

## **Abstract**

This study seeks to investigate if patients with Sacral level Spina Bifida (SSB) with myelomeningocele have equivalent foot mechanics when compared quantitatively and qualitatively using pedobarography to healthy controls (HC). Quantitative measures included foot progression angle, foot start location, foot end location, lateral pressure ratio, and arch pressure ratio, and center of pressure. Qualitative measures compared peak pressures 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. 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 ( $p < 0.05$ ). Comparative analysis reveals fundamental differences in the feet of children with sacral level spina bifida. While it is uncertain if plantar pressure will yield information that can aid in clinical risk stratification and decision making for this population, it does show promise for future prospective research.