couples is associated with biomarkers of aging (Wilson et al., 2021), and described potential pathways from chronic marital distress to mental health problems such as depression, which then increase the risk of obesity, cardiovascular and cardio-metabolic diseases (Kiecolt-Glaser et al., 2019). The research shows that divorce in middle age can negatively affect cognitive abilities, especially memory and orientation, increasing the risk of dementia later in life (Brown et al., 2021). A study conducted in China shows that people who are married are on average 0.6 years younger than their single peers (in terms of biological rather than chronological age), and those who have lost their spouse are 0.3 years older (Galkin et al., 2022).

Social relationships (social support and frequency of contacts) have been proved to affect immune function, chronic diseases, and mortality risk (Holt-Lunstad et al., 2010). People who know that friends and family members are ready to support them in difficult times feel a more pronounced sense of meaning in life (Krause, 2007). In addition, people with developed social networks report higher emotional well-being in daily life, as well as in stressful situations (Cohen and Wills, 1985). That is, both the structural (number and type of social partners) and functional (perceived

or actual support) aspects of social media contribute to emotional well-being.

Increasingly, studies show that older people who are in strong social networks and maintain a high level of social activity are less likely than their less socially engaged peers to experience cognitive decline (Zunzunequi et al., 2003), as well as older people engaged in volunteer activities (Singh-Manoux et al., 2003). Prosocial behavior is generally positively associated with successful aging (Sparrow et al., 2021).

It has long been proven that increasing social support and frequency of contacts over time, especially with loved ones, has a positive effect on health, reducing the physiological effects of stress (Carstensen et al., 1999). Support and contacts with friends are particularly important for biomarkers of aging (McHugh Power et al., 2019), since relationships with them are usually voluntary, unlike relationships with family members (Sharifian et al., 2019).

Positive emotions experienced during social contacts are considered to be the main reason why social interactions can contribute to improved cognitive function (Blanchard-Fields et al., 2008). People who report less satisfaction with their networks show more pronounced cognitive decline over time (Hughes et al., 2008). The effect of developed social networks is comparable to traditional medical indicators such as high cholesterol and smoking.

#### **Emotional factors affecting the quality of aging**

It has been proven that the emotional component of personality also seriously affects the quality of aging. The inclusion of social and behavioral sciences in the field of vision of gerontology, where attention to biological processes has traditionally prevailed, has led to the use of social constructionism in the analysis of the aging process. From the point of view of constructionism, age is a social construct embedded in social norms and culture (Bytheway, 2011; Hoepner, Urban,

2019; Twigg, Martin, 2014; Zhang et al., 2017). People interpret aging in different ways depending on the context and the discourses available to them (Holstein, Gubrium, 2008). Positive self-perception also influences the formation of a “healthy old age” and longevity, which is confirmed by many years of psychological research.

According to the theory of stereotype embodiment proposed by B. Levy, positive and negative stereotypes about age in society are embodied through internalization processes (Levy, 2009). These stereotypes may be conscious or unconscious, but they become noticeable through the manifestation of social signals that define “old age”. Internalized stereotypes about age are assumed to affect health through behavioral (e.g., sedentary behavior, medication adherence), psychological (e.g., expectations that alter behavioral responses such as cognitive and physical functioning), and physiological (e.g., increased cardiovascular stress response) pathways.

A comparative longitudinal analysis of the influence of genetic (APOEε2) and environmental factors (ideas about cognitive functions) on the preservation of cognitive functions has shown that positive ideas about one’s own cognitive abilities have a statistically significant reinforcing effect on the functioning of the APOEε2 gene, while negative ideas have a negative effect; at the same time, the contribution of positive ideas to the level of preservation of cognitive functions is 15 times higher than the genetic factor (Levy et al., 2020).

The main conclusion is that people who are positive about aging experience it more easily (Róin et al., 2021) and live 7.5 years longer than those who perceive aging less positively. This effect is partially mediated by the will to live (Levy et al., 2002).

