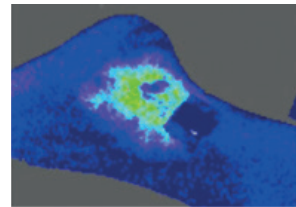


# Speckle spectroscopy – evaluation of a venous leg ulcer<sup>8</sup>

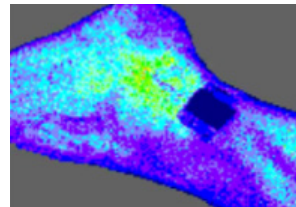
The geko™ device caused a 225% increase in flux ( $p < 0.001$ ) in the wound bed and a 67% increase in flux ( $p < 0.001$ ) surrounding the peri-wound area. Increases in flux corresponds to an increase in microcirculatory blood flow, which is clearly seen in the comparison below. This results in an increase in red blood cells carrying oxygen and nutrients necessary for healing. Further evidence can be reviewed at: [www.gekowound.ca](http://www.gekowound.ca)



Baseline speckle flow pattern



After activation of the geko™ device



## Benefits of the geko™ device<sup>9</sup>

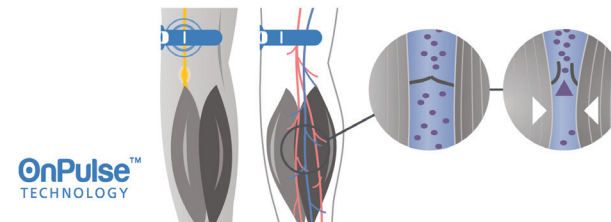
The geko™ device increases venous, arterial and microcirculatory blood flow while reducing pain<sup>7</sup> in individuals with lower leg ulcers.

In addition, consider the geko™ device.

- In the management of lower leg edema that is contributing to reported pain
- In the management of stalled, chronic lower leg wounds that are not progressing along the expected healing trajectory
- In wounds that can be predicted to be slow in healing from the onset
- In conjunction with compression or when compression cannot be tolerated
- For patients with fixed ankle joints, those who are bedridden or those with limited mobility

### References:

1. Zhang Q, *et al*. Effects of electrical nerve stimulation on force generation, oxygenation, and blood volume in muscles of the immobilized human leg. *Scand J Clin Lab Invest*. 2014 Aug;74(5):369-77
2. Das SK, *et al*. Neuromuscular stimulation of the common peroneal nerve increases arterial and venous velocity in patients with venous leg ulcers. *Int Wound J*. 2020;1–7. <https://pubmed.ncbi.nlm.nih.gov/33236847/> Williams KJ, Moore HM, M Ellis and Davies AH. Haemodynamic changes with the use of a neuromuscular stimulation device compared to intermittent pneumatic compression. *Phlebology*. Online 10 April 2014. <http://phl.sagepub.com/content/early/2014/04/10/0268355514531255>
3. Bosanquet D, *et al*. Microcirculatory Flux and Pulsatility in Arterial Leg Ulcers is Increased by Intermittent Neuromuscular Electrostimulation of the Common Peroneal Nerve. Elsevier: Clinical Research 2020 <https://pubmed.ncbi.nlm.nih.gov/32768540/> Jawad H, Bain DS, Dawson H, Crawford K, Johnston A, Tucker AT. The effectiveness of a novel neuromuscular electrostimulation method versus intermittent pneumatic compression in enhancing lower limb blood flow. *J Vasc Surg: Venous Lymphat Disord*. 2014;2(2):160-5
4. Williams KJ, *et al*. Pilot Trial of neuromuscular stimulation in the management of chronic venous disease. 2 Posters from VEINS Conference, UK. 2014
5. Williams KJ, Davies AH. Pilot trial of neuromuscular stimulation in the management of chronic venous disease. *British Journal of Surgery*. 2015; 102:20
6. Waterloo Wellington Community Care Access Centre Pilot Evaluation. 2017. Data on file.
7. Nia J, Jones G, Prof. Keith Harding *et al*. A case series evaluating the geko™ neuromuscular electrostimulation device on lower limb wounds of differing aetiology.
8. Harding KG. A New Innovation in Wound Treatment. Presented at CAWC Conference 2016.
9. Orsted H.L. *et al*. (2016). The effects of low frequency nerve stimulation to support the healing of venous leg ulcers. Wound Care Canada: Supplement Consensus Paper: pp 1-16. Available [on-line]: <https://www.woundscanada.ca/docman/public/health-care-professional/bpr-workshop/70-bpr-lfns-final-110316/file>
10. Harris C, *et al*. Refractory venous leg ulcers: observational evaluation of innovative new technology. *Int Wound J* 2017; 14:1100–1107
11. Harris C, *et al*. Using a muscle pump activator device to stimulate healing for non-healing lower leg wounds in long-term care residents. *Int Wound J*. 2019;16:266–274. <https://doi.org/10.1111/iwj.13027>
12. Ingves MV, Power AH. Two Cases of Transcutaneous Electrical Nerve Stimulation of the Common Peroneal Nerve Successfully Treating Refractory, Multifactorial Leg Oedema. *Journal of Investigative Medicine High Impact Case Reports*. October-December 2014: 1–4. Available at: <http://journals.sagepub.com/doi/abs/10.1177/2324709614559839>
13. Tucker AT, Maass A, Bain DS, *et al*. Augmentation of venous, arterial and microvascular blood supply in the leg by isometric neuromuscular stimulation via the peroneal nerve. *Int J Angiol* 2010;19:e31–e37.
14. Case Study from Perfuse Medtec Inc. Archives used with patient permission
15. Williams KJ *et al*. *Phlebology*. 2015 June;30(5):365-7 Harris C, *et al*. Evaluation of a muscle pump-activating device for non-healing venous leg ulcers. *Int Wound J* 2017; 14:1189–1198
16. Jawad H *et al*. 2014 *Journal Vasc Surg*. Vol 2: 160-65.
17. Harris C, *et al*. Evaluation of a muscle pump-activating device for non-healing venous leg ulcers. *Int Wound J* 2017; 14:1189–1198



