



Exercise and Joint Health

Jason S. Holm, MD

I recently answered the following questions for an article in Minneapolis and Saint Paul Magazine focusing on exercise and joint health.

1. What is your job title?

Orthopedic surgeon with fellowship training in sports medicine.

2. We all want to stay in shape, but exercise can sometimes lead to injury. What are some of the most common exercise-related injuries you see in people's hips, knees, shoulders, and/or elbows, and how do people get them?

Hips:

- Trochanteric bursitis- inflammation of a bursal sac over the prominent lateral aspect of the upper femur. This can develop in more sedentary individuals who have weakened gluteal muscles and start a new exercise program or in runners who develop increased friction of the iliotibial band against the femur.
- Femoroacetabular impingement- a mismatch of the hip ball and socket joint that can cause edge loading with extremes of hip motion and ultimately leads to labral tears and possibly arthritis.

Knees:

- Exacerbation of underlying osteoarthritis. Osteoarthritis is a condition of cartilage degeneration and is very common. Regular exercise is an important part of the non-operative management for arthritis but certain loading or twisting motions can lead to increasing pain when there is a limited cartilage cushion in the knee.
- Meniscus tears. The meniscus is another form of cartilage in the knee that provides cushion and stability. Sudden loading and twisting can lead to tears. As we age, the meniscus is more at risk for tearing with even lower energy mechanisms, such as performing a deep squat.
- Patellofemoral pain- pain that is felt in the front of the knee that is not necessarily related to an anatomic defect. Certain people are prone to developing this pain with exercise due to a variety of predisposing factors. It is typically felt with using stairs, deep squatting, kneeling or prolonged sitting.

Shoulders:

- Rotator cuff tendinopathy. The rotator cuff is a group of four muscles that surround the humeral head and hold it compressed against the socket or glenoid while movement is initiated. A relatively small injury, or repetitive overuse can cause tendon fibers to become disorganized, thickened and weak which leads to pain.

Elbows:

- Medial or lateral epicondylitis ("golfers elbow" and "tennis elbow"). Epicondylitis is an overuse injury leading to a degeneration of muscle and tendon fibers at the inside or outside of the elbow.
- Biceps tendinopathy. Repetitive strain with elbow motion can lead to degeneration of the lower end of the biceps tendon where it attaches to the upper forearm.

3. What are some of the best exercises for maintaining healthy joints?

In general, it is critical to include both resistance training and low impact aerobic exercises as part of a workout program. To maximize time at the gym, incorporate high intensity interval training for both aerobic and strength training. Intensity matters.

For those who are dealing with arthritic joints, it may feel like rest and restricting exercise is the best way to minimize pain. While this may be true in the short term, it is certainly not a good long-term solution and will, in fact, only exacerbate pain and dysfunction. This is a time where the old adage, "no pain, no gain" rings



true. Some pain may be felt with initiating an exercise program, but numerous studies have demonstrated that low-impact aerobic exercises and strength training can lead to decreased pain and can lengthen the lifespan of arthritic joints.

Whole body exercises that engage the core muscles such as...

- 1) The Kettlebell swing – When done correctly, it teaches your body how to contend with a constantly varied center of gravity which is what your body will encounter in daily life. It also can be performed with short rest intervals and can therefore hit on high intensity training.
- 2) The basic squat- whether that's at the air squat level or a more advanced back/front squat. We all probably squat 50 times a day, whether it's to sit down in a chair or go to the bathroom or stand up from the floor. Squatting isn't bad for the knees if done properly and in fact is necessary for healthy hips and backs as well. The "use it or lose it" concept applies here, which is why we start to fall into our chairs as we age.
- 3) The multiplanar lunge – This is a great mobility exercise that dynamically stretches the muscles surrounding the hip joint. If these muscles become weak and inflexible, more stress is placed on the knees and lower back in order to accommodate.

4. What are some of the worst/most risky exercises for maintaining healthy joints?

I frequently see the "weekend warrior" athletes in my clinic. These are athletes who are not involved in a routine aerobic or strength training program but continue to participate in intermittent recreational sports such as softball, basketball, or soccer. These fast-paced activities require a high level of coordination and strength in order to protect the joints from seeing isolated loads that can lead to injury. I always encourage my patients to stay involved in activities that they are passionate about and will help to keep them active, but not to necessarily make this their main or sole form of exercise.

For those who are engaged in strength training programs, there are many exercises that can lead to injury. While high intensity exercises with heavy loads can be incredibly beneficial, they also place the joints at greatest risk when performed with poor form. You are always better off slowing down or lightening the load if your form is compromised.

5. Is there an "all-time worst" exercise for joints that all people should avoid, in your opinion?

I routinely advised against isolated knee extension machines that lead to shear forces being placed across the knee. Joint cartilage tolerates load and smooth gliding much better than shear forces.

In general, however, joint injury is so much less about the exercise and more about form and activation patterns to complete the movement. The worst exercise for joints are the ones you're doing incorrectly.

6. If someone has injured their hip, knee, shoulder, or elbow, what non-surgical treatment options do they have for managing the pain? How do they work?

Minor aches and pains as well as muscle soreness should be expected with exercise and will typically respond to a brief period of rest, stretching, ice and anti-inflammatory medications if needed.

Injuries often occur in the setting of a strength imbalance at some point along the kinetic chain or across a particular joint. Rehabilitation is performed to identify weaknesses and restore balanced motion, strength and, ultimately, function. Physical therapists can play a pivotal role in directing a rehabilitation program as they will view the impact of the injury on the entire kinetic chain and will introduce exercises that limit further damage to the joint, while gradually working to restore full function as the body goes through a healing process. Injuries that are ignored may become chronic and possibly place other joints at risk.



7. What are 2-3 of your best tips for keeping joints healthy?

The most effective exercise programs incorporate consistency, variety, and intensity including both aerobic and resistance training.

Strength training is one of the most effective ways to prevent injury to joints.

You can't out-train a bad diet. There is a critical interplay between core strength and diet.

Hydration plays a critical role in joint, muscle and tendon health.

Learn proper form for new exercises prior to increasing load. It is imperative to have a trained professional help in the process if strength training is new to you or you would like to introduce new lifts.

8. Is there anything else about joint health that you would like to add?

Regular exercise will always introduce some risk of injury, but the numerous benefits for whole body health far out-way these risks.

There is no age limit for incorporating strength training as a routine part of exercise.

There are differences in joint health goals for competitive athletes versus joint health for those who are exercising to maintain or improve health. Most commonly, competitive athletes are focused on injury prevention in an uncontrolled fast-paced environment. For those athletes who are at particular increased risk for knee ligament injuries, such as adolescent females involved in cutting and jumping sports, a specialized training program can be used to minimize this risk. This neuromuscular training works to promote correct movement techniques that are incorporated into competition so as to protect joints. At Twin Cities Orthopedics, we have many programs focused on injury prevention as well as exercise programs used to maximize performance.

Exercise to preserve the life of your joints, but also so that you have continued health, a fast recovery, and a high level of function if a joint replacement becomes necessary. For those who have end stage arthritis, there is a tipping point where loss of function may not be fully recovered if a joint replacement is delayed. When joint pain is no longer responding to a variety of non-operative treatment options and quality of life is significantly impacted due to loss of function and pain, a joint replacement may be an excellent option to facilitate resumption of a regular exercise program. There are very few restrictions after a joint replacement and regular exercise is strongly encouraged.