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## Determinants of Successful Ageing and Longevity: How to Age Well and Achieve a Good Old Age?

Ivana Tucak Junaković

Department of Psychology, University of Zadar  
itucakju@unizd.hr

### Abstract

*The extension of the average human lifespan and the increasingly better quality of life in the newer generations of older people have increased scientific interest in the positive aspects of ageing and old age and the factors that contribute to longevity and successful ageing. Successful ageing is one of the most represented but also the most controversial topics in contemporary gerontology. Researchers in this field have reached a consensus that successful ageing is a complex multidimensional construct that incorporates various domains of functioning (not just physical) and requires a holistic approach. However, there is no consensus regarding the components of this complex construct and the most appropriate way to measure it. In the first part of the article, the concept of successful ageing and the differences compared to similar concepts such as healthy, active, productive, or quality ageing were explained. Furthermore, different theoretical approaches, such as biomedical, psychosocial, and lay, and recent holistically oriented multidimensional models of successful ageing, along with methods of research on successful ageing were described. In the second part of the article, the key determinants of successful ageing and longevity were presented. These were confirmed by numerous studies, including those conducted in samples of Croatian older people. An attempt was made to explain in more detail the role of different socio-demographic characteristics, lifestyle factors, personality traits, psychological resources, social relationships, and social participation, as well as cognitively stimulating activities in the context of successful/active/ageing well and improving the quality of life in old age.*

**Keywords:** *determinants of successful ageing, longevity, research methods on successful ageing, theoretical approaches to successful ageing, successful ageing*

## Introduction

Demographic trends towards an increase in the average human lifespan and an increasingly better quality of life in newer generations of older people have led to an increase in scientific interest in factors that contribute to longevity and good or successful ageing. Croatia joins these demographic trends because we are at the very top of Europe in terms of the proportion of older people. According to the latest Census from 2021, people aged 65 and over made up even 22.45% of the total population of the Republic of Croatia (Croatian Bureau of Statistics, 2022), and a comparison with the results of previous Censuses shows that the proportion of older people is continuously increasing.

In the context of these demographic trends and contemporary shift in scientific interest towards positive aspects of ageing, the first aim of this study is to present the concept of successful ageing, and to explain different theoretical approaches and methods of research on successful ageing. The second aim is to present the key determinants of successful ageing and longevity, including socio-demographic characteristics, lifestyle factors, personality traits, psychological resources, social relationships, and social participation, as well as cognitively stimulating activities.

## Successful Ageing and Related Concepts

Ageing is a term that usually has a negative connotation and is traditionally defined as a universal progressive process of decline in all functions that ends in death. However, according to the lifespan developmental perspective, ageing and development are intertwined processes, where successful adaptation to increasing losses in ageing process is key to successful ageing (Baltes, 1987). Both development and ageing are multidimensional and multidirectional processes that include physical, cognitive, and psychosocial dimensions that are not affected to the same extent by degenerative processes associated with increasing age. Therefore, there is a space for developmental gains and for the preservation of psychological vitality and social engagement in old age (Achenbaum, 2001). Newer generations of older people, despite their great heterogeneity, are generally living longer, are healthier, better informed, more educated, and more active in social and public life, and this trend is likely to continue in the future.

Some abilities and traits are very well preserved or progress until a very late age (e.g., satisfaction with life, positive emotionality, generativity, wisdom, crystallised knowledge and intelligence, semantic memory, etc.). Therefore, negative stereotypes about older people are less and less justified, and facts support a much more favourable image of old age and ageing than that held by many people. Therefore, over the past two decades, there has been a visible shift in scientific and professional interest towards positive aspects of ageing and old age and factors of longevity. In this context, concepts such as successful, active, healthy, vital, productive, quality ageing, etc. have emerged (Bowling, 2007; Depp & Jeste, 2006; Fernandez-Ballesteros et al., 2013). They are all very similar and relate to the fundamental idea of ageing well (Fernandez-Ballesteros et al., 2013). However, each of them emphasises different components of ageing well. Thus, the term *healthy ageing* primarily refers to good health and preserved functional ability (Depp & Jeste, 2006). The term *active ageing*, which has often been used lately, was introduced by the World Health Organisation in 2002. It encompasses the health, active social participation, and safety of older people and is frequently used in a socio-political context for the purpose of influencing public policies (Fernandez-Ballesteros et al., 2013). *Successful ageing* is a concept that has a broader meaning since it encompasses both the biomedical and psychosocial dimensions. Some authors believe that it is an umbrella construct that encompasses healthy, productive, and active ageing as narrower constructs (Fernandez-Ballesteros et al., 2013; Fernandez-Ballesteros, 2019; Urtamo et al., 2019). Compared to other similar terms, the term successful ageing is the most frequently used in gerontological research.

## ***Criticism of the Concept of Successful Ageing***

Despite its contribution in the context of emphasising individual differences in the ageing process and the possibilities of more quality ageing, the concept of successful ageing has also been criticised (e.g., Liang and Luo, 2012; Masoro, 2001). The leading objection to the very idea of “success” in the ageing process is that it indirectly implies that there are also individuals who age unsuccessfully or “losers” in the ageing process. Furthermore, some believe that the paradigm of successful ageing imposes excessive individual responsibility for one’s own ageing process, ignoring the influence of genetic, environmental, and other factors that the individual cannot influence. Also, emphasising the importance of successful ageing can create pressure on individuals to be healthy, productive, and active, with the ultimate goal of reducing their independence on social institutions (Rubinstein & de Medeiros, 2014).

These criticisms are not entirely unfounded, and it is important to emphasise that the inevitable losses in the ageing process should not be underestimated, nor should exceptionally successful ageing be made an imperative. On the other hand, it is a great merit of research on successful, active, quality ageing, etc., that it has emphasised the underestimated positive aspects of ageing. It has also helped identify those factors (biological, psychosocial, lifestyle factors, etc.) that contribute most to a quality life in old age and longevity.

## **Theoretical Approaches and Methods of Research on Successful Ageing**

Scientific interest in successful ageing emerged together with the beginnings of gerontology as a scientific discipline (Tucak Junaković, 2022). The major gerontological theories in the field of social sciences first deal with successful ageing in a more systematic and scientifically based manner. Thus, *the disengagement theory* (Cumming & Henry, 1961) presents the idea that the best way to age successfully for an elderly person is to gradually withdraw from society through a reduction in social contacts, activities, social roles, and responsibilities. On the other hand, according to another influential gerontological theory that emerged at the same time, *the activity theory* (Havighurst, 1961), an active life and productive involvement in various types of activities are associated with greater life satisfaction in old age. Similarly, *the continuity theory* (Atchley, 1989) proposes that the continuity of previous activities, lifestyle, social relationships, personal characteristics, etc. in later life is crucial for successful ageing.

In the context of the first major theories dealing with successful ageing, it is necessary to mention Erik Erikson and his *theory of psychosocial development*. According to this theory, in the last eighth stage of the lifecycle, a person tries to find meaning in their past life and accept it with all its good and bad sides. If they succeed, they will develop ego integrity in old age or the sense that their life has been meaningful. Such a person can rightly be said to have aged successfully. Therefore, the concept of ego integrity can be considered an earlier form of the concept of successful ageing (Martin et al., 2015).

Although the first major gerontological theories mentioned tried to answer the question of how to age successfully, it was not until the late 1980s that physician John Rowe and psychologist Robert Kahn popularised the concept of successful ageing in the scientific community. In their influential article, Rowe and Kahn (1987) described the difference between pathological, normal, and successful ageing. Rowe and Kahn’s well-known model of successful ageing will be discussed in the subsequent section that addresses biomedical approach to successful ageing. Namely, in the contemporary scientific literature, three basic theoretical approaches to successful ageing can be identified: biomedical, psychosocial, and lay.

