

# Early Elastic Compression Improves Traumatic Limb Wound Healing: textile compression delivers static force that signals cell DNA expression to enhance regenerative healing

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## Problem

Negative pressure wound therapy (NPWT) delivers negative hydrostatic pressure delivered via open cell foam to stabilize and transfer battle field soft tissue injury.<sup>1</sup> The physiology of NPWT and elastic textile compression, both signal cell DNA to make proteins, is not well understood but evidence is growing to suggest 'All lower extremity wounds benefit from elastic compression.'<sup>2</sup> Rubin describes how vibration therapy induces bone micro-strain signaling of bone marrow osteoblasts preventing osteoporosis in space.<sup>3,4</sup> \* Ennis demonstrated this vibration improves murine wound healing presumably by stimulating regenerative marrow stem cells, e.g. circulating epithelial precursors.<sup>5,6</sup> In light of NPWT for trauma, we ask, can early elastic compression improve healing of traumatic wounds.

## Methods

Photos document presentation, therapy, and outcomes of four injuries (auto roll over with blunt knee skin disruption, tractor vs.

corrugated steel, and blunt contusions) treated with early fuzzy wale stockinet compression.<sup>7,8 \*\*</sup>

## Results

Early textile compression of traumatic wounds anecdotally appears to decrease pain, enhance eschar separation, enable home care including frequent wound shower sprays, and decrease clinic visits.

## Conclusions

Four traumatic leg wounds anecdotally appear to have a regenerative response to early elastic textile compression, opening a promising research avenue.

## References

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## Products

\* LivMD™ Vibration Plate: Rx, Amplitude, 5 to 10 microns  $10^{-9}$  M, (for scale, human hair diameter is 30- 50 microns), force 0.6G, (60% of the force of gravity  $9.8 \text{ meters per second}^2$ ), frequency 30Hz, (30/second). Marodyne, BT Health Care, Inning am Ammersee, Germany.

\*\* EdemaWear®, EdemaWear® LITE™, Fuzzy wale elastic compression stockinet, Compression Dynamics LLC, Omaha, Nebraska.