

## Moderate aerobic physical activity promotes greater well-being in older adults over 65 years

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**Abstract:** At present, the regulation of moods and their alteration in old age is receiving a great deal of attention. In this stage, alterations in mood as apathy and fatigue are consequence of the aging process, as well as cognitive and physical decline at the age of 65 and above. Objective. Therefore, the objective is to analyze the existing studies, through a review of the literature, to determine which type of activity is the most commonly agreed and has the greatest impact on health. Methodology. A search was carried out in the Scopus, Pubmed and Science Direct databases, using the keywords "physical activity", "well-being", "elderly" and "health". Results. A total of 17 articles were selected. Conclusions. Studies suggest that any activity that aims to improve psychological well-being and health in people over 65 years of age should contain at least moderate strength and aerobic training, lasting between 30 and 60 minutes. It would be interesting to specify, through experimental and longitudinal studies, the effects of the practice of physical activity at different intensities in order to control such important processes, such as emotional regulation, depression, and thus achieve the improvement of psychological well-being.

**Keywords:** health, older adults, physical activity, well-being.

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### I. Introduction

The World Health Organization (WHO) explains the process of aging from a biological point of view, indicating that aging is the consequence of the accumulation of a wide variety of molecular and cellular damage over time [1]. This aging process entails a decrease and slowdown of physical and mental abilities, as well as an increase in the risk of related diseases. In addition, according to this same agency, between 2015 and 2050 the proportion of people over 65 will double up to 22%, to this must be added, that 80% will live with low or medium income. The National Institute of Statistics puts life expectancy at 80.4 years for men and 85.9 years for women [2]. Consequently, by the year 2031, future projections of life expectancy at birth would reach 83.2 years in men and 87.7 in women, values that would continue to rise in 2065 to reach 88.6 and 91, 6 in men and women respectively according to the National Institute of Statistics [2].

According to the Organization for Economic Cooperation and Development, this sociodemographic change leads to a pyramid of the population invested in a way that in some countries there will be more elderly people than young people [3]. Nevertheless, population aging should be considered as a success since it is a positive consequence of the social and health improvements in terms of health prevention and promotion [4].

This trend reflects an important demographic change which involves economic actions as well as social and health needs to attend the new challenges that society will demand. Due to the increase in health care, along with the enhancement in nutritional habits, lifestyles and education, life expectancy has increased and death rates have been reduced. However, we must bear in mind that the prolongation of life is not always accompanied by a good quality of this. One of the main factors that can have an impact on the aging process is the reduction of activity and physical exercise (sedentary lifestyle) which somehow affects health.

In this regard and considering a recent experimental field research with a randomized sampling of 897 physically active seniors from 65 to 95 years users of 52 sports centres distributed throughout the Valencian Community, 87% highlighted that among the most relevant factors that influence their quality of life, have a good health stands out in the first place [5], regardless of the pension or income.

This process of aging of the general population is associated with an increase in non-communicable diseases and disability, which has important social and economic consequences for individual and social health [6].

In this regard, physical activity is a fundamental pillar during the aging process in order to maintain a good health state. In many occasions, physical activity is considered as a measure to reduce the institutionalization of these people, as well as to improve the standards of quality of life. In fact, among the

factors that intervene in the aging process, as a standard in lifestyle and individual conditions, are the individual physical characteristics [7]. Among which is included the functional ability and the practice of physical activity.

Within this theoretical framework, a great debate in relation to this topic is found. On one hand, physical activity acts specifically on "active aging" with the function of improving the quality of life. In the same way, it is also preventive of a great diversity of diseases such as cancer, heart attack and depression [8]. On the other hand, other authors indicate that it also helps to mitigate different cognitive impairments such as dementia [9]. Likewise, clinical trials conducted with people practicing strength and aerobics training have shown effects in the executive function, as well as in the attention and in the speed in which the information is processed [10]. In this regard, physical inactivity seems to be the most important preventable risk factor for Alzheimer's disease [11]. Particularly, throughout the literature, studies are observed in which aerobic exercise seems to be the one that benefits the elderly the most, without being clear enough today. The benefits can be found at a musculoskeletal, neurocognitive and cardiovascular level, as well as improvements in metabolic diseases and health and chronic conditions (hypertension, osteoporosis, sarcopenia and dementia) [12].

