

Turf Toe

Turf toe gets no respect. Let's take a closer look at the causes of turf toe and see how you can treat it more effectively.

- Turf toe is actually a form of hallux limitus.
- Hallux limitus is typically described as pain and progressive decrease in the range of motion of the first metatarsal phalangeal joint (MPJ).
- The onset of hallux limitus is due to the following:

Functional hallux limitus - biomechanical function that results in metatarsus primus elevatus as well as subsequent repetitive jamming of the initial MPJ.

- Direct physical injury - injury to the articular cartilage or subchondral bone.
- These injuries may be due impaction injuries or hyperextension/flexion of the first MPJ.

Other conditions - synovitis, crystal deposition diseases such as gout, systemic arthritis, external physical affects such as Dupuytren's contracture, etc.

But before we go any further, we need to understand that the terms turf toe and hallux limitus aren't really synonymous. The fundamental difference between the two phrases is the patient population that they affect. Turf toe is a term used in athletic bags talking about any injuries of the great toe joint. Consequently, discussions about turf toe will focus on the initial two factors behind hallux limitus mentioned above; functional hallux limitus and direct physical injury. On the other hand, when we discuss hallux limitus, we're actually referring to a broader, non-athletic' patient population and need to include all three causes of hallux limitus.



“ Think of turf toe (hallux limitus) as an isolated case of osteoarthritis limited to the first MPJ. Whether the injury is acute or due to repetitive loading, the effect will be a lot that is placed on the subchondral bone that is greater than what the bone fragments can tolerate. As the injury progresses, a series of small fractures will develop in the subchondral bone. The typical soft spongy character of the metaphyseal bone changes to become brittle and hard. The result is that the articular cartilage loses its' fundamental support and becomes susceptible to damage. Juxtachondral eburnation, osteophytes, lipping, spurring; call them what you like, but what you see on your x-ray is the slow progressive destruction of the joint.

What's the actual physical change that takes place in the joint with turf toe? As an easy analogy, consider the changes that takes place when an apple falls from a height and is damaged. The skin of the apple appears intact but the underlying pulp is damaged. In the case of turf toe (hallux limitus), think of the skin of the apple as the cartilage of the joint and the harmed pulp of the apple is the subchondral bone. Moderate cases of turf toe (hallux limitus), result in little damage to the subchondral bone and can merely exhibit signs of inflammatory change within the shared.

Most Authors Would Refer to These Cases as Stage One Turf Toe (Hallux Limitus)

More severe cases result in damage to the joint surface, the subchondral bone or equally. These are the stage two and three cases of turf toe (hallux limitus) that show visible change on x-ray. As the subchondral bone gets increasingly damaged, it will create an uneven helping surface for the cartilage. An increase in activity results in uneven loading of the combined as a result of compression injury of the subchondral bone.

The start of turf toe usually the same? Turf toe that is the result of functional hallux limitus is going to be insidious in onset. Functional hallux limitus will usually be seen in younger athletes as they attempt to improve their activity. It may not occur during the initial athletic season, or the second, but when it does start to cause pain, the onset will be more frequent and more severe, varying with activity. This profile of onset is simply due to the fact that the athlete is recreating the injury with every step.

Turf Toe the Result of a Direct Injury to the Joint May or May Not be Obvious

Athletes may not remember an incident of pain since they're frequently distracted by the event or game in which these are involved. The onset of direct injury to the joint may be unexpected, but also may be insidious becoming increasingly more painful as the season progresses. The *joint pain* will diminish with rest only to recur along with increased activity. It's not unusual to see the signs of turf toe resolve in the off season only to recur with renewed exercise.

Treatment of turf toe varies with the type of healthcare provider and includes the use of rest, shoe modifications, orthotics, steroid injections and surgery. The success of non-surgical treatment will vary with the degree of injury, the rate at which the injury is healing and also how much osteoarthritis has occurred. We see varying degrees of success with orthotics that promote plantarflexion of the very first ray, effectively treating metatarsus primus elevatus and peroneus longus dysfunction.

Simple Arch Supports can Make a Significant Difference in the Symptoms of Turf Toe

Should our patient not necessarily react to conservative care in a reasonable time period, we are not reluctant to suggest surgical revision to address the problem may it be revisions of the shared defect, shortening of a long first metatarsal or structural revision of metatarsus primus elevatus. As mentioned before, the clinical appearance of dorsal lipping or visible radiographic changes are suggestive of moderately advanced osteoarthritis, a condition that is only repaired by joint revision or replacement.

When treating turf toe be sure to recognize the fact that there is no lack of feeling innervation in articular cartilage. Pain associated with stage one turf toe (hallux limitus) will be either synovial pain or bone pain. If we recognize that painful stage one turf toe hallux limitus) may be due to be able to bone pain, we then understand that turf toe should be taken care of aggressively to be able to make sure the long term stability of the joint.

Nomenclature:

First MPJ - the big toe joint Metatarsus primus elevatus - a functional or even structural position of the very first metatarsal First metatarsal - the foot bone making up the proximal part of the big toe joint Hallux - the great toe.



Joint Pain/Gout

Anatomy:

The great toe joint, or first metatarsal joint consists of two bones. The proximal bone is the first metatarsal and the distal is named the proximal phalanx or hallux. These two bone move against each other in a up and down motion through what we refer to as the sagittal plane. Biomechanics: The motion of the great toe joint is dependant upon the plantarflexion of the first metatarsal. If the first metatarsal is limited in its' ability to plantarflex, the joint will jam resulting in functional hallux limitus, which as we know is one of the causes of turf toe.

Symptoms:

Turf toe that is the result of functional hallux limitus is going to be insidious in onset. Functional hallux limitus will often be seen in youthful sportsmen as they try to improve their activity. It may not happen during the first athletic season, or the second, but when it does start to hurt, the onset will be more frequent and more severe, varying with activity. This profile of onset is simply due to the fact that the athlete is recreating the injury with every step. Turf toe caused by a direct injury to the joint may or may not be obvious.

Athletes may not remember an incident of pain since these are often distracted by the event or game in which they're required. The onset of immediate injury to the joint could be abrupt, but also may be insidious becoming increasingly a lot more painful as the season progresses. The joint pain can subside with rest only to recur with increased activity. It's not unusual to see symptoms of turf toe resolve in the off season only to recur with renewed exercise.

Differential Diagnosis:

The differential diagnosis of turf foot includes; ArthritisFracture Gout Joint an infection Shared or bone tissue tumor Synovitis.

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“ Susie Hart

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