

Focus on flexed posture and hyperkyphosis: prevention and rehabilitation to reduce disability and increase quality of life

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Generally speaking, our grandparents died quite young and were still straight: they did not have time to flex. Our parents are older than our grandparents; some of them are straight, even if their height has reduced gradually. Others can be slightly flexed anteriorly and quite reduced in height; they can complain of their protruding abdomen, which is due to the reduced space for viscera and the change of spinal balance; they might need to put their hands on their buttocks when they need to walk or stay erect. Unfortunately, some flex anteriorly and cannot anymore reach a straight posture. Our parents are anagraphically old but mentally very active, with expectations for the future. They usually take care of their grandsons and regularly travel abroad. They are happy not only for being alive but are also about their lives. In our families we can observe both the change of opportunities and the new reality of the elderly, that derive from the evolution of the Western societies: people become older and older, they remain active, they work, or if they do not, they want to travel and enjoy their lives. The anterior flexion of the spine, which in the past was rarely a problem, as it occurred very late for the normal life span, is today something that can greatly impair one's life.

Considering the presence of back pain, elderly can be quite well when disability reduces and pain allows an almost normal life.¹ However, if a subject cannot achieve the straight position; if he/she is forced to

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move while flexed anteriorly; if he/she cannot reach an object on an upper shelf in his/her own kitchen; if he/she needs support such as a table or a chair to remain erect; if he/she cannot look in the eyes of a person directly in front of him/her; in all these situations, living is hard. The population ageing of the Western societies implies that these problems are going to increase gradually. Moreover, the reduction of the quality of life and self-confidence in movement can increase the spontaneous regression of mobility and, consequently, of social life, that is a characteristic of ageing.^{2, 3} A vicious cycle can develop, reducing one's health while increasing the burden of any disease on the individual, family and society.

This hyperkyphosis, or in others a totally flexed posture, could be due to normal ageing, even if not all people flex with age.^{4, 5} In fact, many people experience only a reduction in height. Flexed posture can also be due to pathologies like osteoporosis, fractures, scoliosis and/or rheumatological diseases.⁶⁻⁸ Such disorders only interest the musculoskeletal system, and mainly the axial skeleton, thus directly impairing the quality of life. Neurological disorders, instead, through neuromotorial control, can flex the spine as well.^{9, 10} This special section of the EJPRM focuses on the musculoskeletal diseases. The paper by Kado, entitled "The Rehabilitation of Hyperkyphotic Posture in the Elderly", clearly depicts the various sit-

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uations, while proposing protocols and rehabilitation approaches for everyday life.¹¹ Under all these conditions, rehabilitation remains the main step – eventually together with pharmacological approaches – to lower the impact of the postural change. With age a decrease of strength in the spine extensors is quite common, as well as a biomechanical change in the spine properties, with a consequential decrease in height and change of relationship among the spine segments.^{4, 12} With regard to the elderly, the old motto “If you don’t use it, you lose it!” holds true for both physical and psychological functions, but the concept can also be expanded to include activities and participation. The alternative to ageing is worse than ageing itself, and there is only one way to avoid getting old. However, it is possible to reduce the spontaneous loss of capacities by fighting to maintain them.² This is not rehabilitation but counselling, which should regularly be given also by PRM specialists facing the elderly for other reasons. When the spine starts flexing, this should be detected early in order to reduce its progression, otherwise this will persist and worsen over time. Rehabilitation can offer strength, mobility, balance and coordination, allowing to maintain the stimuli for the personal and social aspects of life. What should be avoided is a fixed anterior flexion, when it is no longer possible to improve the lumbar lordosis and achieve a straight posture. This is the time for external supports that usually are only sticks (lumbar supports and braces are nearly always inadequate to sustain the spine or are not accepted and used by the patients).

The position of the spine at the end of a subject’s physical growth can also cause flexion in the elderly. In fact, the more the spine is flexed when one reaches adulthood, the more probable it is that it will flex over time.⁴ This is often neglected. In fact, hyperkyphosis during growth is not considered a main pathology, unlike most of the scolioses.¹³ Research is scanty, and approaches differ widely in different regions according to tradition. As with scoliosis,^{13, 14} the approach should focus on the actual impairments (mainly esthetics, but also pain releasing in case of hyperkyphosis) as well as on the risk of future disorders. In this respect, progressive flexion and consequent quality-of-life issues are the main points, as back pain is not usually correlated with posture.^{15, 16} The rehabilitation approach to sagittal-plane diseases in adolescents, including thoracic hyperkyphosis, junctional kyphosis and Scheuermann’s disease, are considered in the paper by

Zaina *et al.*¹⁷ The tools for rehabilitation mainly include exercises and braces to change the spinal configuration, while other treatments could be advised for pain. Nevertheless, thanks to the pain reduction obtained with exercises and/or braces, no other treatment is usually needed beyond the focus on a straightened spine. Differently from scoliosis, in case of sagittal-plane diseases, an improvement is possible with appropriate treatments.^{17, 18} As with the other most commonly known adolescent deformities, it is absolutely necessary to avoid both over- and under-treatment.

Together with the direct focus on rehabilitation in the different ages, it is very important for PRM specialists to have some basic information on the normal sagittal-plane configuration of the spine. Today this knowledge is rapidly changing, thanks to the hard work of some French and American colleagues.¹⁹⁻²⁴ This special section includes the paper by Harding²⁵ which carefully and thoroughly describes these advancements. Paradoxically, such new research efforts are virtually born in rehabilitation wards but are applied mainly by surgeons, who have the problem of fixing the spine correctly in order to avoid secondary, unforeseen disturbances of sagittal balance, which are among the most important causes of failed-back-surgery syndrome. Nevertheless, some rehabilitation application in fields other than musculoskeletal diseases is already underway.²⁶

Ageing is a value per se, but ageing in a proper way is a personal and social good. The avoidance of a flexed posture maintains quality of life and reduces the social burden of the elderly, that starts from a proper spinal growth. Rehabilitation can, and must, play a significant role in all this. Let’s take care.

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