

# Changes in the Structure of Collagen Distribution in the Skin, Caused by a Manual Technique

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This is a pilot study which deals with changes in the collagen distribution in the connective tissue of the skin caused by manual treatment and made visible using a high frequency ultrasound technique.

**BACKGROUND** In my practice of body therapy we treat patients with functional disorders like chronic pain, nausea, anxiety, etc. These disorders consist of an unpleasant sensation which is accompanied by some movement restriction or disturbance. They are considered sensory motor disorders, without distinguishing the root cause as body or mind. In my clinical experience such disorders originate from the surface of the body e.g. from the muscles, muscles fasciae or skin. As treatment, we use several hands-on techniques, movement and body awareness training – the end goal being a reduction in heightened tonus in muscles and connective tissue and thereby a change in sensory perception, movement and posture.

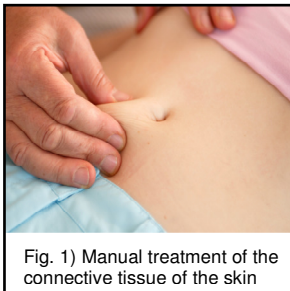


Fig. 1) Manual treatment of the connective tissue of the skin

One of the manual techniques is a treatment of the connective tissue of the skin using pressing and rolling movements of the fingers. Changes by this treatment can be felt: tissue becomes softer, more regular, and less tense. A study was made in order to objectively document these changes.

**METHODS:** 30 patients were measured with high frequency ultrasound (22 MHz) immediately before and after their first treatment in the area where they experienced discomfort.

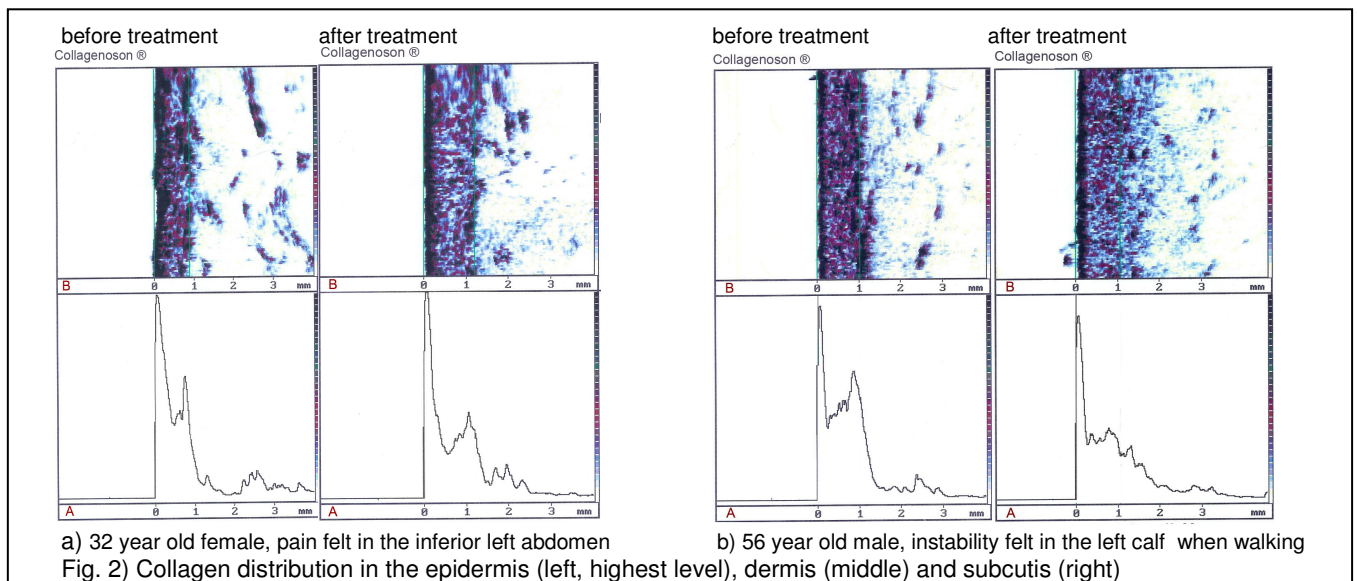


Fig. 2) Collagen distribution in the epidermis (left, highest level), dermis (middle) and subcutis (right)

**RESULTS** Two examples of the measurements are given above. The structure of collagen distribution in the skin is changed by the treatment. In the dermis after treatment the concentration of collagen is reduced, especially in the areas of highest density. Also, collagen seems more distributed throughout the surrounding fluid matrix so that this layer of the skin becomes broader. Transition from dermis to subcutis is less marked in terms of collagen density. The changes in the dermis proved to be highly significant. The epidermis remained unchanged. Changes in the subcutis were inconclusive. The thickness of the dermis of the sampled area in relation to others did not change.

**CONCLUSION:** The structure of the collagen matrix in the dermis can be changed by a manual technique in areas of the body where patients experience discomfort such as chronic pain and/or have some movement limitation. The changes mirror the differences in tension, softness and regularity, which can be palpated before and after treatment and are thought to be caused by changes in the mechanical forces of fibroblasts.