

## Heat or ice for acute ankle sprain?

### ■ EVIDENCE-BASED ANSWER

For grade 3 and 4 ankle sprains, ice works better than heat to speed recovery (return to play) (strength of recommendation [SOR]: **B**, based on a single retrospective cohort study). No studies support faster return to play with the application of heat at any time after injury (SOR: **B**, based on head-to-head randomized trials). Ice therapy also reduces edema, but the clinical significance of this finding is unclear.

### ■ EVIDENCE SUMMARY

Studies of ankle sprain use variable diagnostic criteria for sprain and definition of recovery (return to play). They often report indirect outcomes such as edema. The effect of decreased edema on recovery time is not addressed.

Only 1 study has directly compared heat vs ice therapy and recovery time for ankle sprains. A retrospective cohort study of 32 patients in a sports medicine clinic demonstrated that early cryotherapy (within 36 hours of injury) for grades 3 and 4 ankle sprains, when compared with early heat therapy, resulted in earlier return to activity, as defined by ability to walk, climb stairs, run, and jump without pain.<sup>1</sup> Grade 3 sprains treated with ice recovered in 11.0 days vs 14.8 days with heat. Grade 4 sprains treated with ice recovered in 13.2 days vs 30.4 days with heat. This study also showed that early application of ice (within 36 hours) decreased time to recovery compared with late application of ice.

However, evidence is heterogeneous about the effect of ice on return to play. In 2 of 3 randomized controlled trials, early application of ice vs placebo did not significantly speed return to play.

One randomized controlled trial compared ice therapy (in the form of a cooling anklet applied upon presentation) with placebo in 143 patients presenting within 24 hours of injury to a university emergency department in England.<sup>2</sup> All patients received high-dose nonsteroidal anti-inflammatory agents. Though a trend was found in favor of ice therapy, no statistically significant difference was found in recovery time, as defined by pain relief and ability to bear weight. The grade of sprain was not specifically accounted for in this study.

Another randomized controlled trial compared ice with placebo in 30 patients with grade 3 and 4 sprains referred to a physiotherapy department within 2 days of ankle injury. No statistical difference was found in recovery time, defined as ability to bear weight with only mild to moderate pain.<sup>3</sup>

However, a randomized controlled trial of 60 patients with acute ankle sprains of all grades presenting to an emergency department compared cryogel plus bandaging with bandaging

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## What is a Clinical Inquiry?

Clinical Inquiries answer real questions that family physicians submit to the Family Practice Inquiries Network (FPIN), a national, not-for-profit consortium of family practice departments, residency programs, academic health sciences libraries, primary care practice-based research networks, and individuals with particular expertise.

Questions chosen for Clinical Inquiries are those considered most important, according to results of web-based voting by family physicians across the U.S.

Answers are developed by a specific method:

- First, extensive literature searches are conducted by medical librarians.
- Clinicians then review the evidence and write the answers, which are then peer reviewed.
- Finally, a practicing family physician writes a commentary.

alone (cooling vs no cooling). This study found the mean time to recovery—defined as decreased pain—was reduced from 14.8 days to 9.7 days with constant cooling for the first 48 hours.<sup>4</sup>

The application of ice—but not heat—within 24 to 48 hours of acute ankle sprain also reduced edema. Several studies looked at reduction of edema with cooling. One study measured edema in 30 patients with grade 1 and 2 sprains treated with cold, heat, or contrast baths during the third, fourth, and fifth days.<sup>5</sup> Only ice therapy alone significantly reduced edema.

### ■ RECOMMENDATIONS FROM OTHERS

The American Academy of Orthopaedic Surgeons recommends initial treatment of stable ankle sprains with rest, ice, gentle compression, and elevation (RICE).<sup>6</sup> These guidelines are echoed by the American Academy of Family Physicians. In addition, the Institute for Clinical Systems Improvement and the National Guidelines Clearinghouse recommend PRICE, where protecting the ankle is explicitly added to RICE therapy.<sup>7</sup>

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### ■ CLINICAL COMMENTARY

Ice should be the first choice for all acute ankle sprains. The immediate goals of treating an ankle sprain are reducing edema, stabilizing the ankle, and enabling early weight-bearing. Applying heat may increase swelling and subsequently slow recovery. Once the initial phase of recovery is achieved through cryotherapy, compression, and elevation, the injured patient may initiate work to increase strength, flexibility, and range of motion of the injured ankle. As a result, icing an ankle sprain facilitates an earlier return to full activity and sports participation by speeding the first phase of recovery.

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## How should patients with mitral regurgitation be followed?

### ■ EVIDENCE-BASED ANSWER

Patients with mild to moderate mitral regurgitation should be assessed periodically for a worsening condition; those with severe mitral regurgitation should be monitored for development of congestive heart failure, atrial fibrillation, and decline in left ventricular ejection fraction or increase in left ventricular end-diastolic diameter (strength of recommendation [SOR]=B).<sup>1–3</sup>

Cardiologists and general internists perform equally well in identifying severe mitral regurgitation among patients with known mitral regurgitation.<sup>4</sup> Grade I or II murmurs indicate mild or moderate mitral regurgitation; grade IV or greater murmurs indicate severe mitral regurgitation, and grade III murmurs are indeterminate (SOR=B).<sup>4</sup>

The optimal frequency of evaluation is uncertain. Patients with severe regurgitation should be followed more frequently, with a combination of physical examination and echocardiography (SOR=B).

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