

Development of the Electronics for a Gait Retraining Device

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As many as 40% of individuals who sustain a lateral ankle sprain develop chronic ankle instability (CAI). Those with CAI have decreased neuromuscular control and dysfunctional movement pattern, resulting in gait with a more inverted with the ankle in an inverted position. The change in biomechanics causes individuals to be more prone to lateral ankle sprains. To retrain gait back to a less dangerous position, a vibration based device was developed to detect when individuals were exerting excess force on the outside of the foot. The original device was successful in a lab setting but fails to make the transition into a real-world application. We have modified to utilize a microcontroller and Bluetooth technology to provide feedback to a healthcare provider on a patient's gait retraining process. The results from the device would be sent out to an app where a healthcare provider could see the progress of a patient. The device suggests real-world application of a vibration based gait retraining device for patients and healthcare providers to use in order to limit ankle instability. Future plans of the device include continuous improvement until there is seamless connection between the app and the device, creating a printed circuit board, using a new Force Sensitive Resistor, and incorporating visual feedback through a laser to retrain gait.