

“Healthy Running”

Running and Osteoarthritis

“Aren’t you going to ruin your knees with all that running?” The general perception **among the public and medical profession is that running increases your risk of arthritis. True?** In this month’s *Healthy Running*, let’s explore arthritis in runners from 2 perspectives: Are runners at greater risk for hip and knee arthritis than non-runners, and can runners with arthritis continue to run? I will focus on arthritis of the knees and hips, as these respectively are the most common and second most common joints affected by arthritis.

Osteoarthritis (OA) is the most common form of arthritis and joint disease. Unlike rheumatoid arthritis or psoriatic arthritis, OA affects only joints and is not a body-wide inflammatory disorder. It is considered a “wear and tear” degenerative process that develops slowly over many years. Symptoms include joint stiffness, limitation of motion, sensation of popping or grating, and varying degrees of joint pain. Joint pain is typically worse with use and weight bearing and often relieved with rest. The affected joint may be tender to touch and joint deformity is common. X-rays can show distinctive findings, but a person’s level of pain does not always match how the x-ray looks. Forty to 70% of people with OA findings on x-ray may have no symptoms.

The notion that running leads to OA is based on the premise that repetitive joint motion and force impact result in thinning and damage to joint cartilage. Animal studies and early studies with small numbers of runners over brief time frames supported this thinking. Beginning in the 1980’s, studies with better design and larger numbers of subjects did not support an association with OA and running. Additionally, research showed that runners in general had less long term physical disability than non-runners, sought medical care less frequently, and weighed less than non-runners.

A series of studies of American runners was published in 1993, 1998, and 2008 reporting on OA of the knees and hips among members of the Fifty-Plus Runners Association. This group consists of long distance runners over age 50, most running for more than a decade. Study participants were evaluated with physical examination, annual questionnaires, and x-rays. No greater occurrence of knee or hip osteoarthritis was found in runners over the many years of this study. The authors of the papers suggested that “long distance running...should not be discouraged among healthy older adults” who are concerned about arthritis.

Though most research has looked at knee OA, a 2013 paper reported on nearly 90,000 members of the National Runners and Walkers Health Studies who were followed for up to 8 years for signs of hip OA or the need for hip replacement surgery. It was found that as long as walkers and runners exercised to burn at least twice the energy used to sit at rest, runners were at significantly lower risk for hip OA and hip replacement. There was further protection at greater running effort and higher levels of energy used in exercise. These results held true for

marathon runners and for frequent marathon runners, and was not affected by marathon or 10K running pace. The authors concluded that recreational and moderate running places one at a lower risk for hip OA, but they could not comment regarding very high mileage running (over 60 miles per week) or elite runners.

It is important to note that runners do get osteoarthritis for reasons unrelated to running. Knee and hip OA are more common as we age, and genetics appears to play a role as well. The occurrence is also increased with increasing body weight. The studies cited above note that higher body mass index (BMI) ($\text{kg of body mass/meter}^2$ of height) is a greater predictor of OA than one's running background. Joint injury, too, is a major risk factor for OA. In this sense, injury does not mean overuse such as IT band, tendinitis, or muscles strains. Fractures, labral tears, and meniscus tears, for instance, significantly predispose to future OA.

What advice is there for runners who have osteoarthritis of the hip or knee? Based on the above, runners who are overweight can reduce pain and slow the progression of arthritis through weight loss, even modest loss of 10% of current weight. Runners benefit from a warm-up, such as a 10-15 minute walk, to reduce joint stiffness before starting a run. Running on grass or trails may be more comfortable than on asphalt or concrete. Many runners with OA report no pain or tolerable pain with shorter distances. Instead of one long run a week, this can be dropped to every 2 to 4 weeks as pain permits. Or, if pain comes on at a specific distance, one might do a double of 2 runs within the pain-free range of miles. Pace likely suffers, even under the best of circumstances. In all instances, proper running form should be achieved as much as possible before efforts to maintain pace.

Joint pain can be relieved or reduced with non-prescription acetaminophen or chondroitin-glucosamine. Acetaminophen should be kept under a daily maximum of 3000 mg (6 extra-strength tablets). Chondroitin-glucosamine does not have a standard dose and does not help everyone but has little risk of side effects. Over the counter ibuprofen or naproxen can also be used, but runners with high blood pressure, cardiac, liver, and kidney disease might need to limit their long term use. As always, runners taking these over the counter products should inform their physician of their use.

It is important to keep muscles at the hip and knee joints strong. This reduces the force and stress on the arthritic joint. This includes evaluation of the gluteal muscles in addition to the quadriceps and hamstrings. Strategies for this include cross training on a bike or rower. Runners with less severe arthritis can benefit from properly performed weight lifting and plyometrics. Stretching is valuable to preserve joint motion, and soft tissue work such as massage, active release, or Graston, may reduce tightness around the hip or knee. While a routine office examination can detect the presence of OA, a focused biomechanical evaluation by a sports medicine provider is needed to pinpoint deficits in muscle strength, joint movement, flexibility, and motor control, including motion control and stabilization of the pelvis and lumbar spine. Physical therapy can address specific areas of muscle weakness or limited range of motion.

Knee osteoarthritis may only affect one side of the knee joint. If the inner aspect of the joint is most affected, this can cause deformity, and the lower leg is angled to the midline. Stability and motion control running shoes will make this worse. Instead, a wedge is added to the outside (little toe side) of the shoe and reduces forces on the inner knee. (The opposite position would be employed for the less frequent OA of the outer area of the knee). Various knee braces have also been shown to help. Runners may benefit from periodic corticosteroid (“cortisone”) injections in the knee. They may also consider a series of viscosupplementation injections, informally called “joint fluid replacement”, with preparation of hyaluronic acid (brands such as Euflexxa or Synvisc). The decision to proceed with injections is, of course, individual and should be made in consultation with one’s physician.

To summarize, the sports medicine research shows that low- and moderate-volume running does not predispose the runner to knee or hip osteoarthritis, though further researched is needed regarding spine and ankle OA. The risk of OA in runners is not zero. But it is well established that running substantially reduces the risks of cardiovascular disease, diabetes, and depression. Running helps with weight control and increases bone density. In general, older runners typically are healthier than their non-running counterparts. In sports medicine circles, it is believed that the benefits of running far outweigh the risks of developing osteoarthritis among the vast majority of those of us who run.

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