### ***Biomedical Model of Successful Ageing***

The biomedical approach to successful ageing is still dominant, within which Rowe and Kahn (1997) proposed the most influential model of successful ageing to date. According to this model, successful ageing includes three components: (1) the absence or low probability of disease and disease-related disability, (2) the maintenance of physical and cognitive functioning at a high level, and (3) continued engagement with life. The model was tested in the well-known longitudinal MacArthur study of successful ageing (Rowe & Kahn, 1998). Its results emphasised the key role of physical activity and involvement in productive and social activities in preserving good physical and cognitive functioning over the years.

Within the biomedical model, successful ageing is usually conceptualised as a dichotomous variable, i.e., individuals are identified as “successful” or “unsuccessful”. It is examined with objective measures such as the presence/absence of chronic conditions typical of the elderly population (hypertension, diabetes, arthritis, cardiovascular diseases, etc.), and measures of functional ability, i.e., degree of independence in performing daily activities (e.g., Activities of Daily Living Scale-ADLS, Katz et al., 1970; The Instrumental Activities of Daily Living Scale-IADLS, Lawton & Brody 1969). In research based on the biomedical model, an individual’s cognitive status is often assessed through short cognitive assessment measures, such as the Mini-Mental State Examination-MMSE (Folstein et al., 2011) or the Clifton Assessment Procedures for the Elderly-CAPE (Pattie & Gilleard, 1996).

However, it is not easy for older people to meet the strict criteria of successful ageing according to the biomedical model, especially the one that refers to the absence or low incidence of disease and functional limitations (Bowling & Dieppe, 2005; Strawbridge et al., 2002). It is (almost) impossible to live to a very old age without chronic conditions and with preserved independence in daily functioning (Anderson-Ranberg et al., 2001; Cho et al., 2012). The biomedical approach has also been objected for neglecting other dimensions of successful ageing, such as psychosocial and spiritual dimensions (Young et al., 2009).

### ***Psychosocial Model of Successful Ageing***

In response to the limitations of the biomedical model, psychosocial and lay approaches have emerged. According to the psychosocial approach, the basic components of successful ageing are quality social relationships and social participation, as well as positive psychological states and resources (satisfaction with life, self-esteem, resilience, optimism, autonomy, good adaptation to losses in the ageing process, effective coping strategies, etc.). According to one of the most influential psychological models of successful ageing, *the model of selective optimisation with compensation* (Baltes & Baltes, 1990), successful ageing is a process of good adaptation to changes throughout life, that is, the process of maximising developmental gains and regulating and minimising losses through the processes of selection, optimisation, and compensation.

Studies within the psychosocial approach capture successful ageing with measures of life satisfaction or subjective well-being, social participation, and personal resources such as resilience, self-efficacy, or optimism (Tucak Junaković et al., 2024). For example, the Satisfaction with Life Scale-SWLS (Diener et al., 1985), The Connor-Davidson Resilience Scale-CD-RISC (Connor & Davidson, 2003), Life Orientation Test-Revised-LOT-R (Scheier et al., 1994), Self-Efficacy Scale-SES (Sherer et al., 1982), and other measures have been used in these studies.

According to the psychosocial approach, even people with impaired health can age successfully if they are satisfied with life, relationships with loved ones, and if they perceive their life as fulfilling and meaningful (Stewart et al., 2019; Strawbridge et al., 2002). This implies that it is very important to consider how older people themselves see their own ageing process. This subjective perception often deviates significantly from the so-called objective or biomedical criteria of successful ageing.

### ***Lay Model of Successful Ageing***

Scientists have eventually realised that when developing research definitions of successful ageing, it is useful to consider the perspective of older people themselves. Insight into how older people in a particular socio-cultural setting perceive successful ageing can also be useful when developing public health and other intervention programmes aimed at promoting successful ageing in that specific setting (Bowling, 2006; Tucak Junaković, 2022).

Lay concepts of successful ageing have been examined in research using qualitative methods such as focus groups or interviews with smaller groups of older people who are asked how they perceive successful ageing and the contributing factors. Previous research has shown that older people view successful ageing in a much more complex way than researchers do (Ambrosi-Randić & Plavšić, 2008; Bowling, 2006; Reichstadt et al., 2007; Tucak Junaković & Ambrosi-Randić, 2022). In addition to the components of successful ageing that biomedical and psychosocial models include, lay concepts also include many other components to which researchers have paid less attention in their theoretical concepts and operationalisations. These include, for example, material status, a sense of achievement, contribution to others and society as a whole, a sense of meaning in life, concern for one's physical appearance, etc. A recent meta-analysis that compared lay definitions of successful ageing identified in studies conducted in 13 countries across Western Europe, North America, the Middle East, Asia, and Oceania, from 2010 to 2020, showed that older people most often cite social participation and a positive attitude as components of successful ageing. They have also frequently mentioned independence and physical health (Reich et al., 2020). In one of more recent qualitative studies that examined how older people in Croatia perceive successful ageing and its determinants, it was found that Croatian older people see physical/physiological factors (e.g., general health, physical mobility, healthy habits such as a healthy diet and non-smoking), then psychological factors (e.g., a good life, life satisfaction, subjective well-being, psychological resources such as adaptability and a positive attitude), and community involvement and activity (e.g., being generally active, socialising, continuing previous activities in old age, engaging in enjoyable hobbies) as key components of successful ageing (Tucak Junaković & Ambrosi-Randić, 2022).

While the influence of cultural norms and social expectations on shaping perception of (successful) ageing should not be ignored, there appear to be some universal attributes of successful ageing that people across different cultures value as important, such as good health, quality social relationships, or financial security.

### ***The Newer Generation Models of Successful Ageing***

The recent generation models of successful ageing are multidimensional and holistically oriented. They capture the physical, functional, and psychosocial dimensions of successful ageing, as well as the so-called objective indicators (e.g., chronic diseases and functional ability), and subjective assessment of "success" (Cosco et al., 2015; Fernandez-Ballesteros et al., 2013; Kleineidam et al., 2019; Parslow et al., 2011; Pruchno et al., 2010; Vahia et al., 2012; Young et al., 2009). For example, Young et al. (2009) have presented a multidimensional model with physiological, psychological, and social component. The physiological component captures chronic diseases and functional limitations. The psychological component refers to the assessment of cognitive status, emotional vitality, and depression. The social one includes social engagement and spirituality. The model assumes large individual differences and various possible paths to successful ageing, as well as the possibility to compensate for physical decline through preserved psychological and social resources.

