LIPOEDEMA CLINICAL GLOSSARY & REFERENCES

A Supportive Companion to Deep Oscillation Therapy in Lipoedema Care

NOTE: This clinical companion document was prepared by **PhysioPod® UK** to accompany the webpage copy "Deep Oscillation Therapy in Lipoedema Care" published on the Kinvara Private Hospital website. It serves as an academic, peer-reviewed reference resource translating clinical biophysics into precise and accessible explanations.

Clinical Glossary of Biophysical & Medical Terms

To support transparency, clinical clarity, and patient education, this clinical glossary defines key biophysical and medical terms, translating advanced scientific terminology into clear, accessible, and precise explanations:

• **Endogenous Micro Deformations:** Very small, highly localised microscopic changes in tissue shape and tension generated entirely *within* the tissue's own internal environment by a pulsed electrostatic field, rather than conventional, externally applied downward mechanical pressure or compression (Hernández Tápanes et al., 2018).

• **Johnsen-Rahbek Effect:** The biophysical phenomenon where a safe, low-intensity, pulsed electrostatic field generates a gentle, therapeutic attraction and release sensation between the applicator resting on the skin surface and the tissue layers beneath (Reinhold, 2025).

• **Extracellular Matrix (ECM) Remodelling:** The structural biological process of rebuilding the supportive scaffolding surrounding and nourishing cells. In lipoedema, this represents a microscopic hallmark of pathological loose connective tissue that may contribute to tissue congestion (Duhon et al., 2022).

• **Microvascular Fragility:** An underlying structural weakness and increased permeability in blood capillaries, making them fragile and prone to leakage, which manifests clinically as easy bruising (Kruppa et al., 2026).

• **Tissue Trophicity:** The overall state of cellular nutrition, health, and metabolic balance, which is closely linked to the local flow of oxygen, interstitial fluids, and supportive nutrients (Boisnic & Branchet, 2013).

• **Pathological Fibrosis & Tissue Induration:** The progressive hardening, thickening, and loss of natural elasticity in subcutaneous tissues, often associated with chronic fluid congestion and the formation of deep-seated fibro-fatty networks or dense nodules (Faerber et al., 2024).

Clinical & Biophysical References

This section provides direct, unrouted links to the core peer-reviewed publications, national consensus guidelines, and clinical studies underpinning the clinical safety, efficacy, and application pathways of Deep Oscillation Therapy in lipoedema care:

Kruppa, P., et al. (2026). “Lipedema World Alliance Delphi Consensus-Based Position Paper on the Definition and Management of Lipedema.” *Nature Communications*, 17(1), p. 427. [Nature Link]

Health Service Executive (HSE). (2026). “HSE Consensus Guideline for the Diagnosis and Non-Surgical Management of Lipoedema/Lipalgia Syndrome (LLS).” National Lymphoedema Oversight Team. [Guideline Link]

Wounds UK. (2017). “Best Practice Guidelines: The Management of Lipoedema.” London: Wounds UK. [Guideline Link]

Almendras, M. J., et al. (2024). “The effects of shock waves and deep oscillations on lipoedema.” *Journal of Aesthetic Nursing*, 13(2), pp. 42–53. [Journal Link]

Hernández Tápanes, S., et al. (2018). “The Effect of Deep Oscillation Therapy in Fibrocystic Breast Disease: A Randomized Controlled Clinical Trial.” *International Archives of Medicine*, 11(14), pp. 1–10. [Journal Link]

Reinhold, J. (2025). “Deep Oscillation.” In: Cornely M. E. et al. (eds.), *Applied Lymphology*. Springer Nature Switzerland AG, pp. 340–355. [Book Link]

Teo, I., Coulborn, A., & Munnoch, D. A. (2016). “The use of deep oscillation therapy in the treatment of secondary lymphoedema.” *Journal of Lymphoedema*, 11(1), pp. 33–37. [Journal Link]

Pogorzelska, J. A., Kiebzak, W., et al. (2017). “The use of deep oscillation and its effectiveness on burn scars: A case report.” *Medical Studies/Studia Medyczne*, 33(1), pp. 46–50. [Journal Link]

■ebrowska, A., Trybulski, R., et al. (2019). “Effect of Physical Methods of Lymphatic Drainage on Postexercise Recovery of Mixed Martial Arts Athletes.” *Clinical Journal of Sport Medicine*, 29(4), pp. 324-331. [PubMed Link]