Designing a Flex Sensor-Based Posture Trainer and Determining Its Effect on Sedentary Posture

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Poor posture can result in many alarming health risks. Currently, there are two overarching types of available posture trainers: posture braces and electronic posture reminders. Neither of them can efficiently train good posture. In this experiment, flex sensors were used as an alternative to specifically measure posture and produce efficient posture training. The purpose of this experiment was to create a posture trainer to measure and improve sedentary posture. The scientist hypothesized the posture trainer would increase the time participants sat with good posture and lower their average measured slouch value. The device uses flex sensors and Arduino coding software to measure the precise bend in the lower back (slouch value). The participants sat in a specified position at the beginning of their trial so the scientist could evaluate a threshold of good and bad posture specific to each participant. The participants wore the device 30 minutes each day for one week. On day one, their average slouch value and minutes spent in the “good posture threshold” were recorded. For the next five days, if the participants slouched into the “bad posture threshold”, the device would vibrate, alerting them to adjust their posture and train them to sit in the “good posture threshold”. On the last day, data was collected again and compared to the participant’s first day. The scientist’s results were statistically significant, and they rejected their null hypothesis. Wearing the posture trainer after vibration feedback led to more time sitting with good posture and a lower slouch value.

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