### **Conclusion**

In the presented review, we show many arguments in favor of the intersection of socio-economic, behavioral, and environmental factors with the biology of aging, which demonstrates

interdisciplinarity in studying the determinants of healthy aging and strategies for its design. An example of such a successful interdisciplinary collaboration is socio-genomics, which integrates social factors into biological aging research by untangling complex interactions between innate genetic susceptibility and exposure to the social environment (Joo et al., 2022). Population aging trends have led to the emergence of biodemography, which has revealed new knowledge about the nature of human longevity, including the postponement of mortality and aging, healthy life expectancy, and the demography of healthy aging (Vaupel, 2010). Thus, it becomes clear that it is impossible to study the issues of aging within the framework of a narrowly disciplinary approach. Interdisciplinary barriers limit the adequate use of accumulated knowledge about the mechanisms and factors influencing this process (Yashin et al., 2007). The position of scientists is that an interdisciplinary research program should be based on the agreement of central terms, in particular, what is meant by “normal”, “successful” and “pathological” aging, as well as offer practical recommendations for individual behavior strategies in the formation of “desired” old age (Strizhitskaya, Petrash, 2022).

In our review, we tried to place special emphasis on the aging process as a delayed result of the influence of the identified determinants throughout life. In other words, we focused not on old age itself, but on preparing for it, which made it possible to avoid describing ways of adapting people to old age and focus on lifelong prevention by taking into account modifiable factors, which researchers primarily include social, behavioral, and environmental determinants of health.

Recent statistics have proved that the health level in the middle age group is far from ideal. This means that there are limited functional reserves that have a low chance of creating a high quality of life in the process of aging in the future. In other words, there is an urgent need to focus on the health of the

middle-aged population, especially in vulnerable groups (i.e., among people with lower levels of education, life satisfaction, and monthly income living in urban areas); it focuses on educational activities, the prevention of inequality in education and healthcare, and, as O.Yu. Strizhitskaya and M.D. Petrash write, on creating positive ideas about old age and shaping the subjectivity of the population for planning their old age (Strizhitskaya, Petrash, 2022). Particular attention should be paid to cognitive aging as a process closely related to environmental and social factors.

Understanding the importance of the subjectivity of the population in shaping their old age, at the moment we can only provide a small cross-section of Russian research on how our fellow citizens prepare for old age.

The topic of aging is as relevant in Russia as it is all over the world. According to Rosstat, by 2046, the elderly will make up 27% of the population, which, on the one hand, carries the risks of crises in the economy and healthcare, and, on the other, the growth of markets for goods and services for the elderly, and the development of technologies to prolong active life.

For 2024–2030, the country has launched the national project “Long and active life”, aimed at increasing life expectancy to 78 years by 2030 and to 81 years by 2036, primarily due to the fight against cardiovascular diseases, hepatitis C and diabetes mellitus. To improve the quality of public health, it is also planned to expand the diagnosis of cancer diseases thanks to modern devices for video gastroscopy in the regions, modernize primary health care, expand the possibilities of medical rehabilitation, eliminate the shortage of doctors, develop emergency care and digital systems in medicine. In 2024, the national project “New technologies for saving health” was launched, which includes the federal project “Regenerative biomedicine, preventive medicine technologies, ensuring active and healthy longevity”. But, as

confirmed by many studies, the contribution of a healthy lifestyle to the formation of health is up to 50%, while the contribution of accessibility of medical technologies, genetics and the environment totals the remaining 50%. In this regard, healthy habits are the key to longevity and the foundation for successful aging (Kolosnitsyna et al., 2019).

On average, with their current lifestyle and circumstances, Russians plan to live to 79 years of age (women to 80, men to 78)<sup>8</sup>. In the near future, it is the “silver” generation that will become the main consumer in many sectors of the economy<sup>9</sup>, although this is a group that, according to Russians, has to face serious problems: poverty, low pensions (71%), deteriorating health, various diseases (44%), as well as a feeling of uselessness and lack of demand (19%) and loneliness (17%)<sup>10</sup>.

In Russia, the aging process is problematized through negative stereotypes existing in society that entry into old age deprives a person of any prospects, and a good old age, as Dmitrii Rogozin writes, is just the retention of youth (Rogozin, 2012). Activity and youthfulness are considered the emerging standard of active longevity in society, while only 43% of Russians note that it is necessary to make efforts and struggle with age. Strangely enough, young people aged 18–24 (50%), those with higher education (50%), as well as residents of large and metropolitan cities (49%) are more likely to advocate for the fight against aging.

