

Lower Extremities Dysfunctions

The lower extremity is considered to include the hip and the limb inferior to it. Colloquially, this is called the leg. However, in medicine, the leg refers to what is commonly called the calf. The lower extremity consists of the thigh, leg and foot. The lower extremity articulates with the rest of the skeleton at the femoroacetabular joint. This is a ball and socket joint where the femur articulates with a part of the hip called the acetabulum. An important principle is the angle of the femoral head. The femoral head angle is found by measuring the angle in the inferior medial aspect of the intersection of long axis of the neck of the femur and the shaft of the femur. The normal angle of the femoral head is between 120 and 135 degrees. If this angle is less than 120 degrees then this hip has coxa vara. If this angle is more than 135 degrees this hip has coxa valga. One important pathology of the knee is patellofemoral pain syndrome. Patellofemoral pain syndrome is a lateral deviation of the patella caused by imbalanced musculature of the thigh. Another knee pathology that is more common is osteoarthritis. Osteoarthritis is the degeneration of joint cartilage and bone leading to pain that progresses over a long period of time. The unhappy triad is a classic injury consisting of damage to the ACL, MCL and Medial Meniscus. At the knee another important angle can be measured. The Q Angle is an angle formed by the intersection of two imaginary lines. One line originates from the ASIS to the middle of the patella, and the second line is from the tibial tubercle to the middle of the patella. A normal Q angle is between 10 and 12 degrees. Fibular dysfunction commonly occurs following repeated ankle sprains and consists of a fibular head anteriorly or posteriorly displaced. The foot articulates with the rest of the lower extremity via the tibiotalar joint. The tibiotalar joint (also known as the talocrural joint) is a hinge joint made of the connection between the talus, the medial malleolus of the tibia and the lateral malleolus of the fibula. The Inversion ankle sprain is the most common form of ankle sprain. The anterior talofibular joint is the most common ligament injured in ankle sprains, followed by the calcaneofibular joint and the posterior talofibular joint. Eversion ankle sprains are an uncommon form of ankle sprain. This sprain can lead to injury to the deltoid ligament. The foot has three major arches: the medial longitudinal, lateral longitudinal and transverse arch. A common pathology of the foot is plantar fasciitis. Plantar Fasciitis is a condition in which inflammation of the plantar fascia, a dense connective tissue that runs from the calcaneus to the phalanges, causes pain in the heel. This pain is worse during the first few steps of the day.



PLAY PICMONIC

Hip

Femoroacetabular Joint

Femur-acid-tab-bull Joint

The femoroacetabular joint is a ball and socket joint where the femur articulates with a part of the hip called the acetabulum. The femur is the largest bone in the body with the following parts: head, neck, shaft, medial and lateral condyles. The femoral head articulates with a concave surface of the pelvis referred to as the acetabulum to form the femoroacetabular joint. This joint is held together by the surrounding musculature and 4 ligaments, the iliofemoral ligament, the ischiofemoral ligament, the pubofemoral ligament and capitis femoris. This joint is deepened by a structure called the acetabular labrum.

Femoral Head Angulation

Femoral Head Angle

The femoral head angle is found by measuring the angle in the inferior medial aspect of the long axis of the neck of the femur and the shaft of the femur. The normal angle of the femoral head is between 120 and 135 degrees. If this angle is less than 120 degrees then this hip has coxa vara. If this angle is more than 135 degrees this hip has coxa valga.

Knee

Patellofemoral Pain Syndrome

Potato-femur Pain-bolt

Patellofemoral pain syndrome is a lateral deviation of the patella caused by imbalanced musculature of the thigh. Prolonged exposure of the posterior aspect of the patella eventually causes deep pain in the knee. The treatment involves strengthening of the Vastus Medialis to balance the stronger Vastus Lateralis.

Q Angle

Q Angle

The Q Angle is an angle formed by the intersection of two imaginary lines. One line originates from the ASIS to the middle of the patella, and the second line is from the tibial tubercle to the middle of the patella. A normal Q angle is between 10 and 12 degrees. An increased Q angle is referred to as genu valgum and is colloquially called "knock kneed"; a decreased angle is genu varum and is colloquially called "bowlegged".

Osteoarthritis

Ostrich-King-Arthur

Osteoarthritis is the degeneration of joint cartilage and bone leading to pain that progresses over many years. Weight bearing joints are disproportionately affected by osteoarthritis. Symptoms include pain, joint swelling and decreased range of motion. In contrast with rheumatoid arthritis, osteoarthritis usually has pain that is exacerbated by activity.

Unhappy Triad

Unhappy Triangle-triad

The unhappy triad is the triad of injury to the ACL, MCL and Medial Meniscus. The most common cause of the unhappy triad is a blow to the lateral aspect of the knee while the ankle is immobilized. The unhappy triad is also called O'Donaghue's triad.

Fibula

Fibular Head Dysfunction

Fibber Head Dysfunctioning

There are two types of fibular head dysfunction, posterior fibular head and anterior fibular head, and they commonly occur in the context of repeated ankle sprains. The posterior fibular head resists anterior movement, and will have an internally rotated talus causing the foot to invert and plantarflex. The anterior fibular head resists posterior movement and has an externally rotated talus causing the foot to evert and dorsiflex.

Ankle

Tibiotalar Joint

Tibetan-ankle

The tibiotalar joint (also known as the talocrural joint) is a hinge joint made of the connection between the talus, the medial malleolus of the tibia and the lateral malleolus of the fibula.

Inversion Ankle Sprains

[Upside Down Ankle Spring](#)

Inversion ankle sprains are the most common form of ankle sprain. The anterior talofibular joint is the most common ligament injured in ankle sprains, followed by the calcaneofibular joint and the posterior talofibular joint. Ankle sprains are classified into grades 1, 2 and 3 depending on the amount of ligaments damaged, and into types 1, 2, and 3 depending on the amount of damage to the ankle ligaments.

Eversion Ankle Sprains

[Mt. Everest Everting Ankle Spring](#)

Eversion ankle sprains are an uncommon form of ankle sprain. This sprain can lead to injury to the deltoid ligament. Ankle sprains are classified into grades 1, 2 and 3 depending on the number of ligaments damaged, and into types 1, 2, and 3 depending on the amount of damage to the ankle ligaments.

Foot

Arches

[Arches](#)

The foot has three major arches: the medial longitudinal, lateral longitudinal and transverse arch. The medial longitudinal arch runs from the heel to the ball of the foot along the medial edge and is constituted by the 1st, 2nd and 3rd metatarsals, the cuneiforms, navicular and talus bones. The lateral longitudinal arch runs from the heel to the ball of the foot along the lateral edge and is constituted by the 4th and 5th metatarsals, the calcaneus, and cuboid bones. The third and final major arch is the transverse arch. The transverse arch is in the coronal plane and is made up of the navicular, cuneiforms and cuboid bones. Much like any other structure, somatic dysfunctions can occur in the arches of the foot. Somatic dysfunctions of the foot usually occur in the transverse arch; there are three common types of dysfunction in the transverse arch. The cuboid's medial edge will glide towards the plantar surface. The navicular's lateral edge will glide towards the plantar surface. The second cuneiform will be displaced inferiorly. Dysfunctions of the foot cause pain and are usually seen in long-distance runners.

Plantar Fasciitis

[Plant Fashion on Fire](#)

Plantar Fasciitis is a condition in which inflammation of the plantar fascia, a dense connective tissue that runs from the calcaneus to the phalanges, causes pain in the heel. This pain is worse during the first few steps of the day.