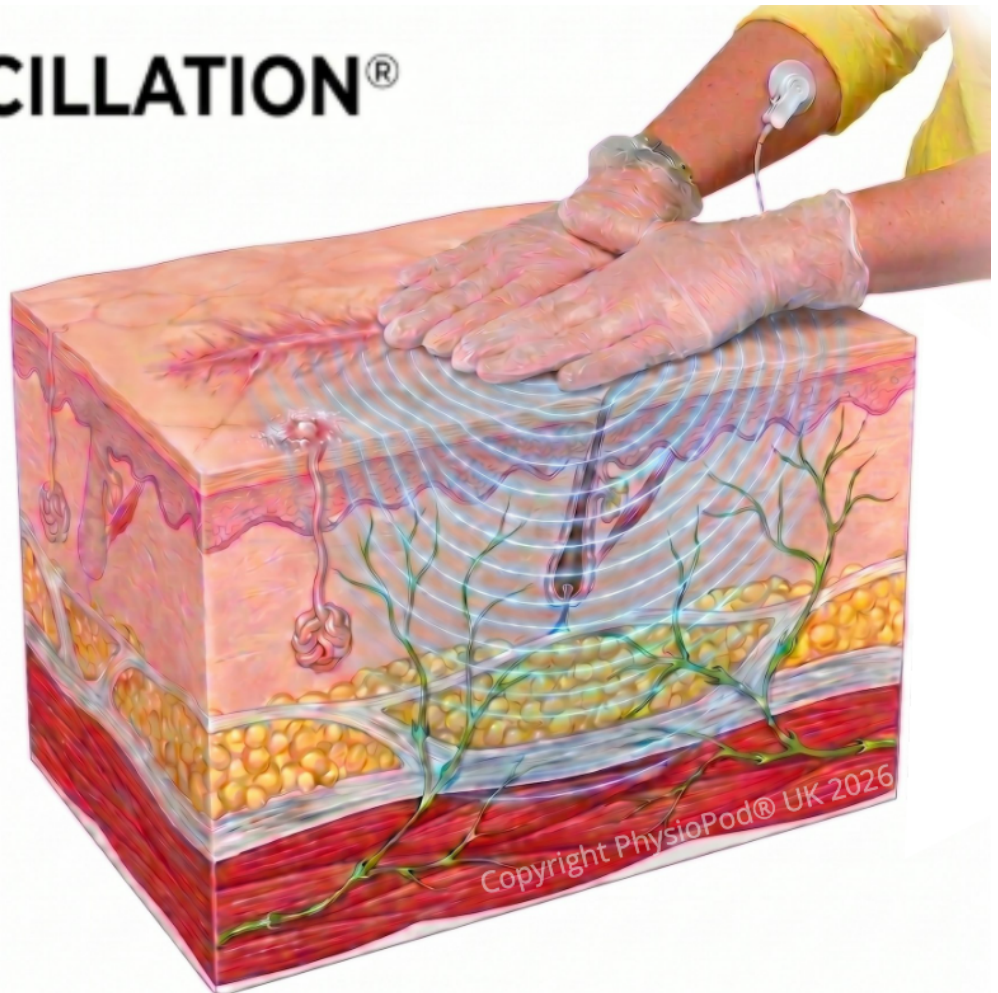


This information is provided for surgeons, oncologists, GPs, and scientifically curious patients who wish to review the underlying biophysical mechanisms of Deep Oscillation.

The Biophysical Mechanism: The Johnson-Rahbek Effect

DEEP OSCILLATION®



Anatomical Depth Illustration (Up to 8 cm)

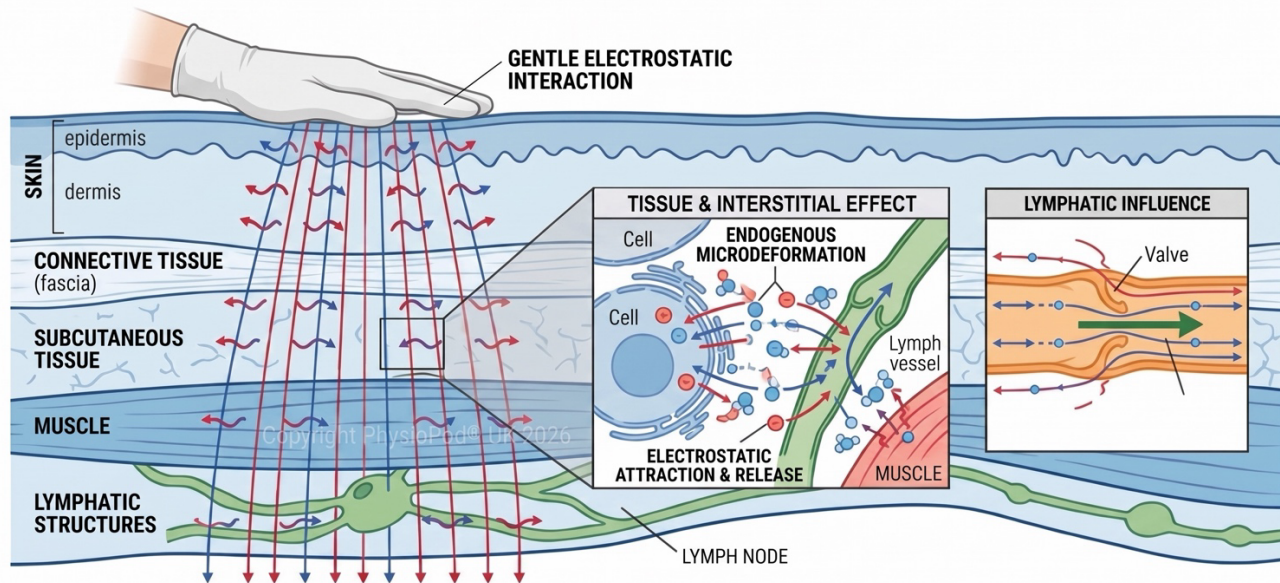
Visual representation of electrostatic waves permeating through the skin, connective tissue, subcutaneous fat, muscles, and lymphatics to support deep lymphatic drainage. Ultrasound observations demonstrated tissue responses approaching 8 cm under specific conditions; the clinical response is dependent on tissue characteristics, treatment parameters, and individual patient factors.