Every second Russian (48%) takes some measures to prolong youth and slow down age-related changes. They are more often women (54% versus 40% among men). Among those who

<sup>8</sup> Live long, live well! Available at: <https://wciom.ru/analytical-reviews/analiticheskii-obzor/zhit-dolgo-zhit-khorosho> (accessed: 17.07.2025).

<sup>9</sup> Shopping 50+: How, what and why? Available at: <https://wciom.ru/analytical-reviews/analiticheskii-obzor/shopping-50-kak-chto-i-zachem> (accessed: 24.04.2025).

<sup>10</sup> Life expectancy in Russia: Desires and reality. Available at: <https://wciom.ru/analytical-reviews/analiticheskii-obzor/prodolzhitelnost-zhizni-v-rossii-zhelaniya-i-realnost> (accessed: 24.04.2025).

are convinced of the need to fight aging, 74% personally make some efforts to do so. Although representatives of different socio-demographic groups have different strategies for combating aging, Russians mainly resort to sports (56% in the group taking measures to combat aging), proper nutrition (29%) and care procedures (27%), healthy lifestyle and hardening (13%) to preserve youth. One in ten in this group also mentioned giving up bad habits and taking walks in the fresh air (10%)<sup>11</sup>.

Thus, we can draw a general conclusion that the idea of preparing for a successful old age in Russia is not yet very widespread, but it tends to develop, since government policy is aimed at improving the quality and duration of a healthy life for older citizens, stimulating their social activity and taking care of their health. In April 2025, the country approved a Strategy for actions in the interests of older citizens until 2030<sup>12</sup>.

Based on the above, we can draw the following conclusions. First, the aging process is multi-factorial and complex, inevitable, but partly manageable, which requires an interdisciplinary approach for its successful study. Second, citizens

are insufficiently aware of the principles and trajectories of healthy aging and, accordingly, are insufficiently motivated to adhere to it, which requires more educational activities of medical and sociological specialists.

Aging is not a hopelessness or a sentence, but a pattern of life that it is necessary to prepare for in advance, saving your health and resources, forming a stable “rear”, a positive attitude, and actively working on issues of saving mental, cognitive, and physical health through healthy lifestyle, regular medical checkups, and timely treatment of diseases. Social well-being, social stability, social engagement, and active social interaction can delay the onset of old age. The active position of the state in health-saving issues will help in the current demographic situation of the “aging population” to create the prerequisites and conditions for the formation of a large stratum of economically active, working-age older generation with a high level of health, which, in turn, will reduce the burden on social and insurance services, that is, it will positively affect the domestic economic situation in the country.

## References

- Agrigoroaei S., Lachman M.E. (2011). Cognitive functioning in midlife and old age: Combined effects of psychosocial and behavioral factors. *The Journals of Gerontology: Series B*, 66B(1), i130–i140. DOI: 10.1093/geronb/gbr017
- Akushevich I., Yashkin A., Kovtun M. et al. (2023). Forecasting prevalence and mortality of Alzheimer’s disease using the partitioning models. *Experimental Gerontology*, 174, 112133. DOI: 10.1016/j.exger.2023.112133
- Antonucci T.C. (2001). Social relations: An examination of social networks, social support and sense of control. In: Birren J.E., Schaie K.W. (Eds). *Handbook of the Psychology of Aging (5th Ed.)*. New York: Academic Press.
- Arias-Merino E.D., Mendoza-Ruvalcaba N. M., Arias-Merino M. J., Cueva-Contreras J., Vazquez Arias C. (2012). Prevalence of successful aging in the elderly in Western Mexico. *Current Gerontology and Geriatrics Research*, 460249. DOI: 10.1155/2012/460249
- Bardhan A. (2024). Biological, psychological and social perspectives of ageing. *Journal of Social Development*, 32(1), 113–129.
- Beard J.R., Bloom D.E. (2015). Toward a comprehensive public health response to population ageing. *Lancet*, 385(9968), 658–661. DOI: 10.1016/S0140-6736(14)61461-6

<sup>11</sup> Aging: Accept or fight. Available at: <https://wciom.ru/analytical-reviews/analiticheskii-obzor/starenie-prinjat-ili-borotsja> (accessed: 24.04.2025).

