

# PO 351 Body Composition Analysis accompanying the Acoustic wave therapy to improve predictability of cellulite therapy results

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## Introduction

Since two years we are treating cellulite patients with the Acoustic Wave Therapy (AWT). Unfortunately during the first half-year we achieved differing results from no effect to very good effect. Aim of our investigation was to improve the predictability of AWT results and improve the results themselves.

## Cellulite

The term cellulite is defined as a change in the surface contour of the skin that results in an orange peel or „mattress“ appearance of the skin. 85-98% of the females of all race and ethnic types are affected. Although cellulite is not defined to be a pathologic condition, it is a main concern for many adult females.

As contributory factors for the formation of cellulite altered connective tissue septae, protrusion of subcutaneous adipose tissue into the reticular dermis, vascular changes and even inflammatory changes have been identified.

## Material & Methods

In my position of managing an aesthetic consultation I am confronted with the demand for cellulite treatment since several years.



Figure 1. Acoustic Wave Therapy Cellactor (picture: Storz Medical AG)



Figure 2. Application of Cellactor

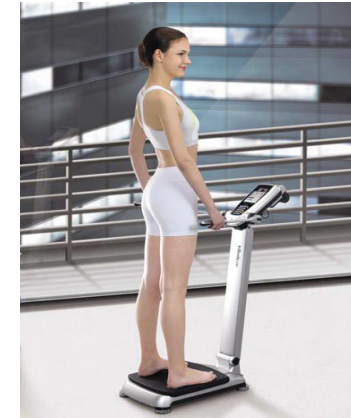


Figure 3. InBody composition analysis scale (picture: JP Global Markets GmbH)

Historically, few treatments have been truly effective. AWT, delivered by a ballistic impulse method, has shown an effect to improve the appearance of cellulite in the majority of patients. So we selected this method as our standard treatment for cellulite patients.

Since two years we operate about ten to fifteen treatments per week. Unfortunately in the first half-year we achieved differing results from no effect to very good effect. In spite of the good pre-existent studies and the theoretically convincing technique, aim of our investigation was to improve the

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predictability of AWT results and the results themselves.

Before starting a treatment series of 10 treatments (tx) 50 minutes, each patient was weighted and photo documented. Additionally we performed a body composition analysis (BCA). The test, done by a machine from InBody, provides amongst others the following test data:

- Lean tissue mass in total and regions especially legs
- Lean tissue percentage
- Body fat [kg]
- Body fat percentage
- Body mass index (BMI)

Our 69 female patients were graded by three independent investigators to have very mild to mild cellulite (rated 1), moderate cellulite (2) or severe cellulite (3).

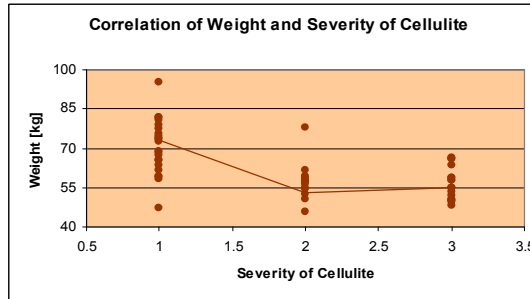


Figure 4. Correlation of weight and severity of cellulite

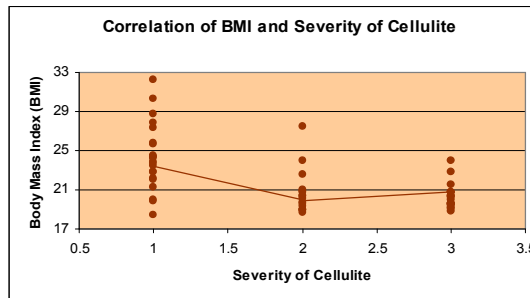


Figure 5. Correlation of BMI and severity of cellulite

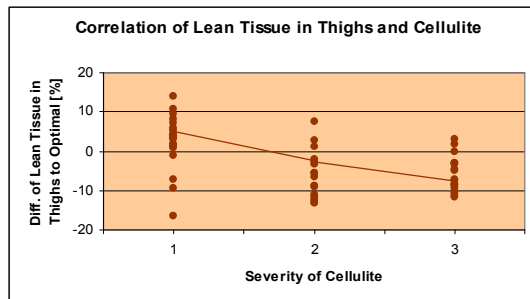


Figure 6. Correlation of lean tissue in thighs and severity of cellulite

## Results

Our data showed a weak correlation of total weight and BMI with the grade of cellulite, as shown in Figure 4 and Figure 5. But we found a good correlation of lean tissue percentage in the legs to the severity of cellulite. Also the proportion of lean tissue/total weight showed a significant correlation to the severity of cellulite. This is shown in Figure 6.

Patients with lower amounts of lean tissue showed less good improvements of their cellulite under the treatment of AWT.

## Conclusion

The outcome of this is, that patients with low percentage of muscle tissue in the legs, need to undergo an additional sport and dietetic program with special exercises for legs and gluteal areas.

AWT is known to be a completely non-invasive treatment. In contrary to many other methods AWT does not destroy any tissue, but allows the body's natural healing process to increase the recovery from the multifactorial problems of Cellulite.

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Recent studies have revealed two major causes of cellulite. The first is the hardening and the contraction of the septae, which organize the skin fat tissue. The contraction of the septae leads to the typical dimpling. In addition it causes a blockage of the blood vessels and lymphatic system. The lymphatic blockage leads to a swollen appearance of the skin. The second major reason of cellulite is the fat protrusion into the reticular dermis.

AWT works on both problems. Without generating any heating effect, Shock Wave produces a hyperaemia due to the mechanical effect at the septa, which show higher density. But most important, it also initiates biochemical processes like the release of Nitric Oxide, which not only generates a vasodilatation but also a neo-vascularisation. This improved micro-circulation is the reason for the determined long term effects. Additionally, changes of the skin thickness due to the revealed effect on fibroblasts were shown.

Our data enforces these findings. Without doubt a low level of lean tissue (muscle tissue) in the legs of healthy women is due to little movements. Training improves the circulation. So we can suppose that the whole circulation in women with low lean tissue levels is weak. Although we have not measured the skin temperature of our

cellulite patients they often tell how cold their skin feels in the areas of cellulite.

Acoustic Wave Therapy has an effective depth of 6mm. It is conceivable that AWT even can support the muscle forming by improving the tissue situation.

At the end a simple advice for our patients with cellulite:

**Better go for sports  
than for a diet!**

**Before Treatment**



**After 10 Treatments**



**Figure 7. Result of 10tx by a person with high BMI but high lean tissue percentage in thighs**