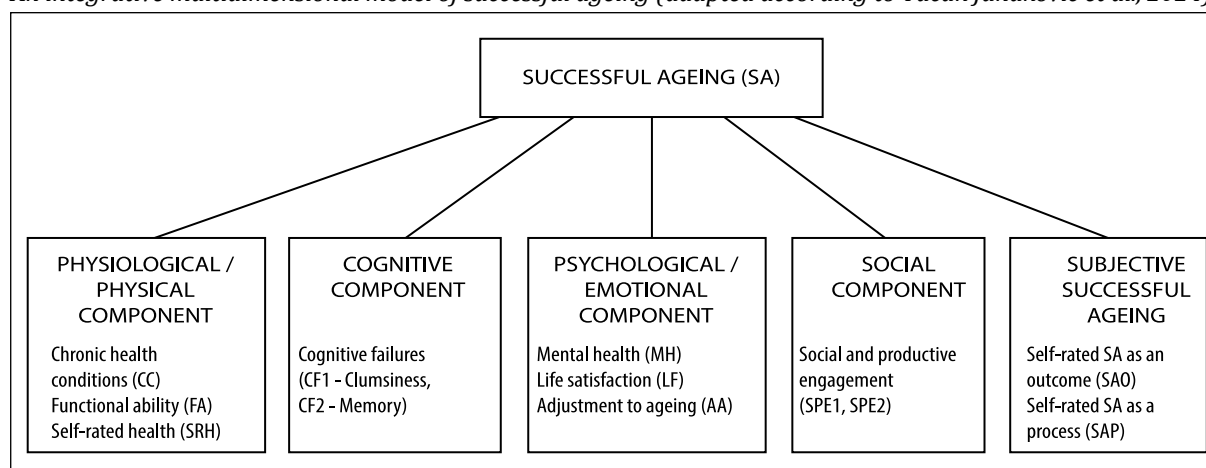
Furthermore, Pruchno et al. (2010) have presented *a two-factor model of successful ageing* that

includes subjective and objective components. The subjective component captures a) self-assessment of successful ageing as an outcome assessed at a certain point in time, b) self-assessment of good ageing as an ongoing process, and c) life satisfaction. The objective component includes a) the number of chronic conditions, b) the assessment of functional ability, and c) the pain assessment. Vahia et al. (2012) supplemented the model of Pruchno et al. (2010) by adding the following components: cognitive ability, mood, and certain psychosocial characteristics (i.e., resilience, self-efficacy, optimism, and attitude towards own ageing). They have called this extended model *the model of successful cognitive and emotional ageing*.

Furthermore, one of the more recent models of successful ageing proposed by Fernandez-Ballesteros (2019) also includes biomedical components (i.e., health and independence in performing daily activities, physical and cognitive functioning) and psychosocial components (i.e., good psychological adaptation and involvement in social and productive activities), as well as subjective and objective dimensions of successful ageing. According to this model, as mentioned earlier, successful ageing is an overarching construct that encompasses healthy, active, and productive ageing, and the underlying thread of all of them is the idea of *ageing-well*.

Finally, it is worth mentioning another recent model of successful ageing developed within the research project *Successful Ageing: Development and Validation of an Integrative Multidimensional Model* (IP.01.2021.21) at the University of Zadar, Croatia. This multidimensional model of successful ageing, presented in Figure 1, includes five latent factors (with their indicators specified in brackets). These are: 1) Physiological/physical (Chronic health conditions (CC)—reverse coded, Functional ability (FA), Self-rated health (SRH)), 2) Cognitive (Cognitive failures 1 (CF1)—Clumsiness factor, Cognitive failures 2 (CF2)—Memory factor; both reverse coded), 3) Psychological/emotional (Mental health (MH), Life satisfaction (LF), Adjustment to ageing (AA)), 4) Social (Social and productive engagement 1 (SPE1)—activities in which older people had more opportunities to participate (e. g., helping friends or family members, attending religious activities), Social and productive engagement 2 (SPE2)—activities in which older people had probably less opportunity to participate (e.g., attending cultural activities, attending various educations, courses, or public lectures), and 5) Subjective (Self-rated SA as an outcome (SAO)—self-assessment on a scale from 0 to 10, Self-rated SA as a process (SAP)—self-assessment on a scale from 0 to 10) successful ageing factors (Figure 1).

**Figure 1**  
*An integrative multidimensional model of successful ageing (adapted according to Tucak Junaković et al., 2024)*



(SAP)—self-assessment on a scale from 0 to 10) successful ageing factors (Figure 1).

The construct validity of the five-component model was tested using a confirmatory factor analysis, and by comparing the model with several other theoretical models with two, three, or four components of successful ageing. The results confirmed that the five-component model, presented in Figure 1, fits the data best (Tucak Junaković et al., 2024). There is also initial evidence (Tucak Junaković, 2024) of the predictive validity of the proposed five-component model in predicting some objective and subjective outcome criteria

of successful ageing, such as health care and informal care utilisation, and ego-integrity or sense of meaning in life as the outcome of the last stage in the lifecycle (Erikson & Erikson, 1998). Therefore, this five-factor model could be seen as a step forward in the development of a sound and comprehensive definition of successful ageing (Tucak Junaković et al., 2024), which could be relevant in predicting specific outcomes.

In conclusion on theoretical conceptions and operationalisations of successful ageing, we can state that researchers in this field have proposed numerous definitions and measures of successful ageing. They reached an agreement that successful ageing is a complex multidimensional construct. However, they have not reached a consensus regarding components that it includes and the best method of measurement.

Depending on the theoretical conceptions and methods of assessing successful ageing, estimates of the proportion of older people who are ageing successfully (when successful ageing is viewed as a process) or have aged successfully (when successful ageing is viewed as an outcome) vary greatly across different studies. For example, in a systematic review of research on successful ageing by Cosco et al. (2014), the percentage of individuals identified as those ageing successfully ranged widely across different studies, from less than 1% to more than 90%. In general, a small percentage of older people, especially the oldest old, age successfully if the so-called objective criteria of absence of disease and disease-related limitations are taken as criteria for successful ageing. On the other hand, most older people assess themselves as successful agers (Montross et al., 2006). This is because they meet their own subjective and psychosocial criteria for successful ageing, such as good psychological adjustment, life satisfaction, good relationships with others, and the sense of purpose. For example, in a recent qualitative study conducted on a sample of Croatian older adults, even 92% of interviewed older people rated their ageing as successful (Tucak Junaković & Ambrosi-Randić, 2022).

The following chapters will provide a systematic overview of the various factors that influence successful ageing, regardless of its theoretical conceptualisation and operationalisation. Systematising knowledge about these factors is also important for practical reasons, as various preventive and intervention measures aimed at promoting healthy and successful ageing and quality of life in old age are based on these factors (i.e., those that we can influence, such as physical activity or social participation).

## **Determinants of Successful Ageing and Longevity: What Facilitates Good Ageing?**

Longevity is determined by numerous factors such as hereditary and environmental factors, diseases, and lifestyle (Depp et al., 2007). The role of genetic factors in the process of (successful) ageing and determining the length of life is important and cannot be ignored. This is well demonstrated by the fact that parents and siblings of individuals who lived a long time were often long-living persons. It is estimated that hereditary factors can explain between 20 and 35% of individual differences in successful ageing, or in longevity as an indicator of successful ageing (Finch & Tanzi, 1997; Glatt et al., 2007). From the above, it can be indirectly concluded that contextual and lifestyle factors, which are subject to change, play a very important role in the process of successful ageing and longevity. Here, research in the field of epigenetics is very promising because it shows that our lifestyle can influence gene expression in such a way that, under favourable circumstances, genes that would otherwise prompt the onset of a disease can remain latent. The role of lifestyle, as well as other factors such as sociodemographic characteristics, personality traits, psychological strengths, social participation and support, in the process of (successful) ageing will be discussed next.

### ***Sociodemographic Characteristics***

Sociodemographic characteristics such as gender, age, education, marital status, or finances certainly influence the success with which a person adapts to changes in the ageing process. The results of

various studies are not entirely consistent, but they quite convincingly support the fact that in the older population, the proportion of successful agers decreases with age (Depp & Jeste, 2006; Hank, 2011; Meng & D'Arcy, 2014; Nosraty et al., 2012; Parslow et al., 2011; Pruchno et al., 2010). This may be attributed to better health and functional independence of younger people within older population.