<sup>12</sup> The Government has approved a Strategy for actions in the interests of older citizens until 2030. Available at: <http://government.ru/docs/54753/> (accessed: 04.09.2025).

- Belekhova G.V., Natsun L.N., Solov'eva T.S. (2024). Prosperous old age: From scientific theories to the fundamentals of its programming. *Ekonomicheskie i sotsial'nye peremeny: fakty, tendentsii, prognoz=Economic and Social Changes: Facts, Trends, Forecast*, 17(2), 220–238. DOI: 10.15838/esc.2024.2.92.12 (in Russian).
- Blanchard-Fields F., Horhota M., Mienaltowski A. (2008). Social context and cognition. In: Hofer S.M., Alwin D.F. (Eds). *Handbook of Cognitive Aging: Interdisciplinary Perspectives*. Sage Publications. DOI: 10.4135/9781412976589.n37
- Brown S.L., Lin I-F, Vielee A., Mellencamp K.A. (2021). Midlife Marital Dissolution and the onset of cognitive impairment. *Gerontologist*, 61, 1085–1094. DOI: 10.1093/geront/gnaa193
- Brunner E.J. (2005). Social and biological determinants of cognitive aging. *Neurobiology of Aging*, 26(1), 17–20. DOI: 10.1016/j.neurobiolaging.2005.09.024
- Bytheway B. (2011). *Unmasking Age. The Significance of Age for Social Research*. Bristol.
- Carstensen L.L., Isaacowitz D.M., Charles S.T. (1999). Taking time seriously: A theory of socioemotional selectivity. *American Psychologist*. 54(3), 165–181. DOI: 10.1037/0003-066X.54.3.165
- Chang A., Skirbekk V., Tyrovolas S., Kassebaum N., Dieleman J. (2019). Measuring population ageing: An analysis of the Global Burden of Disease Study 2017. *The Lancet Public Health*, 4(3), 159–167. DOI: 10.1016/S2468-2667(19)30019-2
- Charles S.T., Carstensen L.L. (2010). Social and emotional aging. *Annual Review of Psychology*, 61, 383–409. DOI: 10.1146/annurev.psych.093008.100448
- Chen G., Zhao M., Yang K. et al. (2021). Education exerts different effects on Cognition in individuals with subjective cognitive decline and cognitive impairment: A population-based study. *Journal of Alzheimer's Disease*, 79, 653–661. DOI: 10.3233/JAD-201170
- Chen X., Giles J., Yao Y. et al. (2022). The path to healthy ageing in China: A Peking University-Lancet Commission. *Lancet*, 400(10367), 1967–2006. DOI: 10.1016/S0140-6736(22)01546-X
- Cherrie M.P.C., Shortt N.K., Mitchell R.J. et al. (2018). Green space and cognitive ageing: A retrospective life course analysis in the Lothian Birth Cohort 1936. *Social Science & Medicine*, 196, 56–65. DOI: 10.1016/j.socscimed.2017.10.038
- Cobb-Clark D.A., Kettlewell N. (2021). Psychological, social and cognitive resources and the mental wellbeing of the poor. *PLoS ONE*, 16, e0258417. DOI: 10.1371/journal.pone.0258417
- Cohen S., Wills T.A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, 98(2), 310–357. DOI: 10.1037/0033-2909.98.2.310
- Cosco T.D., Prina A.M., Perales J., Stephan B.C., Brayne C. (2013). Lay perspectives of successful ageing: A systematic review and meta-ethnography. *BMJ Open*, 3(6), e002710. DOI: 10.1136/bmjopen-2013-002710
- Dove A., Shang Y., Xu W. et al. (2021). The impact of diabetes on cognitive impairment and its progression to dementia. *Alzheimer's & Dementia Journal*, 17, 1769–1778.
- Feng Q., Son J., Zeng Y. (2015). Prevalence and correlates of successful ageing: A comparative study between China and South Korea. *European Journal of Ageing*, 12(2), 83–94. DOI: 10.1007/s10433-014-0329-5
- Feng Z., Cramm J.M., Jin C., Twisk J., Nieboer A.P. (2020). The longitudinal relationship between income and social participation among Chinese older people. *SSM – Population Health*, 11, Article 100636. DOI: 10.1016/j.ssmph.2020.100636
- Fritzell J., Lennartsson C., Zaidi A. (2021). Trends and inequality in the new active ageing and well-being index of the oldest old: A case study of Sweden. *Population Ageing*. 14, 5–22. DOI: 10.1007/s12062-020-09264-9
- Fu C., Li Z., Mao Z. (2018). Association between social activities and cognitive function among the elderly in China: A cross-sectional study. *International Journal of Environmental Research and Public Health*, 15(2), 231. DOI: 10.3390/ijerph15020231
- Galkin K.A. (2022). Social policy of active aging in Russia and European welfare States: Comparative analysis. *Ekonomicheskie i sotsial'nye peremeny: fakty, tendentsii, prognoz=Economic and Social Changes: Facts, Trends, Forecast*, 15(2), 239–252. DOI: 10.15838/esc.2022.2.80.15 (in Russian).

