



## What is Tarsal Hyperextension and how can an orthosis help?

The tarsus is composed of 5 joints made up by the 7 tarsal bones, 2 crural bones (tibia and fibula), and 4-5 metatarsal bones. Multiple ligaments are responsible for stability of this complex joint. Injuries can occur at any of the joints, however, most commonly instability is diagnosed at the level of the tarsocrural, proximal intertarsal (i.e. talocalcaneocentral and calcaneoquartal) or tarsometatarsal joint. Most commonly, instability is either involving the collateral or dorsal ligaments. Tarsal hyperextension on the other hand is a less, well described phenomenon thought to be breed specific to some degree, occur due to a laxity of the ligaments or as a compensation mechanism due to problems found more proximal in limb. Such problems include hip or stifle pathology (particularly severe luxating patellae).

### What will your vet be looking for?

Your veterinarian will complete a full evaluation on your pet and will likely want to take radiographs of the tarsus, hips and stifles. In some cases, they may discuss a CT with you instead of the standard radiographs. If your veterinarian does not find any abnormalities with the joints, they will want to carefully discuss options with you. It is typically not recommended to splint a patient that has tarsal hyperextension as it has not been proven that splinting will improve this condition. If the tarsal hyperextension is mild and possibly due to your pet's conformation and breed, you and your vet may choose to keep an eye on them and only intervene if the problem appears to get worse. If the hyperextension is severe (leg is straight behind and at times can almost bend the opposite way) you and your vet may discuss the use of a custom-made orthosis to help prevent that unwanted movement.

Because an orthosis is not the correct therapy for all patients, before choosing an orthosis, the following points are important to keep in mind:

1. **Device design is paramount to success.** Careful consideration is taken in designing a device and its specific components. Important clinical variables surround use of a paw segment and whether articulation by way of hinges is possible.
  - a. The paw segment is required typically with a severe tarsal hyperextension case, without a paw segment these patients are at risk for poor control of their pathology and most importantly, serious skin trauma/wounds due to uncontrolled pressure and friction.
  - b. Articulation (hinging) is ideal whenever possible in order to provide as close to normal limb use as possible. Articulation is typically possible with these cases at both the tarsus and the paw. We are usually able to allow normal tarsal flexion in the orthosis, and will add what are called Dacron (nylon) extension stops at the joint to prevent the tarsus from hyperextending past a certain point. A Loyal



Companion will discuss design recommendations after the impression, paperwork and all media is received.

2. **Adjustments are expected and are a normal part of the custom orthosis process.** The device is custom-made for your dog. Every effort is made to accurately fit the device. If adjustments are required, A Loyal Companion can make most initial adjustments. If more extensive adjustments are required, the device will be shipped to OrthoPets with a turnaround time of 1-3 business days excluding shipping time. Even so, your dog is much more active at home than here at the clinic. Think of the last time you bought a new pair of hiking or ski boots; they needed some break-in time right? Increased activity and activity intensity can expose fit issues requiring adjustment.
3. **Follow-up is critical to success.** Proper use of an orthosis is necessary to meet therapeutic goals and to ensure its safe application over the lifetime of your dog or the duration of injury healing. Please discuss a follow up plan with your veterinarian and A Loyal Companion.
4. **Rehabilitation, the first key for success.** Most dogs adapt quickly to wearing an orthosis. Behavioral techniques can facilitate this. Also, your dog will need to learn basic skills while wearing the device. These include: transitions (sitting, lying down, and getting up), stairs, getting into vehicles safely, managing on different types of surfaces (ground, carpet, hardwood floor, etc.). Finally, orthopedic injury leads to compensatory abnormal movement and associated muscle strain and weakness. The best way to ensure the highest level of success with an orthosis is to follow a rehabilitation schedule.
5. **A proactive approach to arthritis management is the second key to long-term success.** If the joint itself is injured rather than a ligament alone, osteoarthritis may develop. Just as rehabilitation is important, arthritis management is key as well. Steps taken early and continued throughout your dog's lifetime will make a difference in terms of regaining and maintaining comfort and an active lifestyle well into the senior years. Consult with your doctor for a comprehensive pain management plan.



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