



A Physiotherapeutic View of Osgood-Schlatter's Disease

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Osgood-Schlatter's Disease (OSD) is an osteochondritis which is caused by overuse, it occurs at the epiphysis of the tibial tubercle. This condition most commonly occurs during the second growth spurt in adolescence, this is



Figure 1:

Osgood-Schlatter's Disease
Repeated contractions of the strong Quadriceps mechanism against a strong resistance from tight Hamstrings and Quadriceps muscles facilitate the softening and partial avulsion of this secondary ossification centre on the tibia.

between the ages of 11-15 years, it is especially prevalent in males. Overpronation is thought to have some contributing role in this debilitating disease.

Clinically, nearly all cases I have diagnosed as suffering from OSD have a biomechanical abnormality, at least one or both limbs have an excessively pronated position of the Subtalar Joint throughout midstance. They may also have a forefoot valgus or forefoot varus deformity with or without a rearfoot/tibial varus deformity. The rationale behind this lower quarter problem is that the internal rotation of the tibia has a proportional relationship to the amount of pronation that occurs. If this internal rotation is excessive, it creates a shearing effect at the tibial tubercle as the tibia is going into, and approaching maximum internal rotation.

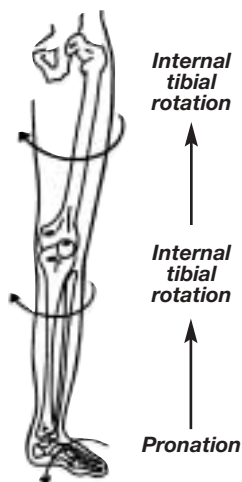


Diagram 2:

Internal rotation at knee

This loading coupled with a prolonged pronation period significantly contributes to the cause of the pain. If the subtalar joint does not start to supinate as it should in normal propulsion, the external rotation occurring at the femur during knee extension will create yet another shearing force at the tibial tubercle as the quadriceps pulls concentrically against an internally rotated tibia.

Simultaneously the quads mechanism via its tendon insertion is eccentrically loading. It is commonly accepted that muscles develop their highest degree of tensile loading when working in eccentric mode.

It is important to note at this point, that if a person has a subtalar joint axis that is above 42 degrees from the transverse plane they will experience a larger degree of tibial torsion than normal. These people may be more predisposed to overuse injuries (such as OSD) of the lower limbs. An axis of less than 42 degrees predisposes a person to foot pathologies.

Management: If a biomechanical problem exists as is often the norm, a functional orthotic is the number one selection in modalities. One has to eliminate excessive internal tibial rotation if you want to remove the causative factor, however, if there is associated tight calf involvement then this tightness should be addressed as a priority due to its contribution to hyperpronation. Once the internal tibial rotation/hyperpronation is being effectively managed, then any muscle tightness that may exist from the hip down can be stretched, allowing normal range of motion and posture to occur at joints. The Vastus Medialis Obliquus muscle is subsequently placed at a biomechanical disadvantage effecting control and timing of muscle contraction and thus its medial influence of patella tracking. The same can be said at the hip level. When a person has adopted a posture of hip flexion and internal rotation as a result of excessive subtalar joint pronation, tight hip flexors and internal rotator muscles will result. This creates muscle weakness in the hip external rotators. Appropriate stretching and strengthening of opposing muscle groups is imperative along with some form of orthotic prescription.

If there is an associated quads tightness present, then gradual stretching to the point of pain is indicated. In most cases, quads contraction reproduces the pain and using McConnell's taping will usually alleviate this pain in conjunction with a graded concentric and eccentric quads strengthening program. The athlete should be allowed to continue their normal sporting activities as long as pain is not present. If pain is present, a decrease in the level of activity is indicated. A good adjunct to the above mentioned of OSD is the application of ice and the use of magnetic field therapy to control the inflammatory response.#