There is still no clear answer to the question of whether men or women age more successfully. Women live on average four to seven years longer than men, so if we take life expectancy as an indicator of successful ageing, then we can say that women are ageing more successfully. Studies conducted in groups of older people of a wide age range have confirmed that women age more successfully (Ng et al., 2009). On the other hand, studies show that in the over-90s and centenarians' groups, men are more likely to be classified as successful (Araujo et al., 2016; Nosraty et al., 2012). Although contrary to the findings mentioned earlier, these gender differences are consistent with the well-known paradox that women have higher overall morbidity rates despite living longer than men. In the oldest age group of people over 85, there are more (sick) women because most men have already died by then, and those who have reached this late age are probably the most resilient. Furthermore, older women are at greater risk of poverty and widowhood than older men and generally have lower socioeconomic status, and research clearly shows that lower socioeconomic status and widowhood are associated with poorer health and lower health-related quality of life (Cherepanov et al., 2010).

Some studies, however, did not confirm gender differences in successful ageing, mainly those that used psychosocial criteria for successful ageing (Montross et al., 2006).

Finances and education also play an important role in the process of successful ageing and achieving a long life. Good financial status, objective or perceived, is associated with more successful ageing in groups of centenarians as well as in more age-heterogeneous samples of older adults (Araujo et al., 2016; Feng et al., 2014). Similarly, better education contributes to successful ageing (Depp & Jeste, 2006; Hank, 2011; Ng et al., 2009; Nosraty et al., 2012; Pruchno et al., 2010; Tucak Junaković, Ambrosi-Randić et al., 2023). Higher education is associated with better psychological resources such as more adaptive ways of coping with life stressors or greater awareness of the importance of a healthy lifestyle. It is also related to a greater cognitive reserve that will enable better cognitive functioning in old age, that is, more successful cognitive ageing. Furthermore, better finances enable better health care and easier satisfaction of basic existential and other needs that are important for successful ageing. Lay descriptions of successful ageing also place great importance on financial security as an essential component or determinant of successful ageing (Cosco et al., 2013; Tucak Junaković & Ambrosi-Randić, 2022).

Regarding the role of partner/marital status, research most often shows that older people who live with a partner are healthier, more satisfied with life, and live longer; that is, age more successfully, compared to single, divorced, or widowed people (Bowling & Iliffe, 2006; Meng & D'Arcy, 2014; Nosraty et al., 2012; Pruchno et al., 2010). The quality of the relationship, that is, social support and closeness with the partner, is probably more important here than marital status per se.

### ***Lifestyle Factors***

One of the most important determinants of successful ageing is a healthy lifestyle that includes physical activity, a healthy diet (e.g., Mediterranean), non-smoking, avoiding excessive alcohol consumption, etc. Regular physical activity and a healthy, balanced, and moderate diet are foundations of healthy and successful ageing. There is a lot of evidence about beneficial effects of physical activity on both physical and mental health. Physical activity in older people reduces the risk of a number of health problems, such as hypertension, cardiovascular diseases, osteoporosis, type 2 diabetes, high cholesterol, some types of cancer, etc. (Vuori, 2005). It is also associated with a lower incidence of mental health problems, such as depressive and anxiety disorders (Kadariya et al., 2019; Maier et al., 2021; Tucak Junaković, Nekić et al., 2023). Physical

activity also reduces the risk of developing dementia and slows cognitive decline (Larson et al., 2006; Sofi et al., 2011). It also slows down the decline of functional ability and reduces the frequency of falls in old age, thereby enabling a longer independent living (Spirduso & Cronin, 2001; Vuori, 2005). Epidemiological follow-up studies show that regular physical activity reduces mortality risk (Kokkinos et al., 2010). It can also contribute to successful ageing and longevity in other indirect ways. For example, through organised group exercise, older adults socialise and feel less lonely and isolated; exercise strengthens their sense of self-efficacy, independence, and personal control (Lepan & Leutar, 2012; Štambuk & Tomičić, 2020), which facilitate successful ageing.

Many studies have confirmed the association between physical activity and successful ageing (e.g., Almeida et al., 2014; Depp & Jeste, 2006; Meng & D'Arcy, 2014; Parslow et al., 2011; Pruchno et al., 2010), with physical activity being one of its most important protective factors. It should be emphasised that in these studies successful ageing is operationalised as a broader construct that includes not only physical and health dimensions, but also psychosocial dimension.

In the context of health behaviour, we cannot ignore the impact of smoking and alcohol consumption on healthy and successful ageing. The proven harmful effects of smoking on health are beyond discussion, and studies clearly confirm that smoking also negatively contributes to successful ageing in general (Depp & Jeste, 2006; Gureje et al., 2014). Regarding alcohol consumption, the findings are not entirely unambiguous, but they are closer to the conclusion that people who consume alcohol moderately (but not excessively) are healthier and age more successfully compared to those who do not drink alcoholic beverages at all (Feng et al., 2014; Maraldi et al., 2009; Pruchno et al., 2010; Tucak Junaković, Nekić et al., 2023). This is usually explained by moderate drinking as a social ritual that maintains social contacts, because in this case people drink while socialising with others, and social interaction significantly contributes to successful ageing, as we will see later in this paper.

### ***Personality Traits and Psychological Resources***

How successfully an individual adapts to changes in the ageing process and faces different life challenges is largely determined by their personality. Traits from the five-factor model (McCrae & Costa, 2004) were most often examined in relation to different developmental outcomes. These studies have shown that the traits of extraversion, emotional stability, conscientiousness, and openness to experience are associated with more successful ageing (Ambrosi-Randić, 2022; Chapman et al., 2010; Martin et al., 2006; Pocnet et al., 2020; Tucak Junaković et al., 2018). They achieve this connection mainly because of their influence on the tendency to experience stress and on health and other behaviours that are associated with successful ageing and longevity. For example, conscientious people practice a healthier lifestyle, have more stable relationships and better coping strategies, while extraverted people are less likely to experience stress, are more sociable and are at lower risk of loneliness, which makes it easier for both to age successfully and reduces the risk of mortality (Chapman et al., 2010; Pocnet et al., 2020). On the other hand, neurotic people have a harder time dealing with life problems, are more prone to experiencing stress and practising unhealthy behaviours, which threatens their quality of life and increases the risk of mortality (Chapman et al., 2010; Pocnet et al., 2020).

Furthermore, there is a series of evidence that the personal resources or psychological strengths such as optimism, resilience, sense of control, adaptability, effective coping with stress, self-esteem, self-efficacy, spirituality, sense of meaning in life, etc. facilitate successful ageing (Baltes & Baltes, 1990; Cosco et al., 2015; Heckhausen & Schultz, 1993; Martin-Joy & Vaillant, 2010; Ng et al., 2009; Tucak Junaković et al., 2017; Tucak Junaković, Ambrosi-Randić et al., 2023; Vahia et al., 2012). Optimism (as long as it is not excessive and unrealistic) plays a particularly important role in making life's challenges easier to deal with. It is often mentioned, along with physical activity and nutrition, as one of the pillars of successful ageing (Ambrosi-Randić

& Plavšić, 2008). Optimism has a positive effect on successful ageing and longevity primarily due to better emotional regulation in optimists and less focus on the negative aspects of different situations, which helps them cope better with unpleasant events (Ambrosi-Randić, 2022; Carver & Scheier, 2014). Similarly, self-efficacy, or an individual's belief in their own ability to achieve set goals (Bandura, 1994), is associated with healthier behaviours and the avoidance of unhealthy ones, and with better functioning of the immune system (Ambrosi-Randić, 2022). All of this links self-efficacy with successful ageing and longevity.

