

Case study: Using the geko™ to help reduce oedema following a lateral ankle ligament sprain.

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Subject

34 year-old male.

Relevant Clinical History

3 days prior to presenting for physiotherapy treatment, the patient fell and twisted his ankle whilst competing in an off-road running race. The patient had not run since the injury, and he reported that he had used intermittent ice and compression therapy for the first 48 hours after injury. The patient also reported taking anti-inflammatory medication for the 3 days since injury.

Relevant Previous Medical History

Prior to the injury, the patient typically ran 30 miles per week and is a retired international swimmer with a history of recurrent lateral ankle sprains. He had no other significant past medical history.

Clinical Presentation

On examination in the clinic, the ankle was significantly swollen and there was a reduction in the range of active and passive plantarflexion, dorsiflexion, inversion and eversion movements. The patient was able to weight bear fully, but pain was initiated on all active weight bearing and non-weight bearing movements. On accessory movement testing, ankle stability was reduced.

Rationale for treating with the geko™ device

The primary treatment aim was to reduce swelling. The geko™ device was chosen by the physiotherapist as a treatment modality to help accelerate the reduction of this oedema. This is because Neuromuscular Electro-stimulation (NMES) has been found to be effective at increasing venous flow and reducing oedema^{1,2,3}. The small size and portability of the geko™ device means that it is ideal for providing treatment to patients continuously throughout the day, whilst they are at work or at home.

The geko™ device treatment regime

geko™ treatment was provided to the patient in addition to other treatment modalities including education, advice, ultrasound, and a home exercise program. A geko™ device was applied to the injured leg according to the manufacturer's instructions.

Day post injury	Description of geko™ device use	Patient reported change to symptoms	Photographs taken by the patient after using the geko™ device
3	geko™ worn for 12 hours. (8am - 2pm) and then (4pm - 10pm)	<ul style="list-style-type: none"> Swelling decreased Pain on movement decreased Active ROM increased 	
4	geko™ worn for 12 hours. (8am - 2pm) and then (4pm - 10pm)	<ul style="list-style-type: none"> Swelling decreased Pain on movement decreased Active ROM increased 	
5	geko™ worn for 12 hours. (8am - 2pm) and then (4pm - 10pm)	<ul style="list-style-type: none"> Swelling decreased Pain on movement decreased Active ROM increased Ankle felt more stable 	
6	geko™ worn for 24 hours following the completion of a 4 mile run	<ul style="list-style-type: none"> Swelling decreased Pain on movement decreased Active ROM increased Ankle felt more stable 	

After wearing the geko™ device the patient reported on each day that he felt that his swelling had decreased, his ROM had increased, and he reported feeling less pain. The patient also reported that he felt recovery from this injury had been quicker in comparison to previous ankle sprains. The patient was recovered fully from his injury and has now increased his running mileage to 50-60 miles a week.

Conclusion

In this patient, the geko™ device formed part of a successful rehabilitation protocol for the treatment of an ankle sprain. The device was well tolerated by the patient, and offered a way of reducing oedema when the patient was not able to continue elevating and icing his ankle due to work and functional activities.

References

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2. Sheffler LR, Chae J. Neuromuscular electrical stimulation in neurorehabilitation. *Muscle Nerve*. 2007 May;35(5):562-90.
3. W Man IO, Lepar GS, Morrissey MC, Cywinski JK, Effect of neuromuscular electrical stimulation on foot/ankle volume during standing. *Med Sci Sports Exerc*. 2003 Apr;35(4):630-4