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Towards a mobile device for skin-object friction measurements

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The interest in tribology of skin in interaction with other materials is growing, nevertheless, still much has to be discovered. The differences in methods and different equipment may be responsible for the large variations in the results reported in the literature. For example, the reported values for μ_s and μ_d , the static and dynamic coefficient of friction, vary between 0.11-2.1 and 0.09-3.6 respectively.

These variations make it difficult to compare the reported studies. Furthermore, more extensive or clearer descriptions of the methods (e.g. applied normal load, sliding velocity, anatomical location, circumstances) may increase the reproducibility and comparability of the results. This reproducibility is essential: without reliable and validated instruments and clearly described methods it is not possible to compare between results or to identify factors that may influence the tribological properties of the human skin in interaction with objects.

The foundation of these conclusions is an extensive literature review, in which the aim was not only to explore the (variation in) coefficient of friction of human skin and various objects, but also to evaluate a variety of factors influencing the skin's frictional properties postulated in the literature. Based on this literature and the desires of the customer, several characteristics and conditions were formulated which a new measuring device, suitable for skin friction measurements, would readily meet. These form the starting point for the development of a new tribometer for skin.