

The Treatment and Prevention of Ankle Sprains: Does Bracing Help?



Introduction

Ankle sprains occur frequently in all sports. In volleyball, however, ankle sprains occur more frequently than any other injury. In a 16-year survey of NCAA women's volleyball, ankle sprains were the most common injury sustained during both practice and games. Ankle sprains occurred more frequently during games than practice, accounting for almost half of all game time injuries seen. It is felt that the more aggressive style of play during game situations predisposed the players to an increased risk of injury. Most ankle sprains occurred to players in front row positions and were associated with jumping or landing. Many occurred when the blocker landed on the foot of an opposing attacker who had crossed the centerline.

Many athletes see ankle sprains as only minor injuries, reporting, "it's only a sprain," to their coach or trainer. A significant number of ankle sprains, however, result in both loss of playing time and increased risk of future sprains and disability (recurrent sprains.) In the NCAA women volleyball players 16 year survey, almost 25% of ankle sprains resulted in 10 or more days of lost practice and game time. Furthermore, other studies have shown a re-injury rate, (recurrent sprain,) of up to 70%. Clearly, as illustrated below in this grade 3 ankle sprain, these injuries may result in significant injury and disability.

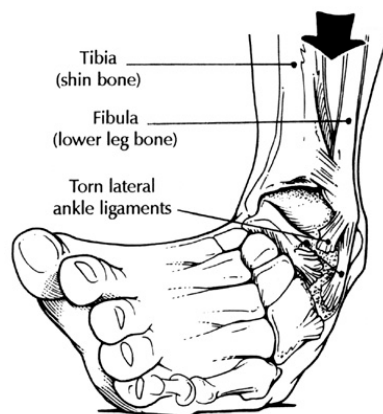


Thus, any treatment to prevent ankle sprains from occurring or to minimize the effects of an injury once it occurs would be of value to the competitive volleyball athlete.

Diagnosis of Ankle Sprains

A sprain occurs when ligaments, thick, rope-like bands of connective tissue that hold joints together, stretch or tear. Sprains are classified according to the location and severity of the ligament injury. The most common severity classification uses a grading system with a grade 1 sprain denoting stretching or minor tearing of a ligament, a grade 2 sprain indicating partial tear of the ligament, and a grade 3 sprain resulting from complete rupture of the ligament. As the grade of injury increases so does the severity of symptoms such as pain, swelling, and risk of recurrent sprain. A grade 3 sprain typically results in significant disability and lost playing time.

Ankle sprains most commonly involve the lateral (outside) ligaments of the ankle. Most often, these sprains occur when the foot rolls inward (inversion sprain.)



Treatment and Prevention of Ankle Sprains

The treatment and prevention of ankle sprains should focus on answering three questions. First, can we prevent the first time occurrence of an ankle sprain? Second, in those athletes that sustain a sprain, how can we most effectively treat the injury and quickly, yet safely, return an athlete to play? Lastly, once an athlete has returned to play, can we minimize the high rate of recurrent sprains?

As with any acute injury, initial care involves the standard "R.I.C.E." treatment which includes, Rest, Ice, Compression, and Elevation. This initial treatment, if pursued aggressively, can quickly be followed by a rehabilitation program aimed at restoring normal ankle flexibility and strength. In addition, ankle bracing has been suggested as a means to both prevent first time, as well as, recurrent sprains.

Ankle Bracing as a Means to Prevent Ankle Sprains

Many athletes, trainers, and coaches have advocated ankle bracing as a means to prevent both initial and recurrent ankle sprains. In fact, many volleyball athletes at the high school and collegiate level are required, or highly encouraged, to brace their ankles for practice and competition.

Before developing guidelines or requirements for the use of ankle bracing, we should ask two questions. First, does evidence support the use of braces in preventing injury? Second, does ankle bracing have negative effects on performance such as decreased speed, jump height, mobility, etc?

Although available in many styles and colors, ankle braces basically fall into one of two types. One type consists of a lace-up or pull-over elastic support that provides circumferential support to the ankle. The other provides a more rigid, stirrup support for both sides of the ankle where the sprain may occur. Both designs attempt to prevent sprains from occurring by providing support and stability to the ankle.



Several large studies have compared the rate of first time ankle sprains as well as re-injury in athletes using a brace with athletes not using a brace. In those athletes without a previous injury, no protective effect of ankle bracing could be shown. For those athletes, however, who had previously sprained their ankle, the rate of re-injury was decreased by 50%. Ankle bracing, as a means to prevent re-injury, appeared most effective in the first 6-12 months after the initial injury. Ankle bracing appeared most effective when combined with both a balance training program and a technical training emphasizing take-off and landing technique for blocking and attacking. In addition, by combining these programs, a decrease in first time sprains was also seen.

Does Ankle Bracing Affect Performance?

Ankle bracing works by restricting the mobility of the ankle joint. One concern with bracing is a potential negative effect on athletic performance. Various performance measures including sprint speed, agility, and vertical jump height have been compared in athletes while wearing and not wearing braces. In those volleyball players who had never

injured their ankle, subtle, but insignificant decreases in performance occurred. The largest deficit, a 1% decrease in sprint speed, occurred with a lace-up style brace.

In those players with previous ankle injuries, however, the group wearing a brace performed considerably better in all performance measures than those who did not. The type of brace worn did not seem to matter.

Conclusion:

Ankle sprains comprise nearly half of all volleyball injuries and occur more commonly than any other volleyball related injury. Prompt and effective treatment, however, may minimize lost play time and reduce the frequency of re-injury. The following guidelines, based on the literature, appear reasonable as effective means to minimize the impact of ankle sprains on volleyball athletes:

- Provide training in take-off and landing technique for all hitters and blockers.
- Provide balance training (proprioception) for all players.
- Treat sprains aggressively with R.I.C.E. followed by a rehabilitation program emphasizing early range of motion and strengthening exercises.
- Encourage (require?) athletes less than one year out from a previous sprain to wear an ankle brace of their choice for practice and competition.
- Allow, but not require, athletes with no history of ankle injury to wear an ankle brace of their choice.