

# Sidelined

## Treating patellofemoral knee pain

By Jordan D. Metzl, MD



**A**manda, a 34-year-old triathlete from Australia, came into the office just last week. “G’Day Dr. Metzl,” she said. “I love to run, but here’s the problem.

The front of my knee is hurting so badly I can barely move. You’ve got to fix me. I want to be a fast Australian, but right now I’m so slow that the dingos are going to catch me.”

“Amanda, have you ever hurt your knees before?” I asked. “And tell me, how did this pain come about?” I added.

“Yeah, I had a similar type of pain last year, though it has become much worse since I started marathon training.” And, she said, “It seems to hurt mostly after I have run for more than an hour. It is especially bad when I am done. I look like an old lady going up and down the stairs.”

“And where specifically does it hurt?” I inquired.

“Doc, it’s here in the front of my knee, just under the kneecap. And if you fix it, I’ll buy you a can of Foster’s or a Violet Crumble candy bar!”

From this dialogue with Amanda I already had a pretty clear idea of her problem and a good idea of how we could fix her.

Patellofemoral knee pain, pain beneath the kneecap, is the most common type of knee pain that we see in the sports-medicine office. The patella (kneecap) is a sesamoid bone, a bone that sits inside a muscle-tendon unit. In the case of the knee, the patella is located inside the patellar tendon and connects to the quadriceps muscle group (quads), the most powerful group in the body.

The forces distributed around the patella are tremendous, and the direction in which the patella moves is related to the forces that come from the quads. For example, if an athlete has a strong lateral quad, the patella can pull outward. The patella also has a thin layer of cartilage lining underneath, known as articular cartilage. This lining layer helps the patella track



up and down along the front of the femur (thigh) bone.

So what about Amanda? How does her story fit into this picture?

Patellofemoral knee pain, irritation of the undersurface of the patella, is characterized by pain beneath the patella that hurts most post-activity, is especially sore going up and down stairs, tends not to swell and typically becomes most aggravated after about an hour of running, when the quads start to tire. Patellofemoral pain is also seen more frequently in women, due to the Q angle, the knock-kneed angle, which tends to occur more commonly in women than men due to their wider hips. This is in contrast to ITB syndrome (see the April 2005 Doctor’s Orders), which causes pain on the outside part of the knee usually within the first 15 minutes of exercise and has not been proven to be gender specific.

Most sports-medicine doctors will diagnose patellofemoral knee pain through a combination of patient history, physical examination and X-rays. The physical examination will often uncover weak, inflexible quad muscles and produce pain when the undersurface of the patella is palpated. X-rays are usually done when there is any swelling or if the pain has lasted for more

than a few months (or if the patient is older than 50). In these cases, the X-ray can help in a diagnosis of osteoarthritis, the most common form of arthritis. An MRI is used to evaluate the cartilage in the knee joint and is often advised if the pain doesn’t go away after several months of treatment or when a cartilage injury is suspected.

No two cases of patellofemoral pain are the same. In some athletes, the quad muscles need strengthening; in other cases there is an injury to the cartilage surface under the patella, and occasionally there is a problem with the mechanics of how an athlete is running or biking. Foot type has also been implicated in patellofemoral knee pain, with a pronated, rolling foot type often

fingered as chief suspect in patellofemoral pain.

Effective treatment of patellofemoral pain often involves referral to a physical therapist to work on body mechanics, plus strength, flexibility and sometimes running or biking style. Plus, motion-control shoes and orthotics are quite useful for athletes who have foot problems as a cause of their knee pain. Once the reasons for patellofemoral pain are defined, treatment is usually successful.

With Amanda, I diagnosed her with patellofemoral knee pain and sent her to a sports physical therapist. Since she pronated, I also advised her to purchase a pair of motion-control running shoes. While in physical therapy, Amanda worked on hip and knee strength and also improved her flexibility. During the treatment cycle, Amanda maintained her fitness through water running and biking, and when I saw her back in five weeks she was all better.

As long as she keeps up with her strengthening and stretching exercises, she should be running for many years to come. ▲

*Jordan D. Metzl, MD, is a sports-medicine specialist at the Hospital for Special Surgery in New York City. Dr. Metzl is a 25-time marathon runner and three-time Ironman finisher.*

John Segesta/wahoonmedia.com