

# Joint Strategies: Stability and Mobility for Hips and Knees

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by *Susannah Kent*

Every year, thousands of people have some type of surgery performed on their hips or knees. In fact, statistics from the Canadian Institute for Health Information indicate that total hip and knee replacements increased from an estimated 31,500 in 1994-95 to more than 63,000 in 2007-08. And even more people experience some kind of pain and diminished function in these two joints.



Much rides on the health of our hips and knees – the two largest, most complex, and hard-working joints in the body. They bear our full body weight, allow for a wide range of motion, and are crucial components to our mobility. And like the rest of the human body, they are subject to aging, injury, and disease.

Understanding some of the key structures and functions of the hips and knees is an important step toward keeping these joints in optimal health.

## **Getting Acquainted with Your Hips and Knees**

The hip is a ball-and-socket joint where the thigh bone or femur attaches to the pelvis. The upper end of the femur is shaped like a ball and forms the femoral head. This rotates in a socket called the acetabulum, which is formed by the pelvic bones. The femoral head is attached to the acetabulum by a joint capsule and a group of three strong ligaments. These ligaments are the main source of stability for the hip, holding it in place.

In a healthy hip, the femoral head and the acetabulum are covered with a layer of rubbery gel-like tissue called articular cartilage, which absorbs shock and provides a smooth surface that eases motion.

Surrounding the hip joint are muscles and the tendons that attach those muscles to the bone. Muscles located in the buttocks, pelvis, and thighs control extension, flexion, and internal and external rotation at the hip.

The knee, a hinge joint, is essentially made up of four bones. The femur is attached by ligaments and a joint capsule to the tibia (shin). Running parallel, just below and next to the tibia, is the fibula. The patella, or kneecap, rides on the knee joint as the knee bends.

The knee joint also contains a structure made of cartilage called the meniscus – a c-shaped piece of tissue that fits into the joint between the tibia and the femur. Along with a bursa, or small fluid sac around the knee, the meniscus helps to protect the joint and allows the bones, muscles, and tendons to slide freely as the knee moves. Muscles that go across the knee joint are the quadriceps and hamstrings.

There are two large ligaments that cross each other in the centre of your knee and keep it aligned, preventing the tibia from moving forward and backward on the femur – the anterior cruciate (ACL), and the posterior cruciate (PCL).

Located on either side of the knee is another set of stabilizing ligaments called the collateral ligaments – on the inside is the medial collateral ligament (MCL), on the outside is the lateral collateral ligament (LCL). They provide stability when your knee moves from side to side.

## **What Can Go Wrong**

With such complex, much used (and abused) structures, it is not surprising that things go wrong with the hips and knees. Whether caused by injury or disease, the common symptom of most hip and knee joint difficulties is inflammation – redness, heat, swelling, pain, and decreased function. The following are a few ways in which your hips and knees can become inflamed, going from happy to hurting.

When too much force is applied, ligaments and cartilage can tear – from microscopically to completely. A torn ACL is the type of knee injury you most often hear about (especially from athletes), and can happen with a sudden twisting motion – upper or lower legs go one way, knees the other. A torn or overstretched meniscus is common among people who exercise regularly (particularly those over thirty-five). This type of injury occurs when the knee rotates while supporting weight.

Two common types of inflammation affecting the knees and hips are tendonitis and bursitis. Tendonitis is inflammation of one or more tendons, while bursitis indicates inflammation of the bursa. Runners, skiers, and cyclists are prone to developing tendonitis in the patellar tendon, which when inflamed inhibits the bending and flexing of the knee. With bursitis, you may experience sharp pain around the outside of your hip or along the kneecap, whether you are moving or not.

Both the hip and knee can suffer muscle strains that result from the tearing of muscle fibres. Their severity depends on how many fibres are torn, and often occurs when exercising without adequately warming up and stretching the muscles. The adductors and hamstrings are the most commonly strained muscles. And of course, the bones around the knees and hips can break, fracture, or become dislocated.

Diseases like arthritis can also adversely affect the hip and knee joints. Osteoarthritis, or degenerative arthritis, is the most common type of arthritis. It occurs when the cartilage in a joint deteriorates with use and age. Osteoarthritis usually develops gradually and tends to cause pain, swelling, stiffness (particularly upon rising or after physical activity), creaking or popping sounds in the knee, and loss of internal rotation in the hip and overall flexibility in the joints.

Thankfully, we can avoid and/or fully recover from many of the aforementioned scenarios by supporting our knees and hips with a mindful movement program.



## **Movement for Strong Stable Knees and Loose Limber Hips**

There are numerous studies indicating that exercise (balance, flexibility, and strengthening) can improve joint health. In fact, when it comes to your joints, the old adage “move it or lose it” is not only appropriate, it is an essential ingredient to building muscle, increasing flexibility, improving alignment, relieving pain and pressure on joints, and repairing damaged tissue.

