

## Editorial

# Measuring skin mechanics. The soft touch in a hard environment?

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TECHNOLOGY in medical science is often perceived as hard and less than friendly by patients. Appropriate technology to measure biophysical properties of the skin may, however, have its greatest impact by being soft, i.e., non-invasive and capable of detecting small differences or abnormalities. We are now able to detect minute differences in colour, permeability, surface roughness and many other aspects of normal human skin. In addition, several methods have been developed for the measurement of the mechanical properties of human skin *in vivo*. The measure of skin mechanics is one way in which to gain more objective information in the realm of the tactile sense. The mechanical properties of skin are, therefore, important on many different levels.

The skin is not only our largest organ and our physical interface with the surrounding environment, but it is also the seat of our sense of touch. Touch involves the mechanical properties of the skin in two ways. A certain plasticity of the skin is necessary for us to sense adequately. Similarly, the plasticity of what we touch is often important. In clinical medicine, patients are touched for a number of purposes, one of the most common being the mechanical properties of the skin, which are commonly interpreted as a sign of body water content. Skin mechanics are, therefore, important both for our ability to sense and for our impression of what we touch.

Skin mechanics are also of immense importance to the maintenance of good dermatological health. It is a common experience among dermatological patients that skin which has lost its normal elasticity and resilience becomes bruised, cracked and very difficult to use. Patients suffering from such common skin disease as psoriasis are often greatly helped by bland ointments and de-scaling agents that work towards restoring the normal mechanical functions of the skin.

Finally, there is a large and growing demand for

modifiers of skin plasticity in contemporary society. This ranges from cosmetic preparations to aesthetic plastic surgery, and the modifier often serves the purpose of reconstituting elastic and supple skin in areas or ages where photo- or chronological ageing has altered the mechanical properties of the skin.

In spite of the immediate and obvious relevance of skin mechanics for studies on many different levels, considerable methodological problems remain to be addressed. In contrast to other cutaneous qualities, skin mechanics have not been studied widely and, in contrast to, e.g., TEWL, some level of methodological consensus still has to be found. These two problems are most likely causally interconnected, as one is dependent on the solution of the other.

There are several ways out of this impasse. Some solutions are primarily technical; e.g., the measurements can be correlated more closely to the underlying structure or the dynamics of the measured parameters can be described in greater detail. However, to any clinician, one obvious way is to establish the clinical relevance of a given measure, i.e., how clinically "true" are the results. Establishing both the technical specificity as well as the clinical specificity of any given method is the prerequisite for full implementation and further development.

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