- Galkin F., Kochetov K., Koldasbayeva D. et al. (2022). Psychological factors substantially contribute to biological aging: Evidence from the aging rate in Chinese older adults. *Aging (Albany NY)*, 14(18), 7206–7222. DOI: 10.18632/aging.204264
- Gellert P., Alonso-Perez E. (2024). Psychosocial and biological pathways to aging. *Zeitschrift für Gerontologie und Geriatrie*, 57, 365–370. DOI: 10.1007/s00391-024-02324-1
- Gilles V., Salouhou S., Vallée R. et al. (2024). Social determinants of cognitive aging trajectories across 39 countries. *MedRxiv*. DOI: 10.1101/2024.12.05.24318553
- Hartshorne J.K., Germine L.T. (2015) When does cognitive functioning peak? The asynchronous rise and fall of different cognitive abilities across the life span. *Psychological Science*, 26(4), 433–443. DOI: 10.1177/0956797614567339
- Holstein J.A., Gubrium J.F. (2008). *Handbook of Constructionist Research*. London: Guilford Press.
- Holt-Lunstad J., Smith T.B., Layton J.B. (2010). Social relationships and mortality risk: A meta-analytic review. *PLoS Medicine*, 7(7), e1000316. DOI: 10.1371/journal.pmed.1000316
- Höpner G., Urban M. (2019). Editorial: Materialities of age and ageing. *Frontiers in Sociology*, 4, 14. DOI: 10.3389/fsoc.2019.00014
- Hughes T.F., Andel R., Small B.J., Borenstein A.R., Mortimer J.A. (2008). The association between social resources and cognitive change in older adults: Evidence from the Charlotte County Health Aging Study. *The Journals of Gerontology: Series B: Psychological Sciences and Social Sciences*, 63(4), 241–244. DOI: 10.1093/geronb/63.4.P241
- Jin Y., Jing M., Ma X. (2019). Effects of digital device ownership on cognitive decline in a middle-aged and elderly population: Longitudinal observational study. *Journal of Medical Internet Research*, 21, e14210. DOI: 10.2196/14210
- Joo Y.Y., Cha J., Freese J., Hayes M.G. (2022). Cognitive capacity genome-wide polygenic scores identify individuals with slower cognitive decline in aging. *Genes*, 13(8), 1320. DOI: 10.3390/genes13081320
- Kahn R.L., Antonucci T.C. (1980). Convoys over the life course: Attachment, roles, and social support. In: Baltes P.B., Brim O. (Eds). *Life-Span Development and Behavior*. Vol. 3. New York: Academic Press.
- Kiecolt-Glaser J.K., Wilson S.J., Madison A. (2019). Marriage and gut (microbiome) feelings: Tracing novel dyadic pathways to accelerated aging. *Psychosomatic Medicine*, 81, 704–710. DOI: 10.1097/PSY.0000000000000647
- Kirkwood T.B.L. (2017). Why and how are we living longer? *Experimental Physiology*, 102(9), 1067–1074. DOI: 10.1113/EP086205
- Kolosnitsyna M., Kossova T., Sheluntsova M. (2019). Factors of the life expectancy: Country-level cluster analysis. *Demograficheskoe obozrenie=Demographic Review*, 6(1), 124–150 (in Russian).
- Krause N. (2007). Longitudinal study of social support and meaning in life. *Psychology and Aging*, 22(3), 456–469. DOI: 10.1037/0882-7974.22.3.456
- Kunkel S.R., Settersten R.Jr. (2021). *Aging, Society, and the Life Course*. Springer.
- Lachman M.E., Agrigoroaei S. (2010). Promoting functional health in midlife and old age: Long-term protective effects of control beliefs, social support, and physical exercise. *PLOS ONE*, 5(10), e13297. DOI: 10.1371/journal.pone.0013297
- Lachman M.E., Teshale S., Agrigoroaei S. (2015). Midlife as a pivotal period in the life course: Balancing growth and decline at the crossroads of youth and old age. *International Journal of Behavioral Development*, 39(1), 20–31. DOI:10.1177/0165025414533223
- Lebedev D.T., Rukavishnikov A.S., Lupashko E.V., Khokhlyuk E.V., Saginbaev U.R. (2024). The medical significance of loneliness and social isolation in old age (literature review). *Uspekhi gerontologii*, 37(1–2), 130–137. DOI: 10.34922/AE.2024.37.1-2.017 (in Russian).
- Levy B. (2009). Stereotype embodiment: A psychosocial approach to aging. *Current Directions in Psychological Science*, 18, 332–336. DOI: 10.1111/j.1467-8721.2009.01662.x

