Detecting Myofascial Tightness in the Lower Extremities

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The fascia is a layer of connective tissue that connects to most internal structures of the human body to keep them in place. Myofascial tightness is tightness within the fascia that connects to the muscles. Myofascial tightness is an extremely underdiagnosed and overlooked condition that affects what is estimated to be 85% of people at some point during their life. There is no current test that can diagnose this condition. This leads to the question, can a device and program be engineered to detect myofascial tightness in the lower extremities? The engineering goal is to create a device that measures myofascial tightness. 3D print a device that three FSRs can attach to, all three are necessary for device function but only one is used to measure tightness. An Arduino microcontroller will be used to collect data as well as run the program created to collect tightness readings from the 3D-printed device. Construct a model leg that is capable of being adjusted via different configurations of latex bladders filled with various amounts of sand. Construct a projector stand that will project a standardized grid onto the model leg from a distance of one meter. Test in various configurations to confirm that the device can detect differences in myofascial tightness. The ANOVA statistical test was used to confirm that the differences in data collected by the device were statistically significant. Additionally, the use of a standardized grid projection establishes a standard process to measure myofascial tightness.

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