

# Does Three-Dimensional Elastic Compression Therapy Deliver Positive Pressure Wound Therapy: Bedside Observations of Refractory Wound Responses to Compression with a Third Dimension - a Non-Flat Surface?

Martin J Winkler MD FACS

## Introduction

Clinical experience with lumps of foam rubber under torso compression garments and with fuzzy wale elastic compression stockinet in intimate contact with VLU surface suggests that static force delivered to skin is dramatically more effective if it creates a third dimension, depth, think valleys in subcutaneous fat creating useful tissue micro deformation, versus flat textile compression first reported by Aristotle 400 BCE. (Ehmann 2022) (Fazzari 2022) (Melin 2021)

## Methods

Open cell foam intimate with wound surface under sub atmospheric pressure creates tissue under compression by oval foam cell walls, and tissue under stretch (tension) in the center of the foam ovals. This cell micro distortion turns on gene expression via mechano transduction pathways to synthesize myriad proteins required to close wounds and is arguably the key physiologic mechanism of negative pressure wound therapy (NPWT). (Saxena 2004) (Orgill 2008) Clear photos of chronic leg wounds create a visual library of the physical findings of three-dimensional elastic textile compression. Additionally, we document wound edge and peri wound skin changes.

## Results

Wound edge epiboly clears rapidly, robust granulation replaces friable weeping friable tissue, peri wound stasis dermatitis resolves, and rapid migration of neo epithelial cells at wound edge is clearly documented in photographs. These bedside findings suggest that fuzzy wale elastic compression textile\* upregulates gene expression via mechano transduction pathways in the manner of NPWT.

## Conclusion

Textile compression with a third dimension appears to increase gene expression, improve lymphatic function, and increase subcutaneous perfusion. Positive Pressure Wound Therapy,\*\*, with more clinical research, may prove to be an appropriate term.

## References

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\* Fuzzy Wale Elastic Compression Stockinet, EdemaWear®, Compression Dynamics LLC Omaha Nebraska 68102

\*\* Positive Pressure Wound Therapy© Suzanne Ehmann