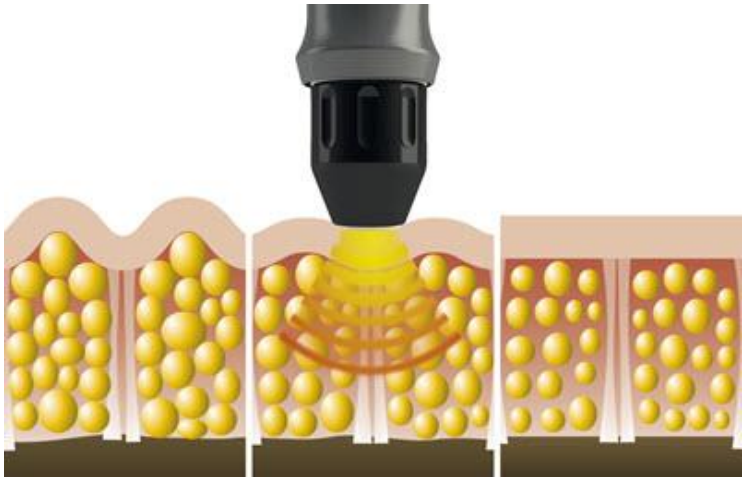
Clinical Data: Extracorporeal Shock Wave Therapy in the Treatment of Cellulite

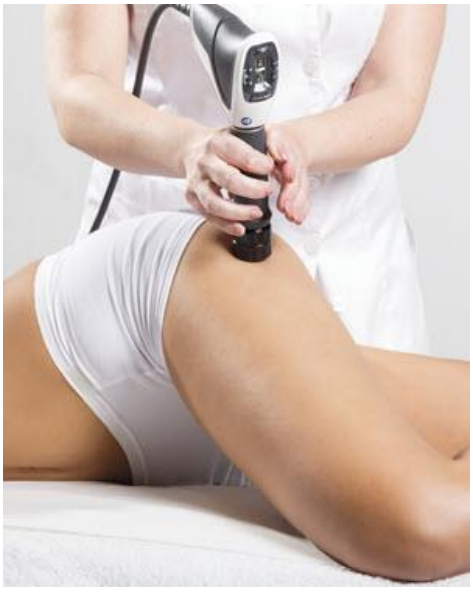
The author (Dr. Karsten Knobloch, FACS and president of German Shock Wave Society DIGEST), writes that as far as cellulite is concerned, 12 clinically controlled studies are available that confirm the positive effects of both radial and focused ESWT technologies. In order to illustrate this, he describes some of these studies and their results in detail.

The first publication about the effects of ESWT on cellulite was published in 2005 [1]. In the study, 26 women with lipedema and cellulite were treated with focused ESWT. The results showed that it was possible to reduce the increased concentrations of serum malondialdehyde (MDA) and of lipid peroxidation products significantly by applying ESWT. In addition, the results showed a strong correlation between the number of ESWT treatments and clinical efficacy for the first time: the more often patients were treated (1-6 sessions), the better was the measured elasticity of the patients' skin.



In another double-blinded, randomized-controlled trial from 2013 [2], 53 patients with a mean age of 42±5 years (BMI [Body-Mass-Index] 24.2±2.3kg/m^2) were randomly allocated into the intervention or the control group. The intervention group received 6 sessions of focused ESWT (0.35 mJ/mm^2, 2,000 impulses) plus specific gluteal strength exercise training. The control group received 6 sessions of SHAM-ESWT (0.01 mJ/mm^2) plus specific gluteal strength exercise training. Follow-up was 12 weeks after the 6 focused shock wave sessions. The primary endpoint of the study was the "cellulite severity score" (CSS), a validated score for the classification of cellulite with a range from 0 (no cellulite) to 15 (severe cellulite). The CSS in the intervention group was 10.9 ± 3.8 before focused ESWT and 8.3 ± 4 after 12 weeks (p = 0.001, 2.53 improvement, 95 % confidence interval (CI): 1.43–3.62). The CSS in the placebo group did not change. It was 10.0 ± 3.8 before intervention and 10.1 ± 3.8 after 12 weeks (p = 0.876, 95 % CI: 1.1–0.97). The change of the CSS in the intervention group and the control group was significantly different (p = 0.001, -24.3 effect size, 95 % CI: -36.5 to -12.1).

In 2015, a systematic metaanalysis [3] of all published studies on the effects of ESWT on cellulite included a total of 11 clinical trials with a total of 297 females. Among the 11 clinical trials were 5 randomized controlled trials (LoE 1b). In the studies, both focused as well as radial ESWT devices were found effective in treating cellulite. Typically, 6 to 8 sessions overall were studied in the clinical trials (1-2 per week).



In 2017, a cohort study with 30 females was published [4]. They underwent 12 sessions of combined focused/radial ESWT twice a week. The mean CSS improved significantly from 11.1 to 9.5. Hips circumference was reduced from 103 cm to 100 cm. The thickness of the subcutaneous fat tissue also decreased significantly from 28.3 ± 7 mm to 26.6 mm. About 90 % of the women were satisfied with the combined focused/radial ESWT and would undergo the treatment again.

Extracorporeal shock wave therapy in autologous fat transplantation

The overview article also describes the application of ESWT in autologous fat transplantation: Stimulation of autologous fatty tissue with adipose-derived stem cells (ASC) by ESWT (especially before liposuction) has recently been shown in several experimental studies. It is a promising approach to improve the quality and vitality of ASCs. The author concludes that a “preventive” ESWT prior to lipotransfer makes sense in order to improve cell survival rate and the quality of the lipoaspirate.

Conclusion

Based on the available clinical data, the author concludes that extracorporeal shock wave therapy (ESWT) is a treatment option free of side effects when applied competently and that it also works well in combination with other treatment methods.

References:

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2. Knobloch K, Joest B, Krämer R, Vogt PM (2013) Cellulite and focused extracorporeal shock wave therapy for non-invasive body contouring: a randomized trial. Dermatol Ther (Heidelb) 3(2):143–155

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* Source: Knobloch, K.. Cellulitebehandlung mithilfe von Stammzellen und Stoßwellen. Was kann man mit physikalischen Methoden erreichen? J Ästhet Chir (2018). doi.org/10.1007/s12631-018-0167-y (open access)

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