

TeXiSense: a portable device for real time, *long-term* and in-situ foot pressure monitoring

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Abstract

Objective: Although most existing insole plantar pressure monitoring systems are promising in their ability to measure in real time the pressures at the foot/insole interface, they do suffer from several limitations. Sensor technology is included in the insole that prevents any overpressure detection in the dorsal surfaces of the toes and the feet, they still need a wire connection that makes them inappropriate to a daily use and they are prohibitively expensive for widespread consumer and clinical use. A promising approach to partly overcome these disadvantages could be the development of textile technologies.

Design: We designed a fully wireless, customizable and washable sock made of a textile able to measure pressures all around the foot and the ankle, TeXiSense.

Results: Preliminary studies showed that TeXiSense is a functional device that meets requirements in terms of valid and reliable real time, long-term and in-situ foot pressure monitoring and in terms of comfort, portability, ease of use and aesthetics for a daily use.

Conclusions: The portable TeXiSense allowing real time, long-term and in-situ foot pressure monitoring, could have a significant impact for scientific testing of orthotic devices. Current clinical studies are currently performed to strengthen the potential value of this system.