

How To Beat An Insertional Achilles Injury

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While the Achilles tendon may be injured in several different locations, one of the worst running injuries occurs when the Achilles is damaged directly at its attachment on the heel. Referred to as an insertional Achilles tendinitis, this type of Achilles injury is notoriously difficult to treat. In a study evaluating the success rate associated with conventional exercises, only 32% of athletes presenting with insertional Achilles tendinitis improved over a 12-week training period (1). This compares to the 80-90% success rate when the same exercises are used to treat non-insertional Achilles injuries. This frustrating injury is more likely to occur in high-arched, inflexible runners, particularly if they possess a Haglund's deformity (see Fig. 1).

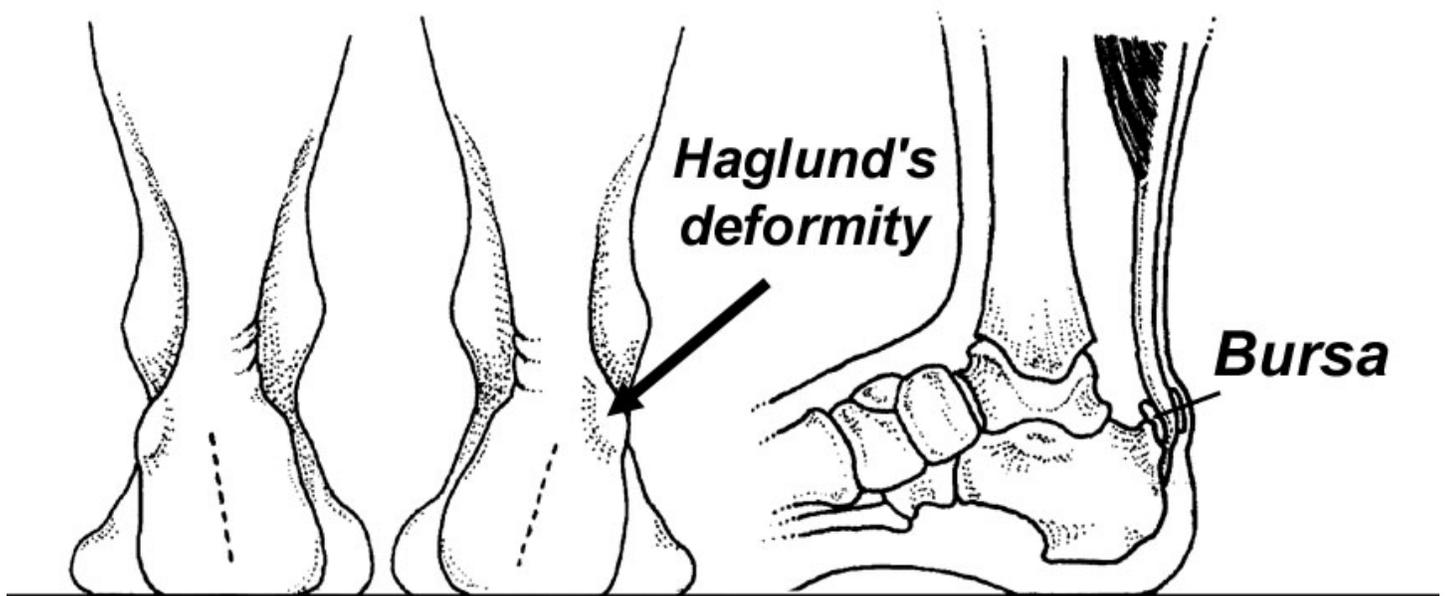


Figure 1. Insertional Achilles tendinitis injuries are frequently associated with a bony prominence called a Haglund's deformity. Because of chronic stress at the Achilles attachment point, an inflamed bursa often forms between the Achilles tendon and the heel.

Until recently, researchers believed the biomechanical cause for the development of insertional Achilles tendinitis was pretty simple: excessive running causes the Achilles tendon to break down on the back portion of the Achilles attachment, where pulling forces are the greatest. While this makes perfect sense, recent research has shown that just the opposite is true: the Achilles tendon almost always breaks down in the forward section of the tendon, where pulling forces are the lowest (Fig. 2). By placing strain gauges inside different sections of the Achilles tendons and then loading the tendons with the ankle positioned in a variety of angles, researchers from the University of North Carolina discovered that the back portion of the Achilles tendon is exposed to far greater

