

Osteoarthritis and sports

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Osteoarthritis (OA) is a growing problem, and hence a growing burden on national health systems. Public health campaigns should, however, concentrate on risks which can be ameliorated, such as obesity and injury prevention.

El-Tawil *et al*¹ excellent overview of epidemiology and pathogenesis of OA of the knee, summarises these risks, and their future perspectives.

Physical inactivity might become the major public health issue of our time. In a prospective study increased BMI was directly correlated with increased total knee prosthesis.²

Cytokines associated with adipose tissue influence cartilage metabolism through the increased emission of inflammatory cytokines and proteases, which causes catabolic activity and cartilage degeneration. Although there is clearly an association between OA and age, the simple 'wear and tear' model is no longer valid. OA is not an unavoidable result of a long and active life.

BUT WHAT ABOUT SPORTS AND OA?

Physical activity is a benefit for the treatment and prevention of almost every chronic disease, including OA. It clearly does not increase the risk of knee and hip OA, or its progression. Canine studies have demonstrated that moderate running actually improves joint condition, in terms of cartilage thickness and glycosaminoglycan content, and recreation runners show neither increased incidence nor increased severity of radiographic knee OA, compared with non-runners, over an 18-year period.³ Some data actually suggests that runners have less OA than controls, but this data is statistically not significant, perhaps because the participants' OA was relatively mild.

There are various reasons for this benefit. Improved muscle-strength and proprioception protects the joints. There is level 1B evidence that both strengthening and exercise reduce pain and improve function and health in patients with knee and hip OA.⁴

Lack of exercise, conversely, may contribute directly to OA by causing atrophy of the supportive and shock-absorbing

muscles which surround the joint. Many of our patients intuitively feel that inactivity will aid their recovery. We have all heard them say: 'But doctor, my knee hurts; I don't want to make it worse'. But if they move less because moving is painful, then eventually they cannot move properly, or move at all. This becomes a vicious circle, which we should prevent with timely advice.

SHOULD I DO SPORT?

Cycling has demonstrated to reduce the pain from knee OA.⁵ The way you eat, move, manage stress and interact with others, and whether you smoke or drink, all these influence your overall health, and also the health of your joints. Physical activity is one of the best treatments for OA. Moderately intense exercise, five times a week, helps joints stay limber and strengthens the muscles that support and stabilise the ankles, knees and hips. Exercise is also a key factor in weight control.

But some elements of joint loading are potentially harmful. Vibration, repetitive movement, long hours of kneeling, squatting or standing have all been associated with an increased risk of OA. Frequent knee bending while loading is another activity that has been related to cartilage degeneration.¹

SO, WHICH SPORTS ARE POTENTIALLY HARMFUL?

Moderate to intense sporting activity helps to maintain physiological joint loading, although the balance sometimes gets lost in endurance sports and especially contact-sports, where there are more and significant joint injuries. The impact of anterior cruciate ligament (ACL) rupture and meniscectomy is well known. Joint injuries significantly increase the risk of OA.

Injury prevention is important in all sports, and not just for the knee. In this issue of JISAKOS, Verhagen *et al*⁶ argue the effectiveness of 'prevention programmes' for ankle trauma. They demonstrate that neuromuscular training is effective for reducing ankle sprains in sporting population, and for athletes with previous ankle sprains. This is level 1 evidence. Data from Union of European Football Associations (UEFA) also confirms that such programmes have

successfully reduced ankle injuries, which no longer top their injury-list! A key element in such programmes is balance exercise training.

And lateral ankle sprains are not just limited to athletes. They are frequent among the younger general population, have a wide range of consequences, which have clear economic and social costs. Up to 70% of lateral ankle sprains result in functional limitations, with continuing 'giving way', pain and decreased function. And 89% of ankle sprains show osteochondral lesions which, combined with chronic instability, incline to OA. Initial treatment, therefore, must be correct and sufficient.

AND MY CONCLUSIONS FROM ALL THIS?

The beneficial effects of non-contact sports, such as running, far outweigh the downsides. Exercise and a healthy lifestyle are the best defence against any chronic disease, including OA. Together with 'prevention programmes' and early management of disease, these can reduce the prevalence of Chronic Ankle Instability (CAI) and its associated sequelae.

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