

New device eliminates itchy sweaters and blisters: Innovative invention tracks skin friction

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Shoes (or shoe-sock combinations) that do not give you blisters, shaving that doesn't cause burning cheeks, clothes that don't itch, coffee cups that won't slip out of your hands, telephone touch screens that you use with wet hands, non-slip bathroom floors that stay that way, even if you have soapy feet. These are just some of the problems that will soon be solved using the know-how generated by RevoltST (the small, newly invented device in question). Noor Veijgen developed this device at the University of Twente, in cooperation with TNO.

The RevoltST [device](#) was developed by Noor Veijgen while she was carrying out research for her PhD. It is an entirely novel invention. At present, RevoltST is being used exclusively by researchers, however industry has already expressed an interest. For instance, it can be used to generate effective personal recommendations concerning [skin](#) care products. It has also attracted the interest of skin researchers (in areas such as shavers, shoe-sock combinations, and the textiles used in hospital beds), who see it as a useful [measuring instrument](#).

Hydration and skin temperature

"My chosen field of research is known as 'tribology'. This includes skin friction, a topic that touches on [materials science](#), dermatology, product development, and [rehabilitation medicine](#). This new measuring device makes it possible, for example, to compare four hundred and fifty skin

friction measurements in terms of skin hydration and [skin temperature](#). These measurements can, for example, be carried out at four different sites on the body. A range of materials can be used, including stainless steel and aluminium. Research into skin friction involves an enormous number of variables. One such variable is the nature of the skin area involved (a site with a lot of hair or very little), others are the contact material (steel, aluminium, plastics, textiles ...), the characteristics of the test subject (man or woman) and the surroundings (humidity)."

The device

The RevoltST is a compact device (measuring 106 x 69 x 39 mm), which is very light (weighing less than 250 grams) and can be operated wirelessly. A cylindrical contact stud (\varnothing 20 mm, length 10 mm), which can be made of any test material required, is mounted in the device. This cylindrical stud rotates as it is moved across the skin. This type of motion between the skin and the contact material makes it possible to determine the effect of the route taken on the measured friction. It also ensures that velocity over the contact surface remains constant. The measuring signals are digitized using an integrated signal converter and the data is stored in the device's internal memory. The RevoltST has an ABS casing, and a great deal of care has been devoted to its aesthetic qualities.

Dr. Noor Veijgen's doctoral thesis is titled "Skin friction. A novel approach to measuring in vivo human skin."

Provided by University of Twente

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