



REHAB / RECOVERY / PHYSIOTHERAPY

Active Care for Ankle Sprains

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An ankle sprain is a common injury, since this joint is required to perform complex movements under high forces during normal walking. In fact, 10 percent of all emergency-room visits are ankle-sprain related and an estimated 25,000 ankle sprains occur in the United States daily.

Ankle stability should be of particular interest to those who participate in recreational activities and sports requiring running and jumping - ankle sprains are the most common injury in sports, accounting for approximately 40 percent of all sports-related injuries. Proper evaluation and management in the early stages of an ankle sprain are important in preventing chronic instabilities. With appropriate treatment, significant improvements in function and stability can be achieved, even in patients with long-standing ankle problems.

Acute Care

Inversion sprains are the most common, occurring 85 percent of the time and most often affecting the lateral side of the ankle. These occur after an injury that causes inversion of the ankle or a combination of inversion and plantar flexion.¹⁻² Long-term effects (side effects) can occur in up to 50 percent of patients.³

Initial treatment of ankle sprains is the standard RICE protocol, which has more recently been [adapted to PRICE](#) (Protection of the injured joint with biomechanically appropriate brace or support; Restricted activity (contralateral exercising); Ice (cryotherapy); Compression (elastic); and Elevation (above heart level)). This major change in the treatment of acute injuries affects most all soft-tissue traumas. Even with severe ankle sprains, using these procedures has been shown to speed recovery and return to sports.



With the injured joint protected, patients can be encouraged to continue their activities (rather than using the now-discredited bed rest), with some restrictions. In the case of ankle sprains, this entails the use of a lightweight, but laterally rigid brace, which protects against inversion and eversion. If a patient has been placed in a walking cast rather than a mobilizing brace, frequent prolonged stretching of the Achilles tendon must be performed in order to prevent shortening.

A study by Konradsen, et al., found that even in severe, grade III lateral ankle sprains (with joint instability), encouraging early activation and walking in a functional brace produced a more rapid return to full work and sports activities than use of a traditional immobilizing cast.⁴ The long-term results were equally good, with a minimum of chronic instability. This is consistent with the reports from studies of injuries to other joints, which demonstrate generally better results by encouraging early activity of injured joints, while providing restrictions and protection from further damage.

Exercise Protocols

During the initial acute stage, exercises for the damaged ankle are not appropriate. However, general full-body conditioning should be continued, using methods which do not place undue stress on the healing ankle (a stationary cycle with pedal straps is recommended).⁵ Additionally, vigorous exercise of the contralateral joint's muscles has been shown to provide a healing stimulus and result in more rapid return to activities.⁶ This is called *crossover* or *cross-education*, and is based on the neurological interconnections between extremities.

In the case of lateral ankle (inversion) sprains, the peroneus muscles should be targeted. The patient

can begin the rehabilitation process by frequently exercising the peroneus muscles of the uninjured ankle, using elastic tubing to perform eversion exercises. Since a recent study of cross-education of the quadriceps found better results when the lengthening (eccentric) muscle action was emphasized. I suggest patients focus more attention and spend more time on the returning portion of the exercise.⁷

In the early (subacute) phase, as healing progresses, patients should begin to perform non-resistive active exercises concentrating on mobility of the injured ankle. This usually takes the form of writing the alphabet with the foot while seated. The entire alphabet should be performed several times a day. This may be accompanied by isometric exercises for the peroneus muscles. The seated patient pushes the foot outward (laterally) against an immovable object, holding each contraction for 5 seconds or longer.

Once the joint can be passively moved through a normal range, isotonic resistance exercising of the peroneal muscles using elastic tubing should be initiated.⁸ At first, these exercises should be performed in a sitting position with the heel resting on the floor, to reduce the forces on the ankle joint while still maintaining functional alignment.

As strength builds, the patient should progress to standing during the exercises in order to retrain the ankle support muscles in a closed-chain position. Additional sport-specific exercises should be introduced to ensure the athlete has all the strength and mobility to participate in sports. Examples include rope jumping, progressing to side-to-side jumps; [carioca steps](#); figure-eight runs; and even backward running. Plyometric procedures should be introduced only when all other capabilities have returned to pre-injury capacity.

Proprioceptive Training

One reason some ankle injuries become chronic or recur appears to be the loss of the normal coordination of the muscles surrounding the ankle, rather than simply their strength.⁹ An easy test for this type of problem is to have the patient stand on each leg with the eyes open and then closed. Check to see if there is less capability of the injured leg. Practice of the one-legged stance and use of "wobble" boards may be required to regain normal proprioceptive coordination. Subotnick recommends that an athlete should be able to demonstrate a "stork stand" for a least 1 minute on the injured leg before being allowed to return to full competition.¹⁰

Other common exercises emphasizing neuromuscular control include modified Romberg exercises and "T"-band kicks. One recent study showed patients who completed a 12-week balance and proprioceptive training routine were more than twice as likely to not experience chronic lateral ankle sprains.¹¹

Orthotics

In many patients, a custom-made functional orthotic also can be helpful in preventing future (and often more disabling) damage to the injured ankle. A careful evaluation of the biomechanics of the foot and ankle will reveal some patients who have underlying anatomical or functional problems. Particularly in the case of athletes, use of a stabilizing, custom-fitted orthotic with good torsional rigidity should be considered. Orthotic support and control of inversion / eversion are necessary and highly recommended whenever there is a deficit in biomechanical function.¹³⁻¹⁵

Recent studies demonstrate that even in severe ankle injuries, a well-informed conservative and active treatment approach will result in good outcomes. Using active rehabilitation concepts, including the use of contralateral exercising, isotonic exercises with elastic tubing and proprioceptive training techniques, most doctors of chiropractic can manage acute ankle sprain injuries quite well. In some patients, custom orthotics will be needed to help prevent future problems and joint degeneration.

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