

Experimental Analysis of Corrective Insoles Materials

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Abstract.

The corrective static insole is a medical device meant to protect and support the locomotion system. In case of afflictions or lesions of this system, the insoles play a part in healing and rehabilitation. Our study aims at analyzing a personalized insole, designed by rapid prototyping with low expenses in order to assist the rehabilitation of pathologies like flat foot and adjacent complications, redistribution of plantar pressures at feet level but also adjusting postural attitude of walking and standing. The insole is developed following a thorough medical examination in order to establish a diagnosis and then an expert in biomechanics and medical engineering will design the product according to the subject's needs and anthropometric dimensions.

The paper performs also the analysis of the materials used for manufacturing the corrective insoles, especially from mechanical point of view by determining the static and dynamic loads that may act upon the device. The study was done by help of Solidworks and provides a finite element analysis of the material used for the personalized insole, in order to provide an efficient and convenient methodology in supporting feet imbalance following a pathology.