

EVIDENCE-BASED ORTHOPAEDICS

Therapeutic Exercises During the First Week After Ankle Sprain
Improved Short-Term Ankle Function

Bleakley CM, O'Connor SR, Tully MA, Rocke LG, Macauley DC, Bradbury I, Keegan S, McDonough SM. Effect of Accelerated Rehabilitation on Function After Ankle Sprain: Randomised Controlled Trial. *BMJ*. 2010 May 10;340:c1964.

Question: In patients with an acute grade-1 or grade-2 ankle sprain, how does accelerated rehabilitation compare with standard treatment for improving recovery?

Design: Randomized (allocation concealed), blinded (outcome assessor) controlled trial with 16-week follow-up.

Setting: Hospital accident and emergency department and a university sports injury clinic in Northern Ireland.

Patients: 101 patients 16 to 65 years of age (mean age, 26 y; 68% men) who had a grade-1 or grade-2 ankle sprain within the past 6 days. Exclusion criteria were complete rupture of the ankle ligament, osseous ankle injury, multiple injuries (e.g., other joint injury or fracture), contraindication to cryotherapy, drug or alcohol abuse, or inability to speak English. 85 patients (84%) were included in the main analysis.

Intervention: Patients were allocated to therapeutic exercise during the first week after randomization plus standard treatment (n = 50) or standard treatment alone (n = 51). The therapeutic exercises consisted of 20 repetitions of active circumduction mobility (clockwise and counterclockwise), 20 repetitions of active mobility (plantar flexion and dorsiflexion), 5 repetitions each of static muscle-strengthening with 10-second hold (eversion, inversion, plantar flexion, and dorsiflexion), 30 repetitions of functional movement pattern (lower-limb triple flexion/extension), and 3 repetitions of triceps surae stretch (with 20-second hold). Both groups received advice on applying ice and compression. From week 1 to week 4, patients in both groups engaged in ankle rehabilitation exercises that focused on muscle-strengthening, neuromuscular training, and sports-specific functional exercises.

Main outcome measures: The primary outcome was subjective ankle function assessed with use of the

Lower Extremity Functional Scale (LEFS). The scale comprised 20 leg activities scored on a 5-point scale (0 = impossible, 4 = no difficulty) for a maximum of 80 points. Secondary outcomes included pain at rest and with activity (10-cm visual analog scale), swelling, self-reported function (Karlsson score), and reinjury rate.

Main results: Ankle function, pain, and swelling were assessed at weeks 1, 2, 3, and 4. At each follow-up point, patients in the accelerated exercise group did better, on the average, than the standard treatment group did with regard to function (p = 0.0077). A significant treatment effect was seen at week 1 and week 2 (Table). No treatment effect was seen for pain at rest, pain with activity, or swelling. At 16 weeks, patients in the exercise and standard treatment groups did not differ for self-reported function (Karlsson score, 97.3 vs 98.4, respectively) or reinjury rate (2 in each group).

Conclusion: In patients with an acute grade-1 or grade-2 ankle sprain, the incorporation of therapeutic exercises in the first week after injury improved short-term ankle function.

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Therapeutic exercises vs standard treatment after ankle sprain*

Outcomes	Follow-up	Exercise	Standard treatment	Difference between means (95% CI)
Lower Extremity Functional Scale	Week 1	57.9	52.1	5.8 (0.05 to 11.5)
	Week 2	68.6	61.8	6.8 (2.3 to 11.3)

*CI = confidence interval (calculated from data in article). Lower Extremity Functional Scale: 5-point scale (0 = impossible, 4 = no difficulty) for 20 leg activities for a maximum of 80 points.

Commentary

Inversion ankle sprains are among the most common injuries encountered in orthopaedic and sports-medicine practice. Despite extensive literature on the subject, the optimal treatment for acute ankle sprains remains uncertain¹⁻³. Conventional functional treatment includes some duration of protection and rest of the injured joint before resumption of a more aggressive exercise regimen^{1,2}.

Several studies report a high prevalence of long-term pain, dysfunction, and instability following acute ankle sprains. The concern has been that aggressive⁴ return to activity, compared with some period of immobilization, may increase these risks, including a potential for recurrent sprains^{2,4}.

The study by Bleakley et al. did not reach the calculated sample size for the study, which led to lower power, including the inability to evaluate some secondary outcomes. Although a return to full or sporting activity, which is a key outcome in the ankle-sprain population, was not emphasized, one can deduce from the rating scales that these patients returned to normal activities of daily living within the time frame of the study.

This study reported better short-term function in the first and second weeks after injury in the accelerated exercise group. At the sixteen-week follow-up, both groups had achieved the same level of ankle function, with only 4% of patients in each group having a re-injury. The most important message of this research is that early exercise and return to activity is not detrimental and does not prolong recovery.

Based on this study, we can conclude that after mild-to-moderate ankle sprain, patients can be advised to return to activity as tolerated with an active exercise regimen and with functional progression, without any increased risk for sequelae, pain, or dysfunction.

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