Independent Operation Studies

Made In Spain Made For You

Dual-Modality Performance

Why RF and NMS Must Be Separated?

Clinical Rationale and Evidence for Emerald Technology

Wonder Face EMERALD™ now features a dual-modality system

One Device. Two Treatments:

- **Neuromuscular Stimulation (NMS)**
- **Radio Frequency (RF)**

NMS and RF operate independently with no interference. Each technology runs at optimal parameters without compromise.

Benefits:

- Deep, smooth, anatomically aligned NMS contractions
- Controlled dermal heating for collagen renewal and skin tightening

This ensures independent operation of both technologies without interference.

WHY THIS MATTERS

ADIPOSE TISSUE SENSITIVITY

Adipose tissue is sensitive to sustained
When thermal energy is delivered
simultaneously with strong NMS,
adipose tissue may lead to:

- Increased metabolic stress
- Temporary inflammation
- In some patients, unwanted volume reduction over time

This isn't dangerous — but in contouring and lifting treatments, it can be clinically undesirable when the goal is to preserve softness and fullness.

EMERALD INNOVATION

Separates RF & NMS to preserve fat while enhancing muscle support.

This design allows:

- Custom treatment intensity based on neuromuscular tolerance
- Avoidance of thermal discomfort
- Volume preservation + structural lifting

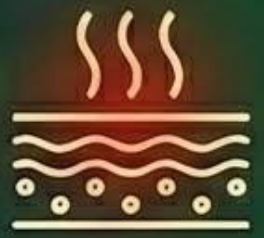
CORE MESSAGE: Emerald separates RF and NMS to prevent the negative heating effects of combined energy on adipose tissue, allowing each modality to operate optimally for comfort and results.

Clinical Rationale

- Distinct Dose–Response Curves: RF requires sustained thermal dosing for collagen remodeling; NMS depends on mechanical tension and time-under-tension for motor-unit conditioning.
- Pain and Nociceptor Activation: Combined RF+NMS increases cutaneous nociceptor activation, reducing tolerable intensity.
- Target Specificity: RF should remain dermal-focused; NMS must recruit deeper motor units for structural lift.
- Adipose Preservation: Excess heat risks adipocyte stress; isolated RF avoids unnecessary heating of fat compartments.
- Clinical Workflow & Safety: Separation simplifies titration and aligns with neuromodulation best practices.

BENEFITS OF INDEPENDENT OPERATION

Deep, smooth, anatomically aligned NMS contractions

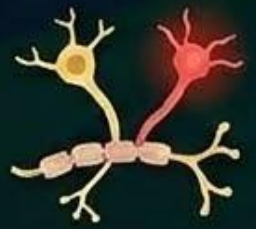


Controlled dermal heating for collagen renewal

Higher tolerable intensity → higher therapeutic dose

Cleaner clinical logic and safer dosing strategy

Emerald vs. Dual-Delivery Devices

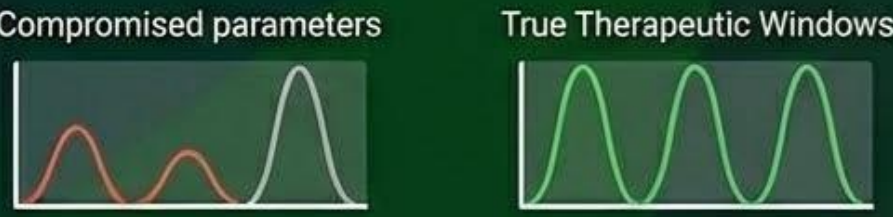


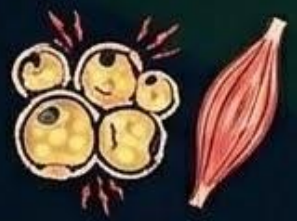
PAIN & TOLERABILITY

Dual-delivery increases nociceptor activation; Emerald separation improves comfort.

EFFICACY

Dual-delivery compromises parameters; Emerald reaches true therapeutic windows.





TISSUE SAFETY

Dual-delivery risks adipose stress; Emerald preserves fat and supports deeper recruitment.

One-Line Message: Emerald delivers comfort, safety, and efficacy by sɘfaɑlt by separating RF and NMS — achieving what dual-delivery devices cannot.

Independent views – why separate RF & NMS?

Springer 2024 - fNMES Systematic Review

Citation: Efthimiou TN, Perusquia-Hernandez M, Elsenaar A, Mehu M, Korb S. Application of facial neuromuscular electrical stimulation (fNMES) in psychophysiological research.

Objective (authors): "This systematic review aimed to summarize the current evidence on the application of facial neuromuscular electrical stimulation (fNMES) and to provide practical recommendations for its use in psychophysiological research."

Key Statement (authors): "Effectiveness depends on precise motor- point targeting and minimizing sensory interference.“

New Age Wonder Face Advantage: RF adds sensory load -> separation preserves NMES precision.

https://link.springer.com/article/10.3758/s13428-023-02262-7

MDPI 2025 - RF Neuromodulation Review

Citation: Sun S, Bok J, Jang Y, Seo H. Brain Disease-Modifying Effects of Radiofrequency as a Non-Contact Neuronal Stimulation Technology.

Objective (authors): "This review aims to summarize the current evidence on RF as a non-contact neuronal stimulation technology."

Key Statement (authors): "RF exposure has been shown to modulate neural stimulation and influence various brain activities in in vitro and in vivo models." Emerald Advantage: RF alters neuronal pathways -> separation avoids unpredictable interference.

Link: https://www.mdpi.com/1422-0067/26/5/2268

FDA Guidance 2022 - EMC of Medical Devices

Citation: U.S. Food and Drug Administration. Electromagnetic Compatibility (EMC) of Medical Devices-Guidance for Industry and FDA Staff. June 6, 2022.

Objective (authors): "This guidance describes FDA's recommendations for evaluating electromagnetic compatibility of medical devices."

Key Statement (authors): "Manufacturers should evaluate electromagnetic interactions between co-located or combined modalities to prevent unintended interference and performance degradation." Emerald Advantage: Regulatory support -> separation ensures compliance and safety.

Link: https://www.fda.gov/media/94758/download

SciELO Brasil 2023 - NMES in Facial Aging

Citation: Consulin MC, Vasques LI, Leonardi GR. Neuromuscular Electrical Stimulation in Facial Aging: an Integrative Literature Review..

Objective (authors): "This study aimed to evaluate the effectiveness of Neuromuscular Electrical Stimulation (NMES)... in attenuating the signs of facial aging."

Key Statement (authors): "Studies emphasize that inappropriate stimulation can lead to sensory irritation and reduced efficiency of neuromuscular activation."

Link: https://www.scielo.br/j/fp/a/zCPGbHzzHJth7hR7qCQXfyy/?format=html

Neuromodulation 2022 – Motor Point Stimulation Study

Citation:
Nakagawa K, Fok KL, Masani K, et al. Neuromuscular Recruitment Pattern in Motor Point Stimulation.

Objective (authors): “To investigate how simultaneous electrical and sensory stimulation affects motor-unit recruitment patterns during motor point stimulation.”

Key Statement (authors): “Simultaneous electrical and sensory stimuli interfere with motor-unit recruitment, reducing neuromuscular efficiency and increasing sensory irritation.”

Full text: https://onlinelibrary.wiley.com/doi/pdf/10.1111/aor.14445

WONDER FACE

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