- Levy B.R., Slade M.D., Kunkel S.R., Kasl S.V. (2002). Longevity increased by positive self-perceptions of aging. *Journal of Personality and Social Psychology*, 83(2), 261–270. DOI: 10.1037//0022-3514.83.2.261
- Levy B.R., Slade M.D., Pietrzak R.H., Ferrucci L. (2020). When culture influences genes: Positive age beliefs amplify the cognitive-aging benefit of APOEε2. *Journals of Gerontology Series B: Psychological Sciences & Social Sciences*, 75(8), 198–203. DOI: 10.1093/geronb/gbaa12
- Liang C., Subramaniam P., Mohd Ridzwan Goh N.S., Kok Wai T., Moustafa A.A. (2023). Digital device use, risk of cognitive impairment, and cognition in healthy older adults: The role of cognitive reserve. *Healthcare (Basel)*, 11(21), 2822. DOI: 10.3390/healthcare11212822
- López-Otín C., Blasco M.A., Partridge L., Serrano M., Kroemer G. (2013). The hallmarks of aging. *Cell*, 153(6), 1194–1217. DOI: 10.1016/j.cell.2013.05.039
- Lövdén M., Fratiglioni L., Glymour M.M., Lindenberger U., Tucker-Drob E.M. (2020). Education and cognitive functioning across the Life Span. *Psychological Science in the Public Interest*, 21(1), 6–41. DOI: 10.1177/1529100620920576
- Marmot M.G., Smith G.D., Stansfeld S. et al. (1991). Health inequalities among British civil servants: The Whitehall II study. *Lancet*, 337(8754), 1387–1393. DOI: 10.1016/0140-6736(91)93068-k
- McHugh Power J.E., Steptoe A., Kee F., Lawlor B.A. (2019). Loneliness and social engagement in older adults: A bivariate dual change score analysis. *Psychology and Aging*, 34(1), 152–162. DOI: 10.1037/pag0000287
- McLaughlin S.J., Connell C.M., Heeringa S.G., Li L.W., Roberts J.S. (2010). Successful aging in the United States: Prevalence estimates from a national sample of older adults. *Journals of Gerontology – Series B Psychological Sciences and Social Sciences*, 65B(2), 216–226. DOI: 10.1093/geronb/gbp101
- Meng X., D’Arcy C. (2014). Successful aging in Canada: Prevalence and predictors from a population-based sample of older adults. *Gerontology*, 60(1), 65–72. DOI: 10.1159/000354538
- Mullins M.A., Bynum J.P.W., Judd S.E., Clarke P.J. (2021). Access to primary care and cognitive impairment: Results from a national community study of aging Americans. *BMC Geriatrics*, 21, 580. DOI: 10.1186/s12877-021-02545-8
- Nutakor J.A., Dai B., Zhou J. et al. (2021). Association between socioeconomic status and cognitive functioning among older adults in Ghana. *International Journal of Geriatric Psychiatry*, 36(5), 756–765. DOI: 10.1002/gps.5475
- Pashina L.A. (2024). Humanistic gerontology and understanding of the phenomenon of aging in the social philosophy of Postmodernism. *Vestnik Leningradskogo gosudarstvennogo universiteta imeni A.S. Pushkina*, 3, 84–99. DOI: 10.35231/18186653\_2024\_3\_84 (in Russian).
- Pazim K., Mahmud R., Yee B.L.F. et al. (2021). The impact of COVID-19 pandemic on Malaysian senior citizens: A review. *International Journal of Aquatic Science*, 12, 186–192.
- Pengpid S., Peltzer K. (2021). Successful ageing among a national community-dwelling sample of older adults in India in 2017–2018. *Scientific Reports*, 11(1), 22186. DOI: 10.1038/s41598-021-00739-z
- Pengpid S., Peltzer K., Susilowati I.H. (2019). Cognitive functioning and associated factors in older adults: Results from the Indonesian Family Life Survey-5 (IFLS-5) in 2014–2015. *Current Gerontology and Geriatrics Research*, e4527647. DOI: 10.1155/2019/4527647
- Perry B.L., Roth A.R., Peng S. et al. (2022). Social networks and cognitive reserve: Network structure moderates the association between amygdalar volume and cognitive outcomes. *Journals of Gerontology. Series B: Psychological Sciences and Social Sciences*, 77(8), 1490–1500. DOI: 10.1093/geronb/gbab192
- Picard M. (2011). Pathways to aging: The mitochondrion at the intersection of biological and psychosocial sciences. *Journal of Aging Research*, 814096. DOI: 10.4061/2011/814096
- Portela-Parra E.T., Leung C.W. (2019). Food insecurity is associated with lower cognitive functioning in a national sample of older adults. *Journal of Nutrition*, 149(10), 1812–1817. DOI: 10.1093/jn/nxz120
- Rogozin D.M. (2012). Liberalizing aging, or labor, knowledge, and health in old age. *Sotsiologicheskii zhurnal*, 4, 62–93 (in Russian).

