

## Editorial

# Challenges to Successful Aging: Recommendation and New Trends in the Field of Aging and Physical Activity

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The world's population is ageing and virtually in almost every country the proportion of people aged over 60 years is growing faster than any other age group. This results from combination of longer life expectancy and declining in fertility rates. This population ageing can be seen as a success story for public health policies and for socioeconomic development, but it also challenges society to adapt, in order to maximize the health and functional capacity of older people as well as their social participation and security [1-3].

Evidence has shown the importance of promoting physical activity in preventing certain chronic health-conditions and public health guidelines advocated that regular endurance exercise is essential to improve health, physiological well being and quality of life (QoL), and survival. Conversely, being sedentary and/or insufficient aerobic capacity (VO<sub>2</sub>max) and maximal tolerated power (MTP) negatively impact physiological functioning and contributes to cardiovascular diseases, metabolic disorders, osteoporosis, and finally all-cause mortality. While physiologically, VO<sub>2</sub>max declines with advancing age, a minimal level of 15 ml/min/kg must be maintained for independent physical functioning. Moreover, VO<sub>2</sub>max is appeared as being one of the strongest predictor of the risk of death; each 1-MET (e.g., VO<sub>2</sub>/3.5) increase in exercise capacity confers a 12% improvement in survival [4,5]. Moreover, many data support the benefits of regular physical activity on different facets of human's health. Regardless of age, it is an important component of healthy and active ageing and an easy and simple means to keep aged people socially included [6,7]. Interestingly training older individuals experiment similar increase in their aerobic performance to that measured in their younger counterparts after aerobic [7,8]. With this aim and perspective, multicomponent-training programs (MCT-defined as the combination of endurance/aerobic, strength/resistance training,

and balance/stability, and/or flexibility, and/or coordination training) appear to be the most effective intervention for improving the overall health status among seniors [9]. Current guidelines recommend that aging and aged adults regularly engage in well-rounded MCT that in turn can contribute to actively reduce poly pharmacy and health care costs while strengthening functional independence and improving QoL [10]. It has also been demonstrated that supervised MCT is more effective than home-based training program in improving overall health status among older patient [11,12]. Therefore it is important for societies and health care providers to encourage all aging and aged adults to engage or maintain an active and healthy lifestyle but also to give them opportunities and/or to ease as much as possible their adherence to MCT preferentially supervised by a coach.

Aging and aged adults are encouraged to perform moderate intensity aerobic exercise (40-60 of HR max) for a minimum of 30 min on 5 to 7 days each week or vigorous intensity aerobic activity for at least 20 min on 3 days each week. Promotion of muscle strengthening activity is recommended for a minimum of 2 days each week. Older subjects should perform also flexibility activities on at least 2 days of each week for at least 10 min each day. At last, community-dwelling older subjects should perform exercises that maintain or improve balance for 1 to 7 days each week [13,14].

These recommendations aim to target all the major physiological systems that are functionally declining due to the aging process. For instance, a regular resistance training program reduces muscle hypotrophy by altering the expression of myosin heavy isoforms [15], while aerobic exercise improves cardiovascular fitness and blood pressure [16] and hence contributes to reduce the risk of atherosclerosis [17].

Balance training also helps in reducing fear of falls and improving dynamic balance [18]. Flexibility activities increase the length of the muscle beyond that which is customarily used in normal activity and facilitates greater range of motion around the joint [19]. Thus, it is clear that the combination of these training components may contribute to better physical health status [20].

Based on this evidence, clinicians should encourage all aging and aged adults to engage in MCT programs to favor healthy aging and keeping all older members of our society autonomous and independent in their daily living.

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