e-Strip: The First Self-Taught, Personalized and Wearable Smart Medical Device to Control the Temperature of Body Parts

Szegedi, Melinda (School: ELTE Apaczai Csere Janos High School)

The subject of my current development is a medical device which can keep the controlled temperature of the skin for hours. The effective part of the device is a thermo-electric cooler based on the Peltier principle. The control unit is operated by a microcontroller which communicates with a server in a cloud using WiFi network. To personalize the therapy, I have to find the necessary and sufficient method of treatment. I collect (anonymous) data about the patient, the disease and the success of previous treatments using a smart phone application as a GUI. By using these parameters then I can calculate the thickness of the skin and the adipose tissue, thus the thermal conductivity of the skin can be estimated. The heating or the cooling must reach the pathologic area but I must not cause discomfort by excessive heat. Based on the huge database from many patients, I can recommend the (subjective or objective) optimal therapeutic parameters, which are not included in scientific publications even in the absence of tools and experimental data. Under standardized and controlled conditions, it is possible to determine the most beneficial temperature, duration and frequency of treatment required for the various diseases. According to the main claim of the related patent, this could be the first self-taught therapeutic device.

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