

EXION™ Fractional RF Applicator

MECHANISM OF ACTION PAPER

RF microneedling is a minimally invasive cosmetic treatment that improves the skin's appearance by inducing controlled thermal damage in the deeper layers of the dermis. This is achieved through the use of micro needles that deliver radiofrequency energy. Throughout the treatment, the targeted tissue is heated to temperatures ranging from 60 to 80°C, resulting in the coagulation and denaturation of old collagen and elastin fibers.¹⁻⁴

Mechanical and thermal injuries trigger a wound healing cascade that leads to remodeling of the affected tissue, resulting in increased dermal thickness, density, firmness and elasticity. However, existing technologies have a drawback in high treatment discomfort. This discomfort often deters patients from seeking further treatment sessions due to the pain experienced from needle penetration and RF heating, particularly in subdermal treatments that require deep needle penetrations. The pain sensation increases with the depth of needle penetration, which is associated with the activation of several types of mechanoreceptors in the dermis, including nerve pain receptors^{5,6}.

EXION Fractional RF technology offers a more comfortable experience by using a unique combination of monopolar radiofrequency and AI-controlled energy delivery that allows deep tissue penetration without full needle insertion. The EXION Fractional RF technology overcomes intense pain sensation by inserting the needle to only 4 mm and creating an additional 4 mm thermal gradient below the needle. This way the deep mechanical pain receptors are bypassed and the subdermal tissue can be affected up to 8 mm depth.

EXION Fractional RF is equipped with an AI pulse control system that eliminates the need for multiple passes during treatment. The AI retrieves impedance measurement from every single needle and adapts the major pulse parameters to optimize energy delivery for highest efficacy, automatically setting the RF power, pulse length, and delivery rate for each pulse. The technology ensures that the necessary energy is effectively delivered during each shot from each needle, resulting in a single-pass procedure that minimizes discomfort.

Without in-depth knowledge it could be assumed that without full needle insertion or multiple passes it is not possible to achieve the "microneedling-like" results, however, the clinical studies suggest otherwise.

Duncan et al., as well as Clark-Loeser & Halaas, conducted studies on single-pass therapy on the face and thermal gradient treatment on the body, respectively. Both studies involved three therapy sessions and showed impressive results with high patient satisfaction rates. Clark-Loeser reported that 82% of subjects found the treatments comfortable, and there was a 41% reduction in acne scars, as shown through 3D photo analysis. The second study showed that 90% of subjects self-reported significantly improved appearance with only mild discomfort, and 98% expressed satisfaction with the results^{7,8}.



EXION Fractional RF is a breakthrough technology that changes the perception of microneedling RF as a painful procedure. It improves the patient's perception of the treatment while yielding great results in treating stretch marks, acne scars, and overall skin rejuvenation along with subdermal remodeling.

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