- Róin T., Skaalum Petersen M., Róin Á. (2021). Managing a positive impression: Self-presentation among octogenarians. *Journal of Aging Studies*, 59, 100968, DOI: 10.1016/j.jaging.2021.100968
- Rowe J.W., Kahn R.L. (1997) Successful aging. *Gerontologist*, 37(4), 433–440. DOI: 10.1093/geront/37.4.433
- Sharifian N., Manly J.J., Brickman A.M., Zahodne L.B. (2019) Social network characteristics and cognitive functioning in ethnically diverse older adults: The role of network size and composition. *Neuropsychology*, 33(7), 956–963. DOI: 10.1037/neu0000564
- Singh-Manoux A., Adler N.E., Marmot M.G. (2023) Subjective social status: Its determinants and its association with measures of ill-health in the Whitehall II study. *Social Science & Medicine*, 56(6), 1321–1333. DOI: 10.1016/s0277-9536(02)00131-4
- Sinyavskaya O.V., Chervyakova A.A. (2022). Active aging in Russia during economic stagnation: What can we learn from the dynamics of the active aging index? *Monitoring obshchestvennogo mneniya: sotsial'nye i ekonomicheskie peremeny=Monitoring of Public Opinion: Economic and Social Changes*, 5, 94–121. DOI: 10.14515/monitoring.2022.5.2043 (in Russian).
- Sparrow E.P., Swirsky L.T., Kudus F., Spaniol J. (2021) Aging and altruism: A meta-analysis. *Psychology & Aging*, 36(1), 49–56. DOI: 10.1037/pag0000447
- Strizhitskaya O.YU., Petrash M.D. (2022). Construction of productive aging: Biological, psychological, and environmental factors. *Konsul'tativnaya psikhologiya i psikhoterapiya=Counseling Psychology and Psychotherapy*, 30(1), 8–28. DOI: 10.17759/cpp.2022300102 (in Russian).
- Sukhera J. (2022). Narrative reviews: Flexible, rigorous, and practical. *Journal of Graduate Medical Education*, 14(4), 414–417. DOI: 10.4300/JGME-D-22-00480.1
- Tajvar M., Yaseri M., Mahmoudi R., Zaidi A. (2022). Individual-level active aging index and quality of life of older people: A population-based survey in Tehran. *International Journal of Preventive Medicine*, 13(1), 2. DOI: 10.4103/ijpvm.IJPVM\_358\_20
- Twigg J., Martin W. (2014). The challenge of cultural gerontology. *The Gerontologist*, 55(3), 353–359. DOI: 10.1093/geront/gnu061
- Vaupel J.W. (2010). Biodemography of human ageing. *Nature*, 464(7288), 536–542. DOI: 10.1038/nature08984
- Vélez-Coto M., Rute-Pérez S., Pérez-García M., Caracuel A. (2021). Unemployment and general cognitive ability: A review and meta-analysis. *Journal of Economic Psychology*, 87, 102430. DOI: 10.1016/j.joep.2021.102430
