

The “smart Insole”: A Pressure-sensing and Vibrating Insole to Improve Compliance in Individuals with Excessive Foot Pronation

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Foot orthoses are able to affect biomechanics and reduce foot hyper-pronation by forcing an angular medial accommodation in order to shift weight or change angulations of the lower limbs.

Non-adherence to exercise can interfere with quality healthcare outcomes in individuals with excessive foot pronation who wear insoles but do not exercise as required.

The proposed clinical trial is intended to investigate the effectiveness of a “smart” insole. It will make use of foot insoles imbedded with an electronic device that senses foot pressure and vibrates when the foot goes into hyper-pronation. The insole will also be imbedded with a Bluetooth chip that will provide information onto a PC or smartphone. The individual’s foot analysis will be done via the PC or smartphone’s live streaming.

An App will be created and paired to the insole. Information from the insole recording will be transferred to the PC or smart phone. The app will also provide timely reminders of daily exercise which may improve exercise compliance.

The vibratory sensation is expected to stimulate the mechanoreceptors on the soles of the feet apart from serving as a reminder to actively control a hyper-pronated foot posture especially during static postures. The in-built pressure sensor will trigger the vibration each time the foot hyper-pronates, providing positive feed-back.

The insole can be constructed and investigated on non-sports or sports persons with the combined help of other qualified professionals.

The major aims and special features of the insole will be further discussed during the presentation.

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