Clinically documented by Dr Solangel Hernández Tápanes, et al. (2010, 2018).

Unlike conventional mechanical treatments that physically force and displace tissue from the outside, Deep Oscillation relies on a physical phenomenon known as the **Johnson-Rahbek effect**.

The therapy uses a pulsed electrostatic field to orchestrate healing from the inside out.

DEEP OSCILLATION® TISSUE INTERACTION



DEEP OSCILLATION® TISSUE INTERACTION: The gentle electrostatic interaction may influence multiple tissue layers, including the skin, connective tissue, subcutaneous tissue, muscle, and lymphatic structures, with effects reported at depths of up to approximately 8 cm.

- **The Attraction-and-Release Phase:** When the controlled rhythmic signal is active, it creates a gentle electrostatic attraction between the semiconductor (the therapist's gloved hands) and the conductor (the patient's tissue). During the active pulse, the tissue is gently **attracted**; during the resting state, the tissue is **released**.
- **Endogenous Microdeformations:** This continuous, alternating cycle of electrostatic attraction and release safely induces gentle, highly **localised**, microscopic changes in tissue shape and tension. Because these "microdeformations" are generated securely within the tissue microenvironment itself, there is no need for conventional, painful downward physical pressure.
- **Deep Tissue Reach:** Under specific clinical conditions, tissue responses have been observed at considerable depths (up to an 8 cm depth of action), passing through the skin, connective tissue, subcutaneous fat, and muscles down into the deep lymphatic structures. Rather than implying a fixed depth for every individual, this deep action gently supports the tissue microenvironment to mobilise deep-seated swelling and fluid congestion without compressing the tissue.
- **An Athermic Approach for Delicate Tissue:** Deep Oscillation operates without generating heat within the body. This **athermic** nature makes it supremely comfortable and highly suitable for early intervention on delicate, highly sensitive tissue.
- **Key Clinical Principle:** Treatment should always be adapted to the patient's tissue presentation, stage of healing, clinical goals, and individual tissue tolerance."

Scientific References

1. **Reinhold, J. (2025).** *"Deep Oscillation."* In: Cornely, M. E. et al. (eds.), *Applied Lymphology*. Springer Nature Switzerland AG. DOI: https://doi.org/10.1007/978-3-031-77734-9_40.
 - o *Clinical Finding:* Examines the physiological mechanisms of Deep Oscillation, detailing how electrostatic friction resolves deep-seated tissue fibrosis, encounters tissue acidosis, and reduces pro-inflammatory cytokine (IL-8) levels.
2. **Hernández Tápanes S., et al. (2010).** *"Value of deep oscillation therapy in the healing of AB burns."* *Cuban Journal of Physical Medicine & Rehabilitation*, 2: 3-12.
 - o *Clinical Finding:* This study concluded that skin healing (**epithelisation**) was complete **5 days faster** in patients treated with Deep Oscillation compared to the control group.
3. **Hernández Tápanes S., et al. (2018).** *"The Effect of Deep Oscillation Therapy in Fibrocystic Breast Disease. A Randomised Controlled Clinical Trial."* *International Archives of Medicine*, Vol. 11, No. 14.
 - o *Clinical Finding:* A landmark randomised controlled trial of 401 women proving that Deep Oscillation significantly reduces pain and actively promotes the reabsorption of fibrosed and cystic tissue.
4. **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): 46–50.
 - o *Clinical Finding:* This research observed the therapy's clinical success on newly formed burn scars, noting Deep Oscillation's significant importance in managing sensitive, overactive keloid scars.
5. **Trybulski R. (2016).** *"Physical methods of lymphatic drainage in the early stages of post-traumatic musculoskeletal physiotherapy."* *Polish Journal of Manual Medicine*, 27-42.
 - o *Clinical Finding:* Supports the clinical use of short, highly targeted daily sessions (as little as 2 minutes) to achieve highly favourable softening results on scars, swelling, and keloids.

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