

Managing Osteoarthritis and Other Chronic Musculoskeletal Pain Disorders



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KEYWORDS

• Osteoarthritis • Cartilage • Exercise • Viscosupplementation

KEY POINTS

- Osteoarthritis (OA) is a common problem in society and can lead to significant disability and impairment of a patient's capacity to perform activities of daily living (ADLs).
- Exercise, pharmacology, bracing, and injections play roles in the management of OA.
- Exercise and injections play roles in the management of myofascial pain syndrome.

INTRODUCTION

OA can be viewed as primarily a wear and tear arthritis. Newer information, however, indicates that inflammation may also play a role. Although the initial pathology is primarily the level of the articular cartilage, the disorder encompasses all aspects of the joint. Ultimately, cartilage, synovium, and bone are all involved in the progression of OA and the debility that can be associated with it. Understanding the pathogenesis of OA is essential when considering the various options potentially available to treat the symptoms.^{1,2}

ETIOLOGY OF OSTEOARTHRITIS

The function of cartilage is to allow for the smooth movement of many joints in the body. Its maintenance depends on the balance of cartilage matrix turnover. Perturbation in the balance between synthesis and normal degradation leads to deterioration in cartilage. Multiple factors can lead to alterations in this normal balance. Mechanical trauma to the joint, progressive joint instability, and production of inflammatory cytokines can all trigger the development of OA. A remarkable and consistent feature of osteoarthritic joints is the development of osteophytes, which represent new development of both cartilage and bone. Although the exact function of osteophyte formation

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is unclear, it may serve to stabilize the joint and may also be an attempt to increase the weight-bearing surface of load-bearing joints, such as the hip and knee.¹⁻⁴

TREATMENT OPTIONS

Exercise

Exercise can take on many forms, including both aerobic conditioning and strength training. Patient and physician thoughts regarding exercise and its role are controversial and often based on personal bias. Data from various studies reveal that a combination of light to moderate cardiovascular training in concert with lower extremity strength training can have significant utility in the management of knee OA. Although patients may express concern about activities, such as walking or light running, in the face of knee OA, the benefits of regular aerobic activity have been shown across multiple studies. Failure to engage in regular and routine activity, even as simple as walking, is associated with debility and loss of muscle mass and may accelerate cartilage degradation secondary to altered cartilage matrix characteristics. Lack of physical activity may result in increased joint stiffness, further alteration in gait mechanics, and an increase in the risk to fall and resultant orthopedic trauma. Separate and distinct from the pain of OA is the pain from soft tissue stiffness that results from assuming a sedentary lifestyle in response to the pain. As the activity level decreases, pain increases, much to the chagrin and frustration of both patient and treating physician. Light to moderate aerobic activity may include walking, jogging, and cycling. Although patients may question using walking and or jogging as part of an aerobic conditioning program in the face of knee OA, the compressive and tensile loads that the cartilage is subjected to are well below threshold. Cycling is well tolerated at low to even high intensity levels, and as such may allow for potentially more significant cardiovascular benefit than walking or jogging. Swimming has been suggested as a way to exercise patients with OA. Its major benefit may lie as a bridge form of activity to ultimate land-based exercise. Swimming has been associated with short-term benefit, but long-term benefit has not been conclusively demonstrated.⁵

Resistance or strength training has been shown to decrease pain scores and increase function in multiple studies of knee OA. Typically emphasis is placed on quadriceps strengthening because knee OA is commonly associated with quadriceps weakness and dysfunction. The cookbook recipe of placing patients with knee OA on a regimen of quadriceps strengthening, however, needs to be avoided because patients with malalignment issues may find that quadriceps strengthening increases the compressive forces across the knee joint and increases pain. In this population, hamstring and hip abductor and lower leg muscle strengthening may be of more benefit. As yet, these data are not readily available and may constitute fertile ground for future research.^{4,5}

More recent literature has looked at the role of balance and proprioceptive training in patients with lower extremity OA and found a positive correlation. Whether this correlation is secondary to improved strength that results from engaging in balance training activities or is secondary to improvements in balance alone has not been determined and may be difficult to separate.

Weight Reduction

Multiple studies have shown that for weight-bearing joints, obesity has as great an impact on joint OA development as does a history of prior trauma. Weight reduction should constitute a major intervention in the management of lower extremity joint OA. Several studies have shown that maintenance of appropriate body weight may be one of the most significant interventions that can be taken to decrease the risk

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