- Walker A.A. (2002). Strategy for active ageing. *International Social Security Review*, 55(1), 121–139. DOI: 10.1111/1468-246X.00118
- Wang P., Lei L., Cui J. et al. (2024). Trend analysis and influencing factors of healthy aging in middle-aged population in China: A longitudinal study based on the China Health and Retirement Longitudinal Study. *Public Health*, 233, 108–114. DOI: 10.1016/j.puhe.2024.05.012
- Wilson S.J., Bailey B.E., Malarkey W.B., Kiecolt-Glaser J.K. (2021). Linking marital support to aging-related biomarkers: Both age and marital quality matter. *The Journals of Gerontology: Series B: Psychological Sciences and Social Sciences*, 76, 273–282. DOI: 10.1093/geronb/gbz106
- Yashin A.I., Romanyukha A.A., Mikhal'skii A.I. et al. (2007). Gerontology In Silico: The formation of a new discipline. *Uspekhi gerontologii*, 20(1), 7–19 (in Russian).
- Young Y., Frick K.D., Phelan E.A. (2009). Can successful aging and chronic illness coexist in the same individual? A multidimensional concept of successful aging. *Journal of the American Medical Directors Association*, 10, 87–92. DOI: 10.1016/j.jamda.2008.11.003
- Zhang L., Zhang Y. (2023). Social determinants of cognitive health: A scoping review. *Innovation in Aging*, 7(1), 186–187. DOI: 10.1093/geroni/igad104.0615
- Zhang W., Liu S., Wu B. (2017). Defining successful aging: Perceptions from elderly Chinese in Hawaii. *Gerontology and Geriatric Medicine*, 4, 1–7. DOI: 10.1177/2333721418778182
- Zhang W., Wang A. (2025). Functional ability of older adults based on the World Health Organization framework of healthy ageing: A scoping review. *Journal of Public Health*, 33, 1513–1531. DOI: 10.1007/s10389-023-02121-x

Zhou S., Song S., Jin Y., Zheng Z.J. (2020). Prospective association between social engagement and cognitive impairment among middle-aged and older adults: Evidence from the China Health and Retirement Longitudinal Study. *BMJ Open*. 10(11), e040936. DOI: 10.1136/bmjopen-2020-040936

Zunzunegui M.V., Alvarado B.E., Del Ser T., Otero A. (2003). Social networks, social integration, and social engagement determine cognitive decline in community-dwelling Spanish older adults. *Journals of Gerontology. Series B: Psychological Sciences and Social Sciences*. 58(2), 93–100. DOI: 10.1093/geronb/58.2.s93

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