

Sacral Level Spina Bifida Plantar Pressure Analysis

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Abstract

The objective of this study is to see if sacral level Spina Bifida (SSB) patients with myelomeningocele have equivalent to healthy control (HC) patient's feet when compared quantitatively and qualitatively using pedobarography. Quantitative measures included foot progression angle, foot start location, foot end location, lateral pressure ratio, and arch pressure ratio, continuously through center of pressure, and qualitatively for peak pressure and shape. The data was collected retrospectively from Children's Hospital Colorado's Gait Analysis Laboratory using a pedobarography mat. The quantitative data was analyzed using a Covariant T-Test comparing the 17 SSB patients to the 18 HC patients across multiple variables looking for covariation with age and BMI. Additionally analysis of the continuous center of pressure data performed. The data strongly supports that the SSB patients have statistically significant increases in the variability of their center of pressure through the gait cycle show by the higher minimum ($p < 0.01$) and a lower maximum ($p < 0.01$), and a higher amount of skew ($p < 0.05$). The qualitative analysis was performed visually post data processing and showed increased SSB variability as well. In this small study, pedobarography was able to distinguish a significant difference between SSB and HC patients.