



# NEWSLETTER

## Ankle sprains

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### **Problem:**

Ankle sprains are one of the most common orthopedic injuries with an annual incidence of 7 ankle sprains per 1000 individuals.<sup>1</sup> Lateral ankle sprains are the most common type of sprain accounting for 85% of all ankle sprains. These injuries commonly involve a plantar flexed and inverted foot and ankle (see diagram 1).<sup>2</sup> This mechanism of injury can occur through sports participation or walking on uneven surfaces and results in an injury to the ligaments and bones of the ankle. Although uncommon, ankle fractures may also occur with this mechanism of injury commonly presenting with an inability to weight bear immediately or after the injury and/or tenderness to touch over the bony prominences of the ankle. These signs and symptoms would require x ray

films to rule out fracture.<sup>3</sup> In the absence of fracture, most individuals will benefit from conservative treatment found in Physical Therapy.



### **Evidence: R.I.C.E.**

The prognosis for ankle sprains may not be as positive as initially reported. Authors have reported up to 72% of individuals who sustain an ankle sprain will still report symptoms at 6 month follow up.<sup>4</sup> In addition, authors report grade I and II sprains, based on a three point severity scale, are most likely to recur and may lead to chronic ankle instability.<sup>5</sup> This less than optimal prognosis for individuals sustaining a lateral ankle sprains likely indicates our prior methods of treatment including rest, ice, compression, and elevation (R.I.C.E.) may not be the most effective management strategy for this condition and likely lead to higher rates of medical utilization and cost to patients.

Green et al. examined the effects of R.I.C.E. versus manual therapy treatment (passive

movements of the ankle and foot joints provided by a Physical Therapist. See diagram 2) for the treatment of acute (<72 hours) ankle sprains.<sup>6</sup> In this randomized controlled trial the authors noted the addition of manual therapy to the R.I.C.E. protocol resulted in a faster return of pain free ROM and gait compared to R.I.C.E. alone. In addition, Eisenhart et al. conducted a preliminary study on the short term effects of manual therapy in the emergency department following acute ankle sprains<sup>7</sup>. Individuals were randomized to either a manual therapy group or control group and short term outcomes were assessed. The individuals treated with manual therapy demonstrated reductions in pain, edema, and improvements in ROM and function versus the control group.



While the R.I.C.E. approach is helpful to reduce inflammation and pain in the immediate time period following injury, it is likely insufficient to restore function and prevent recurrence after injury. Ankle sprains result in injury to various structures within the ankle and foot joints, ligaments, muscles, and balance system (proprioception). The complexity of the injury requires a

multidimensional treatment approach to facilitate an individual's return to activity and sport. This approach should be tailored to a patient's individual impairments to provide the most efficient and effective care possible. The absence of manual therapy and exercise interventions within the post injury period has been associated with a reduction in short and long term outcomes for patients.

### ***Evidence: Manual Therapy & Exercise***

In recent years, the research has highlighted the importance of a multimodal approach consisting of manual therapy and exercise interventions for the management of acute and chronic ankle sprains. Whitman et al. conducted a prospective study of 85 patients with acute ankle sprains to determine which patients would benefit from a manual therapy and exercise approach.<sup>8</sup> Patients were treated for a maximum of three visits with a Physical Therapist and outcomes were assessed following the intervention period. Whitman et al. noted that 75% (64/85) of patients demonstrated an immediate improvement in symptoms and function in the first week of treatment. This study demonstrates the early clinical and cost effectiveness of Physical Therapy interventions on patients with acute ankle sprain.

Recently, Truyols-Dominguez et al. investigated the addition of myofascial treatments to the previously established approach of manual therapy and exercise to determine its' impact on outcomes in patients with ankle sprain.<sup>9</sup> Fifty individuals were randomized to either manual therapy and exercise, established by Whitman et al., or the same approach combined with trigger point treatments. Authors noted small improvements in outcomes when manual therapy included both joint and muscle treatments, but these improvements were small and did not meet the minimal level for clinical significance on outcome

measures. It appears restoring joint motion to the leg, ankle, and foot joints is most important prior to the implementation of an evidence based exercise program.

The cost of formal Physical Therapy appointments should be considered when determining the most effective treatment for patients with ankle sprain. If a home exercise program consisting of stretching, strengthening, and balance exercises is as effective as formal PT then the cost difference would influence a patient and clinician's choice of treatment. A recent study by Cleland et al. examined the difference of formal Physical Therapy including manual therapy and exercise as compared with a HEP for patients with ankle sprain.<sup>10</sup> In this study, 74 patients were randomized to either the home exercise program delivered by a Physical Therapist or the manual therapy and exercise interventions provided by the Physical Therapist. Individuals were seen for 4 weeks and were reassessed at both this time point and at 6 month follow up. Individuals in the manual therapy and exercise group demonstrated superior results at both 4 weeks and 6 months as compared with the home exercise program group alone. It appears the manual therapy aspect of treatment is essential for both short and long term success following an acute ankle sprain and likely reduces pain and facilitates an individual's transition into an exercise program.





## Balance

Balance impairments are common following ankle sprain injuries and may perpetuate symptoms of instability and pain, as well as, a loss of function in individuals with chronic symptoms (chronic ankle instability). These exercise programs should be designed to reduce postural sway and improve dynamic stability on both stable and unstable surfaces (see figure 3). These programs may reduce the risk of recurrence by improving the



body's ability to control movements across the ankle through recreational activities. In addition, athletes should be transitioned into sport specific and individualized training programs to allow a safe return to prior levels of activity. Prior to a return to sport and activity, a Physical Therapist will conduct functional testing measurement to reduce risk of recurrence.

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## Conclusion:

In conclusion, ankle sprains are a common musculoskeletal injury with a poor prognosis for return to sport if left untreated. Patients should seek out Physical Therapy services for an appropriate

evaluation and intervention program designed to reduce recurrence and allow safe return to prior levels of activity.

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