

## **Improving Care for Spinal Deformity Patients: Utilizing Wearable Tools for Functional and Disability Assessments**

PI: Haddas

Clinicians: Menga, Rubery, Puvanesarajah, Lavelle, and Diebo

Disability and functional assessments are of increasing interest in adult spinal deformity (ASD) patients. Motion analysis (i.e., gait and balance analyses) performed in a complex research lab is currently one of the few options to measure disability and functional outcomes. These assessments are expensive and not readily available to spine deformity surgeons. Simple and easy-to-use technologies are needed so spine care providers can assess the patient's functional outcomes objectively. Current wearable devices (i.e., Apple Watch or Fitbit) are able to track a patient's gait, heart rate, and level of activity among other health related criteria, but lack defining clinical studies for applications in spine. We hypothesize that a spine specific wearable can objectively assess a patient's disability and function during a clinic visit and will significantly enhance our understanding of spinal deformity both before and after treatment. The proposed spine-specific wearable with tracking monitors allows for more cost-effective collection of functional data in real-time. These devices may eventually obviate the need for a motion analysis lab for routine clinical assessments. With this new system, a comprehensive picture of disability and functional assessments, PROMs, and radiographic parameters will be available for spine surgeons and will inform postoperative prognosis.