

Exercise/physical activity programmes to combat a sedentary lifestyle, chronicity and poor ageing

Contra el sedentarismo, la cronicidad y el mal envejecimiento, programas de actividad física/ejercicio

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Nowadays, no one questions the value of physical activity and, essentially, physical exercise programmes, as a health tool and important factor in social and healthcare policies. Regular and well-planned exercise is prescribed as non-pharmacological treatment for most diseases prevalent in developed societies, regardless of the need for rehabilitation or specific treatment for a particular system that is specifically damaged^{1,2}. It is also prescribed as a preventive factor for almost all diseases^{1,2}, regardless of a patient's gender or age. Scientific evidence strongly demonstrates that, beyond its health value, and much more than medicine, regular exercise is a source of *life* in our societies that are ageing, sedentary and often extremely socially isolated.

Much more than medicine, movement is life

Today we know that ageing is a gradual, multifactorial process of irreversible and stochastic deterioration, affecting the metabolic, cardiorespiratory and endocrine functions, the immune responses, the inflammatory processes, the performance of the osteo-ligamentous-tendinous-muscular system and, of course, cognitive functions, the regulation of the nervous system and, in general, motor control^{3,4}. The magnitude and persistence of these changes are such that they are accompanied by alterations in the physical condition, motor and mental skills and, in general, the functionality and relationship capacity of older adults.

We are also aware that a sedentary life multiplies any adverse effects such as persistent inflammation and sympathetic nervous system arousal, together with an equally persistent vagal inhibition and, in general, autonomic dysfunction. Among other consequences: pathology chronicity, sarcopenia, emotional disorders, depression, mental illnesses, and, at the end of this continuum, decrease in disability-free life expectancy, multiple pathologies, fragility and dependency⁵.

A sedentary lifestyle entails systemic disuse or detraining, resulting in the alteration of the neural responses and effort intolerance in these older adults or with limiting pathologies. This makes motricity more difficult and movement is perceived as more demanding, more fatiguing. Acting as a feedback loop, psychomotor deterioration induces even greater sedentarism and ends in functional incapacity, autonomic dysfunction and loss of allostasis/resilience, aggravating the already deteriorating effects of the ageing process.

Furthermore, the shortcomings in the motor sphere of a person who feels clumsy, with little or no ability, limit the development of psychomotor and psychosocial skills, hinder efficiency and often involve frustration, with the subsequent lack of motivation to exercise⁶. Yet again, this is particularly important in the case of older adults and, above all, in those with some type of cognitive or motor skill impairment. These people often age alone and with little resources, requiring powerful interventions in the area of functional improvement and their physical re-education, beyond the improvement or reduction in the symptoms of their pathologies.

It should be noted that physically competent individuals understand and face up to the challenges of motricity, moving with economy and confidence, and can safely and empathetically establish relationships with others and with their environment throughout their life⁶. It should also be remembered that, at the opposite end, adults that feel insecure and are afraid to relate to their environment, hardly go out and frequently end up in unwanted loneliness that is related to the risk of poor health, comorbidity, and, once again, fragility and dependency.

Sustained over time, unwanted loneliness is the absence of incentives and an accelerated journey towards physical inactivity and pathology, giving another turn of the screw in the poor sedentary ageing loop. If we add to this factors such as a greater risk of falls and/or an increase in mental disorders in these ageing and lonely groups, then the cocktail is served. Let's do some figures.

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Exercise is good at all ages

In general, the Consejo Superior de Deportes (CSD - Sports Council of Spain) calculates a saving of between 3 to 15 euro in healthcare expenditure for each euro invested in physical activity/exercise programmes, emphasising that Sport and Health must go hand in hand, as a strategic approach to social and healthcare policies. The return on investment (ROI) in *exercise*, is high.

Today there is no doubt of the benefits of increasing physical activity/exercise together with the necessary reduction in sedentary behaviours, given that sufficient amount and intensity of movement demands the complete participation of all our systems, helping to improve/maintain our adaptive responses^{5,7}. When the proposal is demanding and holistic, exercise stands as a powerful neurophysiological tool, capable of ensuring the communication of all our cell organelles and systems in a unified and coordinated way⁷. And when this same movement occurs within the framework of leisure and active free time, despite its lower physiological impact - resulting from its lower intensity - there are also alternative pathways to lead to the same improvements⁵. And it continues to be a powerful tool.

In the words of Bennett, Reeves⁵, the stress pathways are acutely activated and support the physical exertion demanded to move the body through the physical activity, particularly with regard to concerted exercise. This physiological challenge makes it possible to activate the sympathetic branch of the nervous system and the hypothalamic-pituitary axis, and to stop it at the end of the effort, giving rise to a very healthy post-effort “rebound”. This greater specific inflammation is accompanied by a reduction of inflammation at rest, as well as the release of myokines (muscular cytokines) to attract immune cells to repair the tissue damage, also promoting microbiota diversity and gut health⁵.

The binomial “more physical activity/exercise - less sedentarism” is key to our individual and collective health, with greater impact as we grow older.

As reported by Lazarus, Lord³, there are systems that are age-dependent but are not malleable by exercise (a), systems that are age dependent and are also malleable by exercise (b), systems that are not age dependent but are malleable by exercise (c), and finally, systems that are unaffected by age or exercise (d). The understanding of these balances makes it possible to appreciate that, above the impact of ageing, physical activity/exercise leads to what is known as the *healthy ageing phenotype* (active, successful); while, at the other end, inactivity/sedentarism condemns individuals to the pathological ageing phenotype (inactive). The success of the former lies in maintaining the “*intrinsic capacity*” intact, in other words, the possibility to continue doing those simple things that make a human being feel mentally and physically *capable*³. In the words of these same authors: walk, think, perceive (see, hear...) and remember.

Far from settling for a minimum number of minutes of physical activity, in its recent guidelines for physical exercise the WHO⁸ concludes

that older adults must be as physically active as their functional ability allows, adjusting their level of effort to their level of fitness and to their functional abilities so as not to fall below their motor requirements. This also applies to adults with chronic conditions. The WHO also indicates that those adults with greater difficulties may wish to consult a physical activity specialist or health-care professional for advice on the types and amounts of activity appropriate to their individual needs, abilities, functional limitations/complications, medications and overall treatment plan⁸.

At this stage, the first thing to do is to *start, to get going*. The second, but no less important, point is to gain the older adult's *loyalty* to exercise by finding something that is sufficiently attractive for those who have not taken part in exercise programs for a long time (if indeed they ever have) so that they are sufficiently motivated to allow them to overcome their general disinclination to exercise.

Conquer their fears, personalise the proposal, address the heterogeneity of older adults and respect their pace.

It will also be extremely important to support them in the process and not leave them alone once the first improvements are made, because age is accompanied by a high level of *detrainability*, understanding this to be the loss of physical fitness associated with detraining⁴. Although qualities such as agility or the executive function itself appear to hold up well for a certain amount of time, despite the detraining (negative or regressive effect associated with stopping training), the reduction or even the disappearance of gains is particularly accentuated in the cardiovascular and strength capacities, entailing a loss of physical fitness and the reappearance of fatigue levels⁴, with a risk of returning to the centre of the loop.

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