### ***Social Participation, Social Relationships, and Social Support***

A lot has already been written about the importance of forming and maintaining quality social relationships and the importance of the social support we receive from such relationships for our health, quality and long life. It seems important to mention here that older people compensate for the narrowing of their social network that occurs in old age by investing more in and nurturing those very close and emotionally fulfilling relationships (English & Carstensen, 2014). Social relationships, social participation, and social support are associated with better health and functional status, greater life satisfaction, higher self-esteem, and a sense of personal control in older people; they facilitate adjustment to retirement and, in general, promote good ageing and improve the quality of life in old age (Barbosa et al., 2016; Cosco et al., 2015; Douglas et al., 2017; Montross et al., 2006; Pruchno et al., 2010). Social interactions and other productive activities in the community that strengthen a positive self-image and a sense of self-efficacy also have a positive impact on the cognitive functioning of older adults. They thus reduce the risk of developing dementia, while experience of loneliness increases this risk (Wang et al., 2002; Wilson et al., 2007). Social support and socialising with friends and family members can even reduce the risk of death, while social exclusion and a lack of social support are associated with higher mortality rates, as evidenced by longitudinal studies (e.g., Dalgard & Lund Håheim, 1998).

### ***Cognitively Stimulating Activities and Lifelong Learning***

A good path to successful (cognitive) ageing is cognitive investment in various activities throughout life and training cognitive abilities in old age (Vranić, 2022). Numerous studies show that an active lifestyle and stimulating everyday activities (not only intellectual, but also physical and social) significantly contribute to the preservation of cognitive functions in old age and successful ageing in general. Greater investment in formal and informal education (e.g., studying, learning foreign languages, using new information and communication technologies) and cognitively stimulating activities in leisure time (e.g., playing board games or reading) build up a cognitive reserve and reduce the risk of dementia (Cujzek & Vranić, 2017; Lustig et al., 2009; Vranić, 2022). *Cognitive reserve* is a term that refers to accumulation of various experiences, knowledge, and skills that enable good cognitive functioning in the presence of negative neural changes (Vranić, 2022). A high cognitive reserve reduces the risk of developing dementia. Different types of cognitive training or structured exercises aimed at strengthening specific cognitive abilities are also associated with successful (cognitive) ageing (see more on this topic in Vranić, 2022).

## **Conclusion**

Newer generations of older people are living longer and better-quality lives. They are more active in social and public life. Therefore, scientists and experts in the field of gerontology are increasingly interested in the positive aspects of ageing and old age and the factors contributing to longevity. There are more and

more facts that support the conclusion that adverse changes in the ageing process are often not as great or limiting for the daily functioning of older people as is usually believed. Also, despite health and functional limitations, it is shown that most older people are satisfied with life and perceive it as meaningful, which is, ultimately, probably the best indicator of the “success” of ageing process.

There are numerous determinants of successful or good ageing and longevity that can be influenced and thus improve the quality of life in old age. These are, first and foremost, healthy habits and behaviours, but also adaptive psychological traits and strengths, such as optimism and self-efficacy. A supportive social environment that provides an individual with a sense of belonging and support is also important. In this context, all public health programmes and individual psychological and other interventions aimed at strengthening the protective factors of successful ageing and a long quality life are extremely important. However, it should be emphasised that these interventions must be adapted to the condition and needs of each individual because there are different individual paths to successful ageing.

As a summary of all the previously said about the factors of good ageing and longevity, the experiences of long-living people in the so-called Blue Zones can be used. These are places on Earth where people live the longest, such as Sardinia in Italy, Okinawa in Japan, or Ikaria in Greece. What they all have in common and what contributes to their long and quality lives are some common features of their lifestyle. First, they are moderate in eating habits, practising a semi-vegetarian diet rich in plants, legumes, whole grains, and fish, with occasional fasting. Then, moderate physical activity is included in their natural, everyday movements such as gardening or walking. Furthermore, residents of these areas attach great importance to good family relationships. They are also actively involved in the community and experience their lives as purposeful and meaningful (Buettner, 2012).

In the end, it can be concluded that there is a significant body of findings on factors that contribute to successful ageing and longevity. Still, there are many open questions to which scientists have yet to find answers with the ultimate goal of achieving the best possible quality of life in old age (and in earlier stages of the life cycle). In this context, research in the field of epigenetics, which integrates insights from behavioural sciences and genetics, seems particularly promising.

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## References

- Achenbaum, W. A. (2001). Productive aging in historical perspective. In N. Morrow-Howell, J. Hinterlong, M. Sherraden (Eds.), *Productive aging: Concepts and challenges* (pp. 19–36). The Johns Hopkins University Press.
- Almeida, O. P., Karim, M. K., Hankey, G. J., Bu, B. Y., Golledge, J., & Flicker, L. (2014). 150 minutes of vigorous physical activity per week predicts survival and successful ageing: A population-based 11-year longitudinal study of 12201 older Australian men. *British Journal of Sports Medicine, 48*(3), 220–225. <https://doi.org/10.1136/bjsports-2013-092814>.
- Ambrosi-Randić, N. (2022). Emocije, ličnost i socijalni odnosi u kontekstu uspješnog starenja (Emotions, personality and social relations in the context of successful aging). In I. Tucak Junaković (Eds.), *Uspješno starenje: teorijski pristupi, metode istraživanja i čimbenici doprinosa (Successful aging: theoretical approaches, research methods and contributing factors)* (pp. 101-143). University of Zadar.
- Ambrosi-Randić, N., & Plavšić, M. (2008). *Uspješno starenje (Successful aging)*. Društvo psihologa Istre, Istarska županija, Sveučilište Jurja Dobrile u Puli.
- Anderson-Ranberg, K., Schroll, M., & Jeune, B. (2001). Healthy centenarians do not exist, but autonomous centenarians do: A population-based study of morbidity among Danish centenarians. *Journal of American Geriatric Society, 49*, 900–908. <https://doi.org/10.1046/j.1532-5415.2001.49180.x>
- Araujo, L., Ribeiro, O., Teixeira, L., & Paul, C. (2016). Predicting successful aging at one hundred years of age. *Research on Aging, 38*(6), 689–709. <https://doi.org/10.1177/0164027515603771>
- Atchley, R. C. (1989). A continuity theory of normal aging. *The Gerontologist, 29*(2), 183–190. <https://doi.org/10.1093/geront/29.2.183>
- Baltes, P. B. (1987). Theoretical propositions of life-span developmental psychology: On the dynamics between growth and decline. *Developmental Psychology, 23*(5), 611–626. <https://doi.org/10.1037/0012-1649.23.5.611>
- Baltes, P. B., & Baltes, M. M. (1990). Psychological perspectives on successful aging: The model of selective optimization with compensation. In P. B. Baltes, M. M. Baltes (Eds.), *Successful aging: Perspectives from the behavioral sciences* (pp. 1–34). Cambridge University Press. <http://dx.doi.org/10.1017/CBO9780511665684>
- Bandura, A. (1994). Self-efficacy. In V. S. Ramachandran (Eds.), *Encyclopedia of human behavior* (pp. 71–81). Academic Press.
- Barbosa, L. M., Monteiro, B., & Murta, S. G. (2016). Retirement adjustment predictors – A systematic review. *Work, Aging and Retirement, 2*(2), 262–280. <https://doi.org/10.1093/workar/waw008>
- Bowling, A. (2006). Lay perceptions of successful ageing: Findings from a national survey of middle aged and older adults in Britain. *European Journal of Ageing, 3*(3), 123–136. <https://doi.org/10.1007/s10433-006-0032-2>
- Bowling, A. (2007). Aspirations for older age in the 21st century: What is successful aging? *International Journal of Aging & Human Development, 64*(3), 263–297. <https://doi.org/10.2190/L0K1-87W4-9R01-7127>
- Bowling, A., & Dieppe, P. (2005). What is successful ageing and who should define it? *British Medical Journal, 331*, 24–31. <https://doi.org/10.1136/bmj.331.7531.1548>
- Bowling, A., & Iliffe, S. (2006). Which model of successful aging should be used? Baseline findings from a British longitudinal survey of ageing. *Age and Ageing, 35*(6), 607–614. <https://doi.org/10.1093/ageing/afl100>
- Buettner, D. (2012). *The Blue Zones, Second Edition: 9 Lessons for Living Longer From the People Who've Lived the Longest*. Disney Publishing Group.

