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July 09-10, 2026 | Frankfurt, Germany

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Ultrasound and Its Effects on the Skin: Biophysical Mechanisms and Practical Applications for Supporting Skin Health

The skin is the largest organ of the human body and performs essential barrier, protective, immune, and regulatory functions. With ageing, as well as under the influence of environmental factors, the skin undergoes structural and functional changes, including impaired microcirculation, slo-wer cellular metabolism, reduced regenerative capacity, and deterioration of barrier function. As interest in the concept of healthy ageing continues to grow, increasing attention is being given to non-invasive approaches that support skin health and maintain its physiological functions.

This presentation explores the biophysical mechanisms through which ultrasound waves interact with skin tissues and examines their practical relevance in contemporary aesthetic practice. Particular attention is given to the transmission of acoustic energy through the skin, mechanical stimula-tion of tissues, acoustic microstreaming, temporary enhancement of stratum corneum permeability, improvement of local microcirculation and lymphatic drainage, as well as the influence of ultrasound on the extracellular matrix and cellular activity.

Special focus is placed on sonophoresis as a method for enhancing the penetration of active ingredients through the skin barrier and its role in supporting physiological skin processes. The presentation discusses the application of ultrasound for both younger skin affected by dehydration, impaired barrier function, and post-inflammatory changes, and ageing skin characterized by slower metabolic activity and reduced regenerative potential.

Based on current scientific knowledge and extensive practical experience with ultrasound technologies in device-based cosmetology and skin health man agement, this presentation highlights how a deeper understanding of ultrasound-tissue interactions can support evidence-informed practice. Ultra sound may serve as a valuable non-invasive tool for maintaining skin health, improving skin quality, and supporting overall well-being and quality of life within the framework of healthy ageing

Keywords: ultrasound, skin health, sonophoresis, microcirculation, barrier function, device-based cosmetology

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Biography

Nataliia Koziukevych is a practicing specialist in device-based cosmetology and an educator at NATA-LUX Beauty & Training in Munich, Germany. She specializes in non-invasive skin quality improvement technologies, device-based cosmetic procedures, and skin health management. With extensive practical experience working with clients of different age groups and various skin conditions, she focuses on evidence-informed approaches that combine skin physiology, modern device-based technologies, and clinical practice. Through her educational and professional activities, she contributes to the development of safe and effective treatment protocols aimed at maintaining skin health, improving skin quality, and supporting healthy ageing.

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