There are a variety of movement modalities that are perfectly suited to joint health, such as yoga, tai chi, the Feldenkrais Method™, and traditional stretch and strength exercises. A good rule of thumb in choosing a movement program for joint health is to opt for ones that avoid overstressing the joints; encourage strength, flexibility, balance, and alignment; and keep you interested and challenged. Here are just a few ways you can help serve and protect the joints that keep you moving forward.

### **The Feldenkrais Method™ for Moving Smarter**

According to osteopathic physician Dr. George Kessler, the key to prevention of (and recovery from) knee and hip injury and pain is to increase your neuromuscular awareness. The Feldenkrais Method™ of movement education is an excellent way to achieve this. The Feldenkrais approach looks at the role of awareness in movement, with a focus on general functioning. It emphasizes quality versus quantity, exploring how effectively a person can move with the least amount of effort, while still accomplishing a movement goal (bending over, sitting, standing, walking, or lifting).

A key concept in Feldenkrais work is that many sources of joint pain are caused by poor body mechanics. In other words, many of our postural habits could actually be contributing to problems with our hips and knees. As an example, Marion Harris, Feldenkrais practitioner for over 26 years and Director of the Feldenkrais Centre in Toronto, points to the way many people stand and walk with their knees hyper-extended (locked, straight and rigid). She says, “They mistakenly believe this posture is solid and supportive, when in fact it damages the ligaments at the back of the knee and throws the spine and pelvis out of alignment.”

The Feldenkrais solution teaches people to sense and recognize these damaging movements, and to adopt ones that are more comfortable and easier on the joints.

In her own specialty workshop on hips and knees (one is scheduled for next month at the Centre), Harris says she focusses not only on the joints in question, but the whole skeletal system, teaching (through gentle movements) ways to remove stress from the hips and knees. She demonstrates how you can walk by engaging the whole body, not just the legs. This way of walking correctly realigns posture and avoids getting joints stuck in damaging movement patterns.

When I left my interview with Harris, which included a short hands-on demonstration of how Feldenkrais can free the hip and knee joints, I felt as if my whole way of walking was freer – somehow softer and lighter.

### **Total Leg Strengthening For Protection and Support**

Strengthening the muscles that support the knees and hips is crucial. Weak or fatigued muscles don't adequately support the joints or absorb shock. This added stress on the joints can cause pain and make the joints more susceptible to injury. The exercise below is one often used in knee injury recovery programs, but is also extremely helpful in building muscle to support and maintain a healthy knee.

#### ***Straight Leg Raise with Knee Extension***

1. Lie on your back, knees bent, feet flat.
2. Straighten one leg.
3. Without locking the knee or arching the back, raise straight leg one to two feet off the ground.
4. While holding leg up flex or bend at the knee.
5. Extend or straighten the leg once more, hold for one breath and lower.
6. Do 2 sets of 10 repetitions, then repeat on other side.

To maintain a balanced leg strengthening program, you should also include exercises for the hamstrings, buttocks, inner and outer thighs, shin, calves, and ankles, as well as some one-legged balance exercises. And don't forget to gently stretch any muscles worked.

*Anatomy of Exercise*, by Pat Manocchia, is an excellent professional-level book that is tailored to the general reader and provides a variety of strength and flexibility exercises for the entire body.

### **Yoga for Hip Flexibility**

Yoga has many poses or "asanas" that stretch and open the hips, helping to prevent and reduce stiffness, pain, and injury. Reclined and seated twists, seated forward bends, wide-legged straddle, cobbler's, and pigeon poses are ones that I find helpful when my hips are feeling especially tight.

There are a wide variety of excellent yoga classes available throughout the city of Toronto that could provide the perfect solution to your hip problems.

The reclined twist is a great beginner pose that can help free your hips, keep the spine supple, and the abdominal organs toned.

#### ***Reclined Twist***

1. Begin lying on mat with knees bent, feet flat.
2. Lift your hips slightly off the floor and shift them about an inch to your right.
3. Bring your right knee into your chest and extend the left leg on the floor.

4. Lower your right knee over to the left side of your body.
5. Open your right arm to the right side in line with your shoulder. Rest your left hand on your right knee.
6. Turn your head to the right, gaze over the right shoulder, working to release the left knee and right shoulder towards the floor.
7. Hold pose for as long as feels comfortable. Draw right knee back into chest, and repeat on opposite side.

## **ENDNOTE**

Statistics indicate that problems with hips and knees are on the rise, and as the population ages, it will only worsen. That outcome is not inevitable if we protect our precious knee and hip joints by paying more attention to how we use them. Keeping them strong and healthy through awareness and a balanced exercise program will guarantee fluid, flexible movement that is both injury and pain free.

## **RESOURCES**

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