- Carver, S. C., & Scheier, M. F. (2014). Dispositional optimism. *Trends in Cognitive Sciences*, *18*, 293–299. <https://doi.org/10.1016/j.tics.2014.02.003>
- Chapman, B. P., Fiscella, K., Kawachi, I., & Duberstein, P. (2010). Personality, socioeconomic status, and all-cause mortality in the United States. *American Journal of Epidemiology*, *171*, 83–92. <https://doi.org/10.1093/aje/kwp323>
- Cherepanov, D., Palta, M., Fryback, D. G., & Robert, S. A. (2010). Gender differences in health-related quality-of-life are partly explained by sociodemographic and socioeconomic variation between adult men and women in the US: Evidence from four US nationally representative data sets. *Quality of Life Research*, *19*(8), 1115–1124. <https://doi.org/10.1007/s11136-010-9673-x>
- Cho, J., Martin, P., & Poon, L. W. (2012). The older they are, the less successful they become? Findings from the Georgia Centenarian study. *Journal of Aging Research*, 2012, Article ID 695854. <https://doi.org/10.1155/2012/695854>
- Connor, K. M., & Davidson, J. R. T. (2003). Development of a new resilience scale: The Connor-Davidson Resilience Scale (CD-RISC). *Depression and Anxiety*, *18*(2), 76–82. <https://doi.org/10.1002/da.10113>
- Cosco, T. D., Prina, A. M., Perales, J., Stephan, B. C. M., & Brayne, C. (2013). Lay perspectives of successful ageing: A systematic review and metaethnography. *BMJ Open*, *3*(6). <https://doi.org/10.1136/bmjopen-2013-002710>
- Cosco, T. D., Prina, A. M., Perales, J., Stephan, B. C. M., & Brayne, C. (2014). Operational definitions of successful aging: A systematic review. *International Psychogeriatrics*, *26* (3), 373–381. <https://doi.org/10.1017/S1041610213002287>
- Cosco, T. D., Stephan, B. C. M., & Bryne, C. (2015). Validation of an a priori, index model of successful aging in a population-based cohort study: The successful aging index. *International Psychogeriatrics*, *27*(12), 1971–1977. <https://doi.org/10.1017/S1041610215000708>
- Cujzek, M., & Vranić, A. (2017). Computerized tabletop games as a form of a video game training for old-old. *Aging. Neuropsychology and Cognition*, *24*(6), 631–648. <https://doi.org/10.1080/13825585.2016.1246649>
- Cumming, E., & Henry, W. E. (1961). *Growing old: The process of disengagement*. Basic Books.
- Dalgard, O. S., & Lund Håheim, L. (1998). Psychosocial risk factors and mortality: A prospective study with special focus on social support, social participation, and locus of control in Norway. *Journal of Epidemiology and Community Health*, *52*(8), 476–81. <https://doi.org/10.1136/jech.52.8.476>
- Depp, C. A., Glatt, S. J., & Jeste, D. V. (2007). Recent advances in research on successful or healthy aging. *Current Psychiatry Reports*, *9* (1), 7–13. <https://doi.org/10.1007/s11920-007-0003-0>
- Depp, C. A., & Jeste, D. V. (2006). Definitions and predictors of successful aging: A comprehensive review of larger quantitative studies. *The American Journal of Geriatric Psychiatry*, *14*, 6–20. <https://doi.org/10.1097/01.JGP.0000192501.03069.bc>
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, *49*, 71–76. [https://doi.org/10.1207/s15327752jpa4901\\_13](https://doi.org/10.1207/s15327752jpa4901_13)
- Douglas, H. B., Georgiou, A., & Westbrook, J. (2017). Social participation as an indicator of successful aging: An overview of concepts and their associations with health. *Australian Health Review*, *41*, 455–462. <https://doi.org/10.1071/AH16038>
- Državni zavod za statistiku. Konačni rezultati Popisa 2021: Stanovništvo prema starosti, Popis 2021. (Croatian Bureau of Statistics. 2021 Census) <<https://dzs.gov.hr/vijesti/objavljeni-konacni-rezultati-popisa-2021/1270>>
- English, T., & Carstensen, L. L. (2014). Selective narrowing of social networks across adulthood is associated with improved emotional experience in daily life. *International Journal of Behavioral Development*, *38*, 195–202. <https://doi.org/10.1177/01650254135154>

- Erikson, & Erikson (1998). *Life cycle completed*. W. W. Norton & Company.
- Feng, Q., Son, J., & Zeng, Y. (2014). Prevalence and correlates of successful ageing: A comparative study between China and South Korea, *European Journal of Ageing*, 12(2), 83–94. <https://doi.org/10.1007/s10433-014-0329-5>
- Fernandez-Ballesteros, R. (2019). The concept of successful aging and related terms. In R. Fernandez-Ballesteros, A. Benetos, J.-M. Robine (Eds.), *The Cambridge handbook of successful aging* (pp. 6–22). Cambridge University Press. <https://doi.org/10.1017/9781316677018.002>
- Fernandez-Ballesteros, R., Molina, M., Schettini, R., & Santacreu, M. (2013). The semantic network of aging well. In J.-M. Robine, C. Jagger, E. M. Crimmins (Eds.), *Annual review of gerontology and geriatrics, Vol. 33. Healthy longevity: A global approach* (pp. 79–107). Springer Publishing Company.
- Finch, C. E., & Tanzi, R. E. (1997). Genetics of aging. *Science*, 278(5337), 407–411. <https://doi.org/10.1126/science.278.5337.407>
- Folstein, M. F., Folstein, S. E., White, T., & Messer, M. A. (2011). *Kratko ispitivanje mentalnog statusa, Priručnik (Mini-Mental State Examination, Manual)*. Naklada Slap.
- Glatt, S. J., Chayavichitsilp, P., Depp, C., Schork, N. J., & Jeste, D. V. (2007). Successful aging: From phenotype to genotype. *Biological Psychiatry*, 62(4), 282–293. <https://doi.org/10.1016/j.biopsych.2006.09.015>
- Gureje, O., Oladeji, B. D., Abiona, T., & Chatterji, S. (2014). Profile and determinants of successful aging in the Ibadan Study of Ageing. *Journal of the American Geriatrics Society*, 62(5), 836–842. <https://doi.org/10.1111/jgs.12802>
- Hank, K. (2011). How “successful” do older Europeans age? Findings from SHARE. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 66B(2), 230–236. <https://doi.org/10.1093%2Fgeronb%2F66bq089>
- Havighurst, R. (1961). Successful aging. *Gerontologist*, 1(1), 8–13. <https://doi.org/10.1093/geront/1.1.8>
- Heckhausen, J., & Schulz, R. (1993). Optimization by selection and compensation: Balancing primary and secondary control in life span development. *International Journal of Behavioral Development*, 16, 287–303. <https://doi.org/10.1177/016502549301600210>
- Kadariya, S., Gautam, R., & Aro, A. R. (2019). Physical activity, mental health, and wellbeing among older adults in south and southeast Asia: A scoping review. *BioMed Research International*. 2019, Article ID: 6752182. <https://doi.org/10.1155/2019/6752182>
- Katz, S., Downs, T. D., Cash, H. R., & Grotz, R. C. (1970). Progress in development of the index of ADL. *Gerontologist*, 10(1), 20–30. [https://doi.org/10.1093/geront/10.1\\_part\\_1.20](https://doi.org/10.1093/geront/10.1_part_1.20)
- Kleineidam, L., Thoma, M. V., Maercker, A., Bickel, H., Mösch, E., Hajek, A., König, H. H., Eisele, M., Mallon, T., Luck, T., Röhr, S., Weyerer, S., Werle, J., Pentzek, M., Fuchs, A., Wiese, B., Mamone, S., Scherer, M., Maier, W., Riedel-Heller, S. G., & Wagner, M. (2019). What is successful aging? A psychometric validation study of different construct definitions. *Gerontologist*, 59(4), 738–748. <https://doi.org/10.1093/geront/gny083>
- Kokkinos, P., Myers, J., Faselis C., Panagiotakos, D. B., Doumas, M., Pittaras, A., & Fletcher, R. (2010). Exercise capacity and mortality in older men: A 20 year old follow-up study. *Circulation*, 122, 790–797. <https://doi.org/10.1161/CIRCULATIONAHA.110.938852>
- Larson, E. B., Wang, L., Bowen, J. D., McCormick, W. C., Teri, L., Crane P., & Kukull, W. (2006). Exercise is associated with reduced risk for incident dementia among persons 65 years of age and older. *Annals of Internal Medicine*, 144(2), 7–81. <https://doi.org/10.7326/0003-4819-144-2-200601170-00004>
- Lawton, M. P., & Brody, E. M. (1969). Assessment of older people: Self-maintaining and instrumental activities of daily living. *The Gerontologist*, 9(3), 179–186. [https://doi.org/10.1093/geront/9.3\\_Part\\_1.179](https://doi.org/10.1093/geront/9.3_Part_1.179)
- Lepan, Ž., & Leutar, Z. (2012). Važnost tjelesne aktivnosti u starijoj životnoj dobi (The importance of physical activity for older adults). *Socijalna ekologija*, 21(2), 203–223.