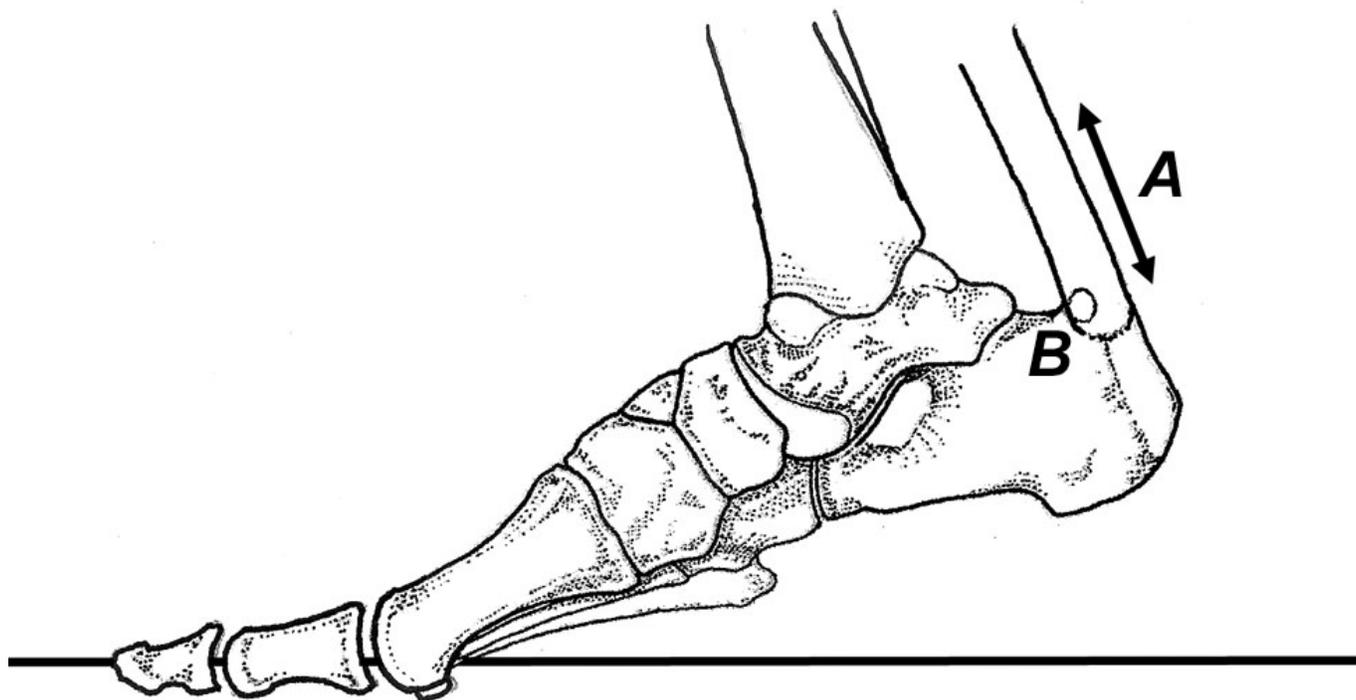


Figure 2. Location of Achilles insertional injuries. Tension in the Achilles tendon during pushoff places greater strain on the back of the Achilles tendon (A). Paradoxically, almost all insertional Achilles tendon injuries occur in the forward section of the Achilles tendon (B).

amounts of strain (particularly when the ankle was moved upward) while the forward section of the tendon, which is the section most frequently damaged with insertional tendinitis, was exposed to very low loads (2). The authors suggest that the lack of stress on the forward aspect of the Achilles tendon (which they referred to as a tension shielding effect) may cause that section to weaken and eventually fail. As a result, the treatment of an Achilles insertional tendinitis should be to strengthen the forward-most aspect of the tendon. This can be accomplished by performing a series of eccentric load exercises through a partial range of motion (Fig. 3). It is particularly important to exercise the Achilles tendon with the ankle maximally plantarflexed (i.e., standing way up on tiptoes), because this position places greater amounts of strain on the more frequently damaged forward portion of the tendon. Compared to conventional Achilles exercises, the partial range Achilles exercises have considerably better outcomes. In a pilot study of 27 people who had been suffering with insertional Achilles tendinitis for more than 2 years, nearly 70% responded favorably to the partial range of motion exercises in just 3 months (3).

Another factor to consider when managing insertional Achilles injuries is that the heel counter of the running shoe should not contact the damaged portion of the Achilles insertion. Over the past few years, many running shoe manufacturers have added a forward angulation to the upper portion of the heel counter that causes it to project directly into the Achilles tendon. This addition often pushes into the back the Achilles insertion causing chronic inflammation, particularly if a Haglund's deformity is present. Treatment in this situation is to look for sneakers that do not contact the Achilles insertion. A simple alternative is to cut off the upper back section of the heel counter so it no longer touches the tendon. It is also important to avoid heavy motion control sneakers when treating Achilles tendon injuries because their inherent stiffness increases the length of the lever arm from the ankle to the forefoot, thereby increasing strain on the Achilles tendon.

