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Clinical Medicine Insights: Arthritis and Musculoskeletal Disorders

Modern Rehabilitation in Osteoporosis, Falls, and Fractures

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ABSTRACT: In prevention and management of osteoporosis, modern rehabilitation should focus not only on bone mass and bone strength, but also on interventions aimed at muscle and bone strength, and weight-bearing exercises help maintain fitness and bone mass. In subjects at higher risk for osteoporotic fractures, particular attention should be paid to improving balance – the most important element in falls prevention. Given the close interaction between osteoporosis and falls, prevention of fractures should be based on factors related to bone strength and risk factors for falls. Fractures are the most serious complication of osteoporosis and may be prevented. The use of modern spinal orthotic helps to reduce pain and improve posture. Vibration platforms are used in rehabilitation of osteoporosis, based on the concept that mechanotactic, short vibrations, and bursts of stimulations could have an impact on osteoporotic risk. Pharmacologic therapy should be added for those at high risk of fractures, and vitamin D/calcium supplementation is essential in all prevention strategies. Success of rehabilitation in osteoporotic and fractured subjects through an individualized educational approach optimizes function to the highest level of independence while improving the overall quality of life.

KEYWORDS: osteoporosis, rehabilitation, exercise, orthotics, falls, calcium, vitamin D, vibration platforms

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Introduction

Osteoporosis is a metabolic bone disease usually occurring with increasing age that predominantly affects postmenopausal women and older people. However, in individual cases, it could occur in younger people, i.e. in the juvenile form, mainly seen with idiopathic osteoporosis, pregnancy-associated osteoporosis, the form of secondary osteoporosis in young steroid-treated patients with chronic inflammatory diseases, etc. The goals of rehabilitation change depending on the stage of disease. In prevention and management of osteoporosis, modern rehabilitation should not only focus on bone strength while ignoring muscular strength and balance. These elements are directly related to the disease, offering protection against predisposing a person to an increased risk of falls and fall-related fractures. Pharmacologic treatment increases bone strength but has no effect on muscle strengthening or balance in general, because there is evidence that vitamin D improves muscle function and decreases the incidence of falls. Moreover, beyond drugs, there are other interventions often overlooked: supplementation with calcium, exercise programs, orthoses, vitamin D, and the prevention of falls.[1]

Falls are one of the most frequent and serious problems that elderly people face; their association with mortality, morbidity, reduced functionality, and premature nursing home admissions has been proven; they are usually the result of interaction of multiple and diverse risk factors and situations that may be corrected many times; their interaction is modified by age, diseases, and the presence of hazards in the environment.[2]

A key point regarding falls is that the increased incidence of falls is combined with increased susceptibility to injury. This propensity of the elderly to injuries results from the high incidence of accompanying diseases, such as osteoporosis, where the prevention and management should not only focus on bone strengthening but mainly shifted to increasing muscle