- Liang, J., & Luo, B. (2012). Toward a discourse shift in social gerontology: From successful aging to harmonious aging. *Journal of Aging Studies, 26*(3), 327–334. <https://doi.org/10.1016/j.jaging.2012.03.001>
- Lustig, C., Shah, P., Seidler, R., & Reuter-Lorenz, P. A. (2009). Aging, training, and the brain: A review and future directions. *Neuropsychology Review, 19*(4), 504–522. <https://doi.org/10.1007/s11065-009-9119-9>
- Maier, A., Riedel-Heller, S. G., Pabst, A., & Luppa, M. (2021). Risk factors and protective factors of depression in older people 65+. A systematic review. *PLoS One, 16*(5):e0251326. <https://doi.org/10.1371/journal.pone.0251326>
- Maraldi, C., Harris, T. B., Newman, A. B., Kritchevsky, S. B., Pahor, M., Koster, A., Satterfield, S., Ayonayon, H. N., Fellin, R., & Volpato, S. (2009). Moderate alcohol intake and risk of functional decline: The Health, Aging, and Body Composition Study. *Journal of American Geriatrics Society, 57*(10), 1767–1775. <https://doi.org/10.1111/j.1532-5415.2009.02479.x>
- Martin, P., da Rosa, G., Siegler, I. C., Davey, A., MacDonald, M., Poon, L. W. for the Georgia Centenarian Study (2006). Personality and longevity: Findings from the Georgia Centenarian Study. *Age (Omaha) 28*, 343–352. <https://doi.org/10.1007/s11357-006-9022-8>
- Martin, P., Kelly, N., Kahana, B., Kahana, E., Willcox, B. J., Willcox, D. C., & Poon, L. W. (2015). Defining successful aging: A tangible or elusive concept? *The Gerontologist, 55*(1), 14–25. <https://doi.org/10.1093/geront/gnu044>
- Martin-Joy, J., & Vaillant, G. E. (2010). Recognizing and promoting resilience. In C. A. Depp, D. V. Jeste (Eds.), *Successful emotional and cognitive aging* (pp. 363–382). American Psychiatric Publishing.
- Masoro, E. J. (2001). “Successful aging”: useful or misleading concept? *The Gerontologist, 41*(3), 415–418. <https://doi.org/10.1093/geront/41.3.415>.
- McCrae, R. R., & Costa, P. T. (2004). A contemplated revision of the NEO five-factor inventory. *Personality and Individual Differences, 36*(3), 587–596. [https://doi.org/10.1016/S0191-8869\(03\)00118-1](https://doi.org/10.1016/S0191-8869(03)00118-1)
- 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. <https://doi.org/10.1159/000354538>
- Montross, L. P., Depp, C., Daly, J., Reichstadt, J., Golshan, S., Moore, D., Sitzler, D., & Jeste, D. V. (2006). Correlates of self-rated successful aging among community dwelling older adults. *American Journal of Geriatric Psychiatry, 14*(1), 43–51. <https://doi.org/10.1097/01.JGP.0000192489.43179.31>
- Ng, T. P., Broekman, B. F. P., Niti, M., Gwee, X., & Kua, E. H. (2009). Determinants of successful aging using a multidimensional definition among Chinese elderly in Singapore. *The American Journal of Geriatric Psychiatry, 17*(5), 407–416. <https://doi.org/10.1097/JGP.0b013e31819a808e>
- Nosraty, L., Sarkeala, T., Hervonen, A., & Jylhä, M. (2012). Is there successful aging for nonagenarians? The vitality 90+ study. *Journal of Aging Research, 2012*, Article ID: 868797. <https://doi.org/10.1155/2012/86879>
- Parslow, R. A., Lewis, V. J., & Nay, R. (2011). Successful aging: development and testing of a multidimensional model using data from a large sample of older Australians. *Journal of the American Geriatrics Society, 59*(11), 2077–2083. <https://doi.org/10.1111/j.1532-5415.2011.03665.x>
- Pattie, A. H., & Gilleard, C. J. (1996). *Priručnik za primjenu Clifton postupaka za procjenu starijih osoba CAPE (Application Manual for the Clifton Assessment Procedures for the Elderly CAPE)*. Naklada Slap.
- Pocnet, C., Popp, J., & Jopp, D. (2020). The power of personality in successful ageing: A comprehensive review of larger quantitative studies. *European Journal of Ageing, 18*, 269–285. <https://doi.org/10.1007/s10433-020-00575-6>
- Pruchno, R. A., Wilson-Genderson, M., Rose, M., & Cartwright, F. (2010). Successful aging: Early influences and contemporary characteristics. *The Gerontologist, 50*(6), 821–833. <https://doi.org/10.1093/geront/gnq041>

