

Healing Soles: An Engineering Approach to Toe Touch Weight Bearing Status

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