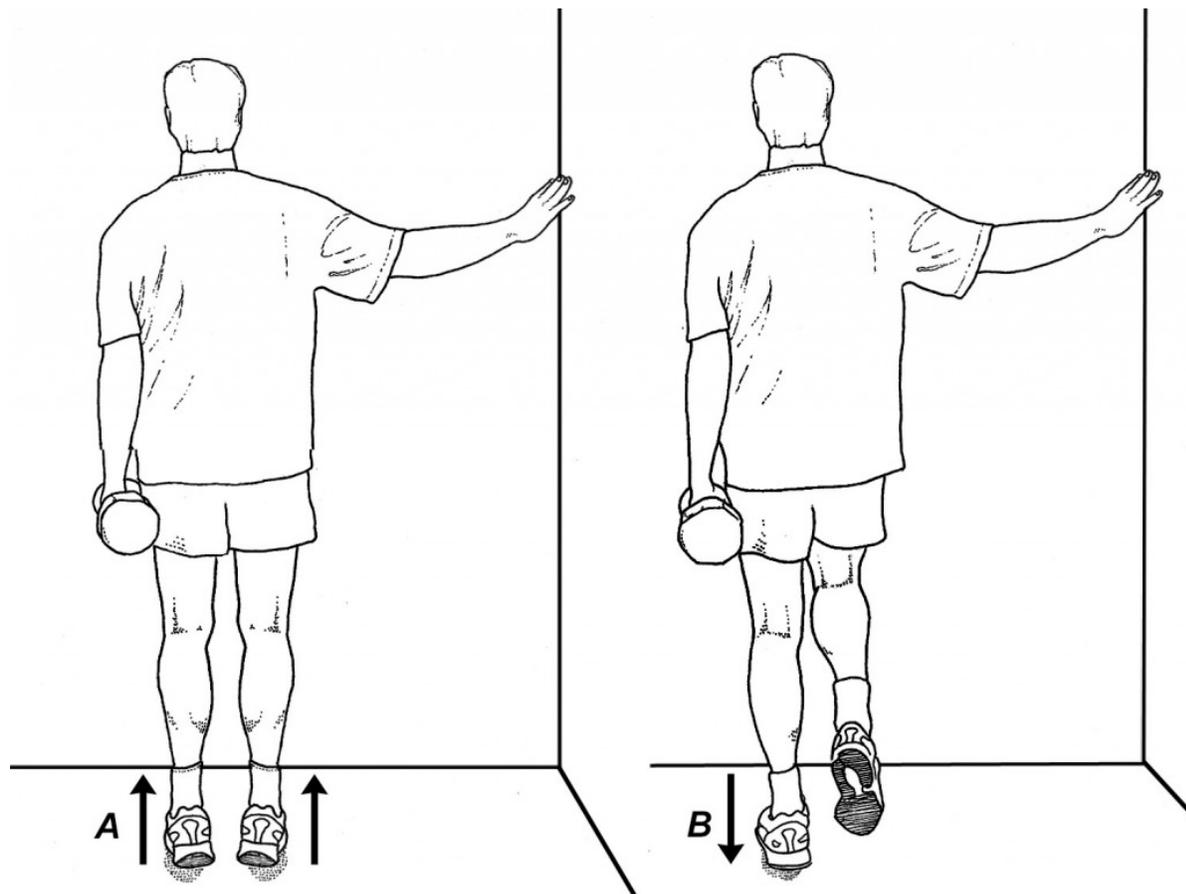


Figure 3. Insertional Achilles tendinitis exercise. Standing on a level surface while holding a weight with one hand and balancing against the wall with the other, raise both heels as high as you can (A) and then slowly lower yourself on just the injured leg (B). Three sets of 15 repetitions are performed daily on both the injured and uninjured side. Use enough weight to produce fatigue.

The final consideration when managing insertional Achilles injuries is that you should avoid taking common anti-inflammatories, such as indomethacin and celecoxib, which have been recently shown to significantly reduce tendon-to-bone healing in laboratory animals (4). Although effective for pain relief, the reduced tendon-to-bone healing increases the likelihood that an insertional Achilles injury will become chronic. Rather than temporarily reducing inflammation with drugs, the preferred approach is to correct the problem by strengthening the tendon with exercises.

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