Distributed in Canada by:



Orders: 1-888-244-5579

© Firstkind and Perfuse 2021  
geko™ is a registered trade mark of Sky Medical Technology Limited  
OnPulse™ is a registered trade mark of Sky Medical Technology Limited  
MDBR0601V2

geko™  
wound therapy

NEW

## Innovative Technology

The geko™ wound therapy device  
A paradigm shift in the management of wounds



Breaking  
the cycle  
of chronic  
wounds

Blood...central to the cause...central to the treatment

[www.gekowound.ca](http://www.gekowound.ca)

# What is geko™ wound therapy?

The geko™ is a self-contained, wearable device that is the size of a wristwatch, weighs 10 grams and is worn at the knee. It gently stimulates the common peroneal nerve with painless electrical pulses. This non-invasive device is fitted to the side of the leg, near the knee, activating the lower leg muscle pumps, returning blood from the lower leg to the heart, in both mobile and immobile patients. It is indicated for the promotion of blood flow, wound healing, the treatment of edema, ischemia and venous insufficiency.

The geko™ device is worn for 12 hours per day, 7 days per week. It accelerates weekly healing rates and time to heal.<sup>10, 11, 12</sup> Patients have reported less edema and decreased levels of pain with the use of the device.<sup>10, 11</sup>

## It has been clinically proven to:

- Stimulate the common peroneal nerve, activating the extensor muscles and stretches the antagonistic flexor muscles, acting as a calf muscle pump<sup>1</sup> to increase both venous, arterial, and microcirculatory blood flow<sup>2</sup> equal to 60% of that achieved when walking<sup>13</sup>
- Activate the venous muscle pump and improve arterial flow to assist with oxygen delivery to the wound site<sup>2</sup>
- Increase superficial femoral venous flow by 100%, femoral arterial volume flow by 75%<sup>15</sup> and microcirculatory flux to the skin on the dorsum of the foot and thigh<sup>16</sup> by 400%

The geko™ device has also shown an estimated cost savings of \$2500 per patient if used as a first-line adjunctive therapy.<sup>6</sup>

## Research Evidence

The geko™ device has been the subject of scientific rigor to demonstrate its ability to increase blood circulation. The body of evidence continues to grow, targeting clinical issues, in the management of lower leg wounds. See [www.gekowound.ca](http://www.gekowound.ca)

# Clinical evidence – evaluation of the geko™ device in the management of venous leg ulcers<sup>10, 11, 14, 17</sup>

## Painful leg ulcer



Prior to treatment  
6-week history



Closed at 18 weeks

41-year-old female, BMI >33kg/m<sup>2</sup>, spontaneous leg ulcers, 6 weeks prior; required IV and later oral antibiotics; still on oral x 5 days at baseline. ABPI: L 1.0,R 1.2; Pain 10/10 initially. As wounds closed, she graduated from low to high compression as pain decreased to 0/10. She was fitted with compression stockings.

## Non-healing venous leg ulcer



Prior to treatment  
6-week history



Closed at 18 weeks

80-year-old female, 6.5-month history of VLU to the R and L medial malleolus and a pressure ulcer on L heel. Unable to tolerate compression due to pain, received wound care 3 x/ week. One wound closed in 18 days, the remaining in 2 ½ months. When pain was reduced, she was fitted with compression. Her nurse commented on a change in her overall appearance and well-being.

## Non-healing surgical amputation



Prior to treatment  
4.5-month history



Closed at 5 weeks

77-year-old male, CVI, diabetes, non-healing R toe amputation site for 4.5 months, previous R leg bypass 7 years prior. Angioplasty was performed 1 month before the toe amputation. Also had a venous ulcer on the R shin, which doubled in size over 3 months. Wearing an inelastic Unna's paste boot dressing. Nursing visits went from every 2 days to every 3 days by week 3. Both wounds closed at 5 weeks.

## Diabetic foot wound



Prior to treatment  
1-year history



Closed at 4 weeks

Female with type 2 diabetes, a non-healing second toe amputation; wedge resection and multiple non-healing plantar DFU following 1 year of wound care. She had 3+ peripheral edema below the knee. Edema reduced after 2 weeks and all plantar surface wounds were closed following 4 weeks of geko™ treatment. Three other wounds were stable dry eschar with no infection.

## Pressure injury



Prior to treatment  
4-month history



Closed at 3 months

92-year-old female, Atrial fib, type 2 diabetes, benign hypertension, arthritis, glaucoma, and dementia. Wound etiology: pressure-related. Offloading and repositioning schedule in place. ABPI not available; suspected some arterial compromise. R heel 0.9 x 0.6cm covered with scab. L heel 2.1 x 1.7 cm, covered in eschar and dry scab, surrounded by hyperkeratotic skin. Wound duration of 4 months healed in 3 months with the geko™ device in combination with conservative sharp wound debridement.

## Woody Fibrosis



Prior to treatment  
14-month history



Some areas closed at 12 weeks, remainder at 9 months

67-year-old male, type 1 diabetes, a long history of bilateral VLU and recurrent blisters. Three hospitalizations for leg cellulitis and sepsis IV antibiotics in the year prior to using the geko™ device. Within 2 weeks his legs were getting softer and he had increased ankle mobility. The recurrent blisters decreased in frequency and duration. During the evaluation he experienced only 1 course of oral antibiotics and no hospitalization.