Ankle sprains are the most common athletic injury, and thus athletic trainers and therapists seek clinical interventions that improve short-term and long-term outcomes. The purpose of this report is to present findings from a systematic review of randomized clinical trials that have investigated the effectiveness of conservative strategies for ankle sprain management. This report discusses the results of the systematic review and provides clinical commentary aimed specifically toward athletic trainers and therapists.

Source

Key Points
- Ankle sprains are very common and have a high reinjury rate.
- Non-steroidal anti-inflammatory drugs, comfrey root ointment, and joint mobilizations improve short term symptoms following ankle sprain.
- Limited evidence supports the use of rest, ice, compression, and elevation.
- High-quality randomized clinical trials are needed to develop best practices for treatment of ankle sprain.

Study Purpose
The study is a systematic review of randomized clinical trials to determine which clinical interventions best augment early movement and external support following ankle sprains. In addition, the effectiveness of various clinical techniques in reducing symptoms (e.g. pain, swelling, loss of function) and improving outcomes were presented.

Summary of Methods
Computer databases were searched for papers that examined conservative strategies in the management of ankle sprains between 1993 and 2005. Initial studies numbering 4,082 were identified. They were then examined for conformity to the following inclusion criteria:

1. They had to be randomized controlled trials.
2. They had to be published in English as a full paper.
3. They had to include adult subjects with acute ankle sprains.
4. They had to utilize exercise, electrophysical, complementary, or pharmacological interventions.

Additional screening reduced the number of eligible studies to 23. These studies were classified according to use of electrophysical agents (9 studies; ice, compression, electrical stimulation, ultrasound, and low-level laser), non-steroidal anti-inflammatory drugs (7 studies), manual therapy techniques (2 studies), complementary agents (2 studies), or hyperbaric treatment (1 study). Data for changes in pain, swelling, function, reinjury...
and improvement in function were extracted and summarized from each of the studies.

**Results and Relevance of Study Finding**

Ankle sprain is the most common injury in high school and collegiate athletics. Athletic trainers and therapists typically manage ankle sprains with controlled mobilization and external support, in combination with a variety of clinical interventions. The use of rest, ice, compression, and elevation (RICE) is almost universally practiced and accepted as useful in the management of acute pain and swelling. Clinicians believe that early pain and swelling management facilitates early exercise and weight-bearing, which hastens recovery. Unfortunately, limited high-quality research evidence supports these clinical notions and practices.\(^1\) Bleakley et al. reported that there is little evidence to support the use of RICE or individual components of the intervention regimen to accelerate recovery. Some marginal evidence for cryotherapy and compression does exist, but no consensus exists regarding time of intervention, mode of treatment, treatment duration, or frequency of intervention can be established from the current literature.

In addition, clinicians use other interventions including but not limited to non-steroidal anti-inflammatory drugs, exercise, electrical stimulation, ultrasound, joint mobilizations, and alternative treatments in the belief that they hasten recovery. The systematic review reported that three interventions, (a) non-steroidal anti-inflammatory drugs, (b) joint mobilizations, and (c) comfrey ointment, improved short-term recovery following acute ankle sprain.

**Non-Steroidal Anti-Inflammatory Drugs**

The review reported that there is strong evidence from multiple randomized clinical trials that non-steroidal anti-inflammatory drugs (NSAIDs), both oral and topical, reduce pain and swelling following ankle sprain. The use of anti-inflammatory dosage NSAIDs is a clinical decision made by the supervising physician. Dosages reported in the source article were consistent with a standard prescription dose. Athletes do take NSAIDs under their own volition, however, whether recommended or discouraged by the physicians. None of the reviewed trials reported significant adverse effects, but long term follow-up was performed in only one trial. The use of NSAIDs remains controversial, as some suggest that NSAIDs may inhibit long-term healing and can have significant side effects.\(^2\) In addition, some suggest that NSAIDs analgesic properties decrease pain to a level that allows the patient may perform exercise and functional activity that should be avoided during the acute phase of injury.

**Joint Mobilization**

Following ankle sprain, patients typically have restricted dorsiflexion, which may be due to restriction of posterior gliding of the talus. Joint mobilizations are passive manual techniques that are purported to restore range of motion (ROM) and decrease pain, which may improve function. Green et al.\(^3\) applied a posterior to anterior joint mobilization to the talus and a standardized RICE protocol and observed an increase in dorsiflexion following six sessions as compared to subjects who received RICE alone. Another trial reported that a one-time application of an osteopathic technique improved pain and swelling. Though the specific techniques were not detailed in the article, they were described as soft tissue techniques that could include simple torsion techniques, soft tissue and fascial techniques, strain and counter-strain techniques, and lymphatic drainage techniques.\(^4\) In addition, Landrum et al.\(^5\) reported that one 30-second application of an anterior to posterior talocrural joint mobilization increased ankle dorsiflexion ROM. They suggested that this may lend support to the concept of correcting anterior positional faults following ankle sprain as suggested by some clinicians.

**Alternative Treatments**

Alternative treatments continue to gain popularity among athletes and the general public in the belief that “natural” interventions produce satisfactory outcomes and have minimal side-effects, but these contentions have not been experimentally confirmed. It is unknown how many patients seek alternative treatments for ankle sprain, but anecdotally, the numbers seem to be increasing as patients often inquire about drug-free interventions. Bleakley et al.\(^6\) reported moderate evidence exists that ointments containing extracts of comfrey root were effective in reducing pain and improving function following acute ankle sprain. In a large double-blind clinical trial, Kucera et al.\(^7\) applied a topical comfrey product 4-5 times per day to acute ankle sprains and reported significant decreases in pain, swelling, and functional impairment.