In this line, initially within the field of gerontology, the study of negative emotions was considered as a main and principal issue to take into account. In fact, large numbers of studies have been conducted in relation to depression and disease in aging, as well as studies linked to decline and cognitive deterioration. Consequently, aspects such as well-being, satisfaction, hope, optimism and happiness have been neglected as protective emotional states of health in aging that favour a better quality of life [13]. At present, and due to the sociodemographic change, studies that give importance to emotional regulation and emotional well-being can be found as well as studies of active and positive aging as an important factor within the prevention and health promotion measures [14].

The concept of well-being is subjective; it is another ingredient of the quality of life and successful aging [15]. Thus, psychological well-being would be related to having a purpose in life, with life acquiring meaning for oneself, with overcoming challenges with a certain effort and achieve valuable goals. However, subjective well-being would have to do more with feelings of relaxation, absence of problems and presence of positive sensations [16]. Both components, emotional and cognitive, define the concept of subjective well-being [17].

On the other hand, another study indicates that subjective well-being is composed of two components of satisfaction with life: one cognitive and the other affective [18]. This subjective well-being is close to other long-standing concepts such as life satisfaction, which refers to the subjective experience of happiness [19].

Recently, researches focused on the study of psychological well-being, in practitioners of physical exercise, have been scarce [20]. Due to the multifaceted and complex nature of the welfare construct its study has been directed more to athletes and young people.

In addition, the need to investigate the relationships between quality of life, subjective well-being and practice of physical activity is very high [5, 21]. It is also very important to find out and determine the concrete amount of physical activity necessary in elderly people. All of this should be considered as part of a research path, necessary for the design of programs to improve the quality of life of the elderly.

Therefore, the purpose of this work is to review the literature looking for the effects of physical activity on psychological well-being in elderly people over 65 years, in order to identify the type of physical activity that favours welfare. The present work aims to show what has been studied up to now, through the published evidence to establish future intervention programs that contemplate aging in an integral way.

## **II. Method**

A review of the studies whose theme focused on the impact of physical activity on psychological well-being was made, paying special attention to the type of intensity practiced by the elderly. For this purpose, the Scopus, Pubmed and Science Direct databases were chosen, using as keywords the search descriptors: "well-being", "exercise" and "aging". The time interval and language were established as inclusion criteria, that is, articles between 2007 and 2018 in English or Spanish. To select the articles analyzed in this work, first of all a search was made in different databases and after applying the inclusion and exclusion criteria, the most suitable articles were obtained.

The inclusion and exclusion criteria were applied both, in the abstract and in the full text. In order to screen the articles to be reviewed, the inclusion criteria used during the search included the following: a) that the sample belonged to people over 65 years of age, b) that they were scientific articles, c) that they include the descriptors "well-being", "Exercise" and "aging", d) over 65 years old. The exclusion criteria were articles prior to 2007, articles where the population was under 65 years, and non-scientific articles. The search process was carried out directly following the above exclusion criteria obtaining a total of 18 valid articles.

Of all the articles found in the different databases, a total of 18 studies published in different scientific journals were selected. It should be mentioned that 14 articles belonged to longitudinal studies (experimental),

with their corresponding intervention, and only 3 articles belonged to cross-sectional studies (observational), based mainly on the collection of data through questionnaires.

After the selection process, the bibliography of each article was reviewed and by the use of Microsoft Excel 2016, a database was created in which the following data were incorporated: the name of the author and the year of publication of the article, the characteristics of the sample, the objective and the most relevant conclusions that were extracted from each study selected.

### III. Results

The most representative bibliographic review results are presented below. The final result consists of a selection of scientific articles related to the effects of physical activity on the well-being of elderly people (Table 1).

Study	Sample	Objective	Conclusions (Results)
Frändin et al. 2016 [22]	322 older adults	To assess the long-term effects on physical function, well-being and cognition, of physical training.	Improvements in cognitive functions are observed after 3 months of intervention,
Ku et al. 2016 [23]	1268 older adults	To assess physical activity, sedentary behaviors and subjective well-being in older adults.	Sedentary behavior generates poor scores in subjective well-being.
Withall et al. 2014 [24]	228 older adults	To explore objective indicators of physical activity and sedentary time and associations with subjective well-being in adults 70 years of age or older.	The number of steps and the functionality of the lower limb were independently and positively associated with perceived physical well-being. Weak relation to mental well-being. There were no relationships between sedentary and well-being.
Langlois et al. 2013 [25]	83 elderly people	Analyzing the benefits of physical training in cognition and in the quality of life in older adults	Improvements in physical and cognitive capacities and in the quality of life
Solberg et al. 2013 [26]	118 older adults	Effects of different types of exercise on muscle mass, strength, and well-being.	Positive correlations with functional test improvements and well-being. It seems to be the most effective way to improve functionality, strength and well-being in older people.
Hirosaki et al. 2013 [27]	27 older adults	To examine the effects of an exercise program and laughter therapy on physiological and psychological health among the elderly.	Significant increases in bone mineral density, self-perceived health of the initial treatment group during the first 3 months. The combination of a program of laughter therapy and exercise could have psychological and physiological effects on health in the elderly.
Sung 2009 [28]	40 elderly people	To compare the effects of the 16-week group exercise program on the physical function and mental health of older women compared to younger women.	Regardless of the age, the program was effective in the improvement of strength, flexibility, balance and self-esteem. Older elderly people got larger gains in self-esteem, although there were positive effects in both groups. Older women can obtain benefits from a group exercise program that can improve their functional ability and self-esteem.

