Fundamental references over insole plantar pressure in terms of human body weight percentage

ABSTRACT

This paper proposes a fundamental study and detailed investigation about the insole touch area of plantar pressure to be considered as a reference measurement for all researchers that study any location over the insole area. A 101 pressure sensor positions, that number represents the most covered area of the insole, these 101 locations were investigated in this work to find out the variation limits for each individual point. A different gain conditioning circuits based on the supply op-amp has been used to measure the output of the sensors to fulfill sufficient accuracy. The measurements have been carried out on one size foot, but with persons have different weights to prove the proposed method hypothesis. It is found that more than 80% of the measured points were different, even for different body weights. The measurements resulted in that maximum applied force, and consequently the mass, not exceed one kilogram, while the minimum approach to a few grams. The verification of the hypothesis is satisfied when the accumulation of all points, in terms of mass, results in Total body weight/242%.

Keyword: Insole touch area; Plantar insole; Reference points; Sensor driving circuit