Short Communication

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Preventive Role of Exercise Therapy in Osteoarthritis or Degenerative Joint Disease: A Viewpoint

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Abstract

Preventable or modifiable risk factors for osteoarthritis (OA) or degenerative joint disease (DJD) include obesity, occupational factors, sports participation, muscle weakness, nutritional factors and hormonal influence. The objective of this short communication paper was to explain the evidence-informed role of exercises in prevention of OA from studies in PubMed. Evidence suggested that regular exercise and physical activity (PA), particularly strengthening and aerobic activity, reduce pain and improve function, and health status among patients with knee and hip OA, the reasons for which are not only associated with slowing structural disease progression but also with functional and quality of life improvements. More longitudinal cohort studies are warranted in this population.

Keywords: Osteoarthritis (OA); Degenerative Joint Disease (DJD); Preventive Rehabilitation; Musculoskeletal Prevention.

Preventable or modifiable risk factors for osteoarthritis (OA) or degenerative joint disease (DJD)include obesity, occupational factors, sports participation, muscle weakness, nutritional factors and hormonal influence, which can be improved with a wide variety of rehabilitative interventions: joint specific exercises, physical fitness, physical modalities, education and self-management [1,2].

Secondary prevention of OA must address the skeletal malalignments such as coxavara, femoral retroversion, genu varum, tibia varum and pescavus; and leg length discrepancy such as structural/ functional shortening [3]. Current state of science in prevention and management of OA emphasized the role of multidisciplinary contribution from nursing, epidemiology, rheumatology, public policy, geriatrics, pharmacotherapy, physical therapy, and complementary modalities [4,5].

Thus it is a top priority to assimilate evidence on preventive and self-management strategies for OA [6]. The objective of this short communication paper was to explain the evidence-informed role of exercises in prevention of OA from studies in PubMed. Muscle weakness is common both as an etiological factor and as a clinical consequence of OA, secondary to common myoarticular innervation leading to arthrogenic inhibition and loss of motor control/ stability which could be effectively tackled by land-based aerobic and strengthening exercises on pain relief and joint function [7].

Muscle activity influences knee-joint loading, and people with OA knee demonstrated muscle function deficits and muscle dysfunction was postulated in development and progression of knee osteoarthritis.

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Exercise prescription in OA should thus consider muscle rehabilitation as one of its primary goals of treatment [8].

Exercise was a valuable therapeutic adjunct to strategies aimed at alleviating the risks and symptoms of two ageing-related concomitant disease conditions-osteoporosis and osteoarthritis. Exercise had its potential impact on the disease processes themselves, and exercise improves general health and well-being, enhances quality of life, and preserves physical independence [9].

Penninxet al [10] examined the preventive role of exercise program on ADL and disability in OA in their 2-center, randomized, single-blind, controlled trial which was conducted in 250 participants who were assigned to an aerobic exercise program, a resistance exercise program, or an attention control group. The cumulative incidence of ADL disability was found to be lower in the exercise groups than in the attention control group, and both exercise programs prevented ADL disability; and the lowest ADL disability risks were found for participants with the highest compliance. Regular physical activity (PA), particularly strengthening and aerobic activity, can reduce pain and improve function, performance measures and health status among patients with knee and hip OA, the reasons for which are associated with slowing structural disease progression [11]. Sports and participation in sport-related activity was recommended for OA provided avoidance of high-impact sports is essential to prevent intra-articular trauma; and to undertake caution if they have abnormal joint anatomy or alignment, joint instability, underlying muscle weakness or imbalance, or if they are overweight [12].

Jordan et al [13] provided recommendations for design and execution of clinical trials on prevention or risk reduction in OA as follows: "disease definitions and their precise and sensitive measurement, identification of high-risk populations, the nature of the intervention (pharmaceutical, nutraceutical, behavioral) and its potential pleiotropic impacts on other organ systems are critical to consider. Because prevention trials may be prolonged, close attention to concomitant life changes and co-morbidities, adherence and participant retention in the trial is of primary importance, as is recognition of the potential for "preventive misconception" and "behavioral disinhibition" to affect the ability of the trial to show an effect of the intervention under study."

Evidence suggested that regular exercise and physical activity (PA), particularly strengthening and aerobic activity, reduce pain and improve function, and health status among patients with knee and hip OA, the reasons for which are not only associated with slowing structural disease progression but also with functional and quality of life improvements. More longitudinal cohort studies are warranted in this population.

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