### IV. Discussion

The objective of this work consisted in a review of the published studies regarding the type of physical activity most suitable for the psychological well-being of the elderly over 65 years of age. The scientific literature is extensive concerning the various modes of physical activity with which health benefits can be obtained. The results suggest a great diversity of the type of exercise and the intensity regarding the benefits of physical activity. In general it can be concluded that the activity focused on moderate strength and aerobic training is a strategy to improve the psychological well-being of the elderly from 65 years of age. However, it should be noted that this depends on the type of sport, training and population, without finding a standardized guideline.

On one hand, throughout the scientific literature, studies that suggest an improvement of well-being and cognitive functions as a consequence of training are found [22]. In the same line, other authors indicate the influence of resistance training on well-being [26]. Psychological and physiological improvement has also been noted, including the improvement of bone mineralization, through an intervention program of approximately 3 months, which makes it possible to modify mental well-being, but according to this author [27] longer periods of intervention and follow-up are needed in order to get to know the long-term effects. On the other hand, other authors indicate the physical and mental improvements derived from the practice of Thai Yoga [29]. In the same

direction, in this study, physical, cognitive and quality of life improvements are observed as a consequence of training [25]. On the other hand, after training intervention, improvements in functional capacity and self-esteem have been indicated [28]. However, in this study, positive relationships between active subjects and the psychological variables that determined mental well-being were not shown.

In this last study, both the number of chronic diseases and the depressive symptoms were significantly associated with well-being. Particularly, depressive symptoms were the factors that correlated most strongly with well-being, with the strength of association from moderate to large [29]. On the other hand, the relationship between sedentary lifestyle and low scores in the subjective well-being of older people has been observed [23]. No relation was found between sedentary lifestyle and its influence on welfare. However, it was found evidence of the relation between the functional capacity of the body (being active, being free of diseases or disabilities) and maintaining a high level of physical function and in consequence positive effects on well-being were proved [24]. Similar results have been reported between the relationships of body functionality, strength and well-being in older people [26].

## V. Conclusion

This review suggests that the activity based on moderate strength and aerobic training is a strategy to improve the psychological well-being of the elderly over 65 years of age. However, we must take into account the multidimensionality of variables that converge with well-being, and that are part of the background variables and that act as influencing factors in the person's daily life. For example, as a consequence of training, bone mineralization is strengthened and variables such as well-being and quality of life are improved.

Therefore, it is necessary to investigate these relationships thoroughly through longitudinal studies that will allow resolving the effects over time. In the study it should be included the type of sport practiced, as it has not been discussed in this review. Therefore it would be interesting for future lines of research to develop the study considering the type of sport practiced and its nature. That is, whether it is individual or collective sport, and how it affects the psychological well-being of the older adult.

The conclusions obtained encourage the implementation of new experimental studies that pay attention to the background variables that intervene in the relationship between physical activity and final psychological well-being. It is also important to determine how the health of the elderly is affected by sedentary lifestyle. Since, psychological well-being in an elderly person will not only depend on the physical intensity of the practiced sport or activity, but also on the multidimensionality of variables that intervene in the process.

It is highly important for healthcare and sport professionals (trainers, coaches ...) to know the positive effects that physical activity has on the elderly health. If the professionals working with the elderly know these effects, they can design training programs and apply them in an appropriate way to an increasingly larger sector of the population in Spain. In addition, preventing non-communicable diseases and stimulating cognitive states that favour health, can reduce health spending as well as the need for informal caregivers or family members responsible for the care of an elderly person, favouring the autonomy and not geriatric institutionalization of the elderly. The aim of this review has been to elucidate relevant improvement issues in this field of study for future experimental investigations.

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