The Knee

Knee Pain
The knee joint is the largest synovial joint in the body. Its small area of contact of the bone ends at any one time makes it dependent on ligaments for its stability.

Common presenting problems in order of frequency are pain, stiffness, swelling, clicking and locking. Excessive strains across the knee, such as a valgus force, are more likely to cause ligament injuries, while twisting injuries tend to cause meniscal tears.

A rapid onset of painful knee swelling (minutes to 1-4 hours) after injury indicates blood in the joint (hemarthrosis). Swelling after 1-2 days indicates synovial fluid (traumatic synovitis).
Disorders of the lumbosacral spine (L3 – S1 nerve roots) and of the hip joint (L3 innervation) refer pain to the knee.

Meniscal tears occur with minimal trauma if there is degeneration of the menisci.

The most common overuse problem of the knee is patellofemoral arthralgia.

Recurrent or chronic swelling of the knee usually indicates intra-articular pathology and can be due to patellofemoral pain syndrome, osteochondritis dissecans, degenerative joint disease or other arthritides.

Locking of the knee means a sudden inability to extend the knee fully while being able to flex the knee fully. The causes of true locking include:

- Torn meniscus
- Loose body
- Torn anterior cruciate ligament
- Avulsed anterior tibial spine
- Dislocated patella
- Synovial osteochondromatosis

Pain and spasm of the hamstrings can cause pseudolocking.
Overuse injuries of the knee develop gradually without swelling and are aggravated by activity and relieved by rest.

A plica is a redundant fold of synovium that failed to mature with the rest of the knee. The shortened tissue may become symptomatic when traumatized or when it binds down the patella.

The semitendinosus, sartorius and gracilis muscles form a conjoined tendon that inserts on the medial tibia to form the pes anserinus. The tendon is separated from the underlying bone by a bursa.

Knee sprains usually require traction/thrust manipulation. This particular distortion results from the joint being hyperextended. Knee sprains requiring compression/thrust are less common, but the pain is the same in that it hurts deep in the joint. If the knee hurts with compression and feels better with traction use traction thrust manipulation. If the knee hurts with traction but feels better with compression, use compression thrust manipulation.

A twisting injury to the knee can cause myofascial bands or enthesopathies along the medial joint line. Palpate for tenderness with your thumb and if the tenderness moves use myofascial band technique. If the tenderness stays localized, use enthesis compression. Enthesopathies tend to be more common than myofascial bands around the knee. Some myofascial bands about the knee can be short, a few inches only in length. An enthesisopathy of the attachment of the fibular collateral ligament can cause lateral knee pain.

Superficial fascial disruption of the knee produces diffuse pain with little or no swelling. Usually double hand spiral twist will correct this distortion.

Herniated trigger points can refer pain to the anterior knee from the rectus femoris, vastus medialis and adductor brevis. Trigger points in the vastus lateralis can cause lateral knee pain. A trigger point in the fibular collateral ligament can also cause lateral knee pain, as can dysfunction of the fibular head. Herniated trigger points in the gastrocnemius, biceps femurs and popliteus are
capable of amusing posterior knee pain. Involvement of the popliteus muscle will cause pain in the back of the knee when crouching and running or walking, especially downhill or downstairs.

Anterior knee pain can be caused by trigger points in the following muscles:
- Rectus femoris
- Vastus medialis
- Adductor longus and brevis

Trigger points in the vastus lateralis can cause lateral knee pain.

Posterior knee pain can be caused by trigger points in the following muscles:
- Gastrocnemius
- Biceps femoris
- Popliteus

Involvement of the popliteus will cause pain in the back of the knee when crouching and running or walking, especially downhill or downstairs.

Clicking may be due to an abnormality such as patellofemoral arthralgia or subluxation, a loose intra-articular body or a torn meniscus, but can occur in normal joints when people climb or squat.
Frequent locations of Enthesopathies are the medial and lateral inferior portion of the knee. Frequent location of the myofascial band will be the inferior portion of the knee, lateral and medial portion of the knee. At times there will be a U shape from the medial to the lateral. Often, anterior cruciate ligament tears will cause myofascial bands in the inferior quadriceps. This can be very successfully treated with myofascial band and double thumb technique.
Leg

The lower leg is supported by two bones and 13 muscles. The tibia bears approximately 5/6 of the body’s weight. The Fibula bears the other 1/6. The leg is divided into four compartments, divided by bony and fascial elements. All of the compartments may develop a compartment syndrome. In exercise, the fascial layers may increase 20%. In compartment syndrome, the fascial layers do not allow for accommodation of the additional volume. The result is the collapse of the venous return system and neurocompression. The most common cause is overexertion by those unaccustomed to a particular exercise.

Fascial Hernias can be caused by compartment syndromes or blunt trauma. A bulge of underlying tissue into upper tissue occurs. This may worsen with exercise.

Thrombophlebitis is a condition that will happen usually in the pelvis or the legs, especially the calf. This may happen subsequent to a severe injury. Usually there is erythema and swelling along the course of the vein involved. Pain can be reproduced with dorsiflexion of the foot with simultaneous compression of the calf. Claudication may occur after prolonged periods of sitting. Estrogen therapy or other conditions that may affect blood vessel clotting may be contributory. Signs of embolism or thrombosis may be accompanied by respiratory stress or chest pain.

The most frequent myofascial disruptions identified in the leg are myofascial bands in the calves and the anterior portion of the leg, and Enthesopathies along the shin, causing shin splints. Enthesopathies can also occur along the posterior portion of the knee at the medial tibial condyle. Another condition that can occur is a herniated trigger point in the belly of the gastocnemius. Slow deliberate pressure will usually correct these condition.

Medial Tibial Condyle
The posterior portion of the leg often has myofascial bands beginning at the Achilles tendon, and going straight up the Achilles tendon to the junction of the Gastrocnemius muscle. Slow deliberate myofascial band treatment is successful.

Another very successful treatment that we have identified is the diagnosis of neuropathy in the leg. We have found this to be a superficial fascial disruption and a spiral twist technique throughout the whole lower leg has been quite successful. Two of these cases were proven by EMG.

Foot and toe drop can be effectively treated by correcting herniated triggerpoints in the lateral peroneal muscles of the leg in the lateral calf. You will usually have an immediate strengthening of the big toe test.

Osgood Schlatter’s Disease responds very effectively to enthesis disruption treatment using ischemic compression on the anterior and lateral and medial portion of the lesion just below the patella over the growth plate. It is best to hold firm pressure. If you can get the case early (usually within 3 months), you can actually take the bump away. However, if you get to it later, though they will still have a bump at the lesion site, the pain will be gone. Most respond well with three visits, spaced a day apart. However occasionally you will need 1-2 more visits. In this author’s experience, only 1 case out of about 500 did not respond and in that case the child was had a significant growth spurt ongoing at the time.
References


Typaldos S. Orthopathic Medicine. The Unification of Orthopedics with Osteopathy through the Fascial Distortion Model. 3rd ed. Self Published, Bangor, Maine; 1999: 25, 100, 102.