- Reich, A. J., Claunch, K. D., Verdeja, M. A., Dungan, M. T., Anderson, S., Clayton, C. K., Goates, M. C., & Thacker, E. L. (2020). What does "successful aging" mean to you? – Systematic review and cross-cultural comparison of lay perspectives of older adults in 13 countries, 2010-2020. *Journal of Cross-Cultural Gerontology, 35*(4), 455–478. <https://doi.org/10.1007/s10823-020-09416-6>.
- Reichstadt, J., Depp, C. A., Palinkas, L. A., Folsom, D. P., & Jeste, D. V. (2007). Building blocks of successful aging: A focus group study of older adults' perceived contributors to successful aging. *American Journal of Geriatric Psychiatry, 15*(3), 194–201. <https://doi.org/10.1097/JGP.0b013e318030255f>.
- Rowe, J. W., & Kahn, R. L. (1987). Human aging: Usual and successful. *Science, 237*, 143–149. <https://doi.org/10.1126/science.3299702>
- Rowe, J. W., & Kahn, R. L. (1997). Successful aging. *The Gerontologist, 37*, 433–440. <https://doi.org/10.1093/geront/37.4.433>
- Rowe J. W., & Kahn, R. L. (1998). *Successful aging*. Pantheon Books.
- Rubinstein, R. L., & de Medeiros, K. (2014). "Successful aging," gerontological theory and neoliberalism: A qualitative critique. *The Gerontologist, 55*(1), 34–42. <https://doi.org/10.1093/geront/gnu080>
- Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A re-evaluation of the Life Orientation Test. *Journal of Personality and Social Psychology, 67*, 1063–1078. <https://doi.org/10.1037/0022-3514.67.6.1063>
- Sherer, M., Maddux, J. E., Mercandante, B., Prentice-dunn, S., Jacobs, B., & Rogers, R. W. (1982). The Self-Efficacy Scale: Construction and validation. *Psychological Reports, 51*(2), 663–671. <https://doi.org/10.2466/pr0.1982.51.2.663>
- Sofi, F., Velecchi, D., Bacci, D., Abbate, R., Gensini, G.F., & Macchi, C. (2011). Physical activity and risk of cognitive decline: A meta-analyses of prospective studies. *Journal of Internal Medicine, 269*(1), 107–117. <https://doi.org/10.1111/j.1365-2796.2010.02281.x>
- Spiriduso, W. W., & Cronin, D. L. (2001). Exercise dose-response effects on quality of life and independent living in older adults. *Medicine & Science in Sports & Exercise, 33*(suppl 6), S598–S608. <https://doi.org/10.1097/00005768-200106001-00028>.
- Stewart, J. M., Auais, M., Belanger, E., & Phillips, S. P. (2019). Comparison of self-rated and objective successful ageing in an international cohort. *Ageing and Society, 39*(7), 1317–1334. <https://doi.org/10.1017/S0144686X17001489>
- Strawbridge, W. J., Wallhagen, M. I., & Cohen, R. D. (2002). Successful aging and well-being: Self-rated compared with Rowe and Kahn. *The Gerontologist, 42*(6), 727–733. <https://doi.org/10.1093/geront/42.6.727>
- Štambuk, A., & Tomičić, V. (2020). Iskustva starijih osoba s plesom kao oblikom fizičke aktivnosti (Experiences of older people with dancing as a form of physical activity). *Croatian Journal of Education, 22*(4), 1255-1281. <https://doi.org/10.15516/cje.v22i4.3805>
- Tucak Junaković, I. (2022). Teorijski pristupi i metode istraživanja uspješnog starenja: Što je uspješno starenje i kako ga mjeriti? (Theoretical approaches and methods of research on successful aging: What is successful aging and how to measure it?) In I. Tucak Junaković (Eds.), *Uspješno starenje: teorijski pristupi, metode istraživanja i čimbenici doprinosa (Successful aging: theoretical approaches, research methods and contributing factors)* (pp. 7-36). University of Zadar.
- Tucak Junaković, I. (2024). Odrednice uspješnog starenja i dugovječnosti: kako dobro (o)starjeti (Determinants of successful aging and longevity: how to age well and achieve a good old age). In I. Macuka, I. Burić, A. Slišković, A. Šimunić, P. Valerjev (Eds.), *24th Psychology Days in Zadar-Book of Abstracts* (p. 18). Department of Psychology, University of Zadar.
- Tucak Junaković, I., & Ambrosi-Randić, N. (2022). Lay Definitions of Successful Aging and Contributing Factors among Croatian Older Adults: A Thematic Analysis of Qualitative Data. *Psihologijske teme,*

- 31(3), 685-708. <https://doi.org/10.31820/pt.31.3.11>
- Tucak Junaković, I., Ambrosi-Randić, N., & Macuka, I. (2023). Psihosocijalne determinante objektivnih i subjektivnih pokazatelja uspješnoga starenja (Psychosocial determinants of objective and subjective indicators of successful ageing). *Društvena istraživanja*, 32(3), 449-469. <https://doi.org/10.5559/di.32.3.04>
- Tucak Junaković, I., Ambrosi-Randić, N., & Nekić, M. (2018). Odnos otvorenosti prema iskustvu i uspješnog starenja: posredujuća uloga životnih žaljenja (The Relationship between Openness to Experience and Successful Aging: Testing the Mediation Role of the Life Regrets). *Psihologijske teme*, 27(3), 499-518. <https://doi.org/10.31820/pt.27.3.8>
- Tucak Junaković, I., Martinčević, M., & Vranić, A. (2024). Validation of an integrative multidimensional model of successful aging in community-dwelling older adults: what is successful aging all about? *Current Psychology*, 43, 24977-24993 (2024). <https://doi.org/10.1007/s12144-024-06165-4>
- Tucak Junaković, I., Nekić, M., & Ambrosi-Randić, N. (2017). Some psychosocial predictors of successful aging among Croatian older adults. In I. Burić (Eds.), *Book of selected proceedings of the 20<sup>th</sup> Psychology Days in Zadar* (pp. 275-286). University of Zadar.
- Tucak Junaković, I., Nekić, M., & Šimić, N. (2023). Lifestyle factors, psychosocial resources, and mental health in older people. *GeroPsych: The Journal of Gerontopsychology and Geriatric Psychiatry*. Advance online publication. <https://doi.org/10.1024/1662-9647/a000330>
- Urtamo, A., Jyväkorpä, S. K., & Strandberg, T. E. (2019). Definitions of successful ageing: A brief review of a multidimensional concept. *Acta BioMedica*, 90(2), 359-363. <https://doi.org/10.23750/abm.v90i2.8376>
- Vahia, I. V., Thompson, W. K., Depp, C. A., Allison, M., & Jeste, D. V. (2012). Developing a dimensional model for successful cognitive and emotional aging. *International Psychogeriatrics*, 24(4), 515-523. <https://doi.org/10.1017/S1041610211002055>.
- Vranić, A. (2022). Uspješno kognitivno starenje: kako očuvati zdravlje mozga? (Successful cognitive aging: how to maintain brain health?). In I. Tucak Junaković (Eds.), *Uspješno starenje: teorijski pristupi, metode istraživanja i čimbenici doprinosa (Successful aging: theoretical approaches, research methods and contributing factors)* (pp. 73-100). University of Zadar.
- Vuori, I. (2005). Tjelesna aktivnost kao učinkovito sredstvo protiv nepovoljnog zdravstvenog djelovanja tjelesne neaktivnosti (Physical activity as an effective means against the adverse health effects of physical inactivity). *Glasnik Hrvatskog saveza sportske rekreacije*, 3-12.
- Wang, H. X., Karp, A., Winblad, B., & Fratiglioni, L. (2002). Late-life engagement in social and leisure activities is associated with a decreased risk of dementia: A longitudinal study from the Kungsholmen project. *American Journal of Epidemiology*, 155(12), 1081-1087. <https://doi.org/10.1093/aje/155.12.1081>
- Wilson, R. S., Krueger, K. R., Arnold, S. E., Schneider, J. A., Kelly, J. F., Barnes, L. L., Tang, Y., & Bennett, D. A. (2007). Loneliness and risk of Alzheimer disease. *Archives of General Psychiatry*, 64(2), 234-240. <https://doi.org/10.1001/archpsyc.64.2.234>
- 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. *American Medical Directors Association*, 10, 87-92. <https://doi.org/10.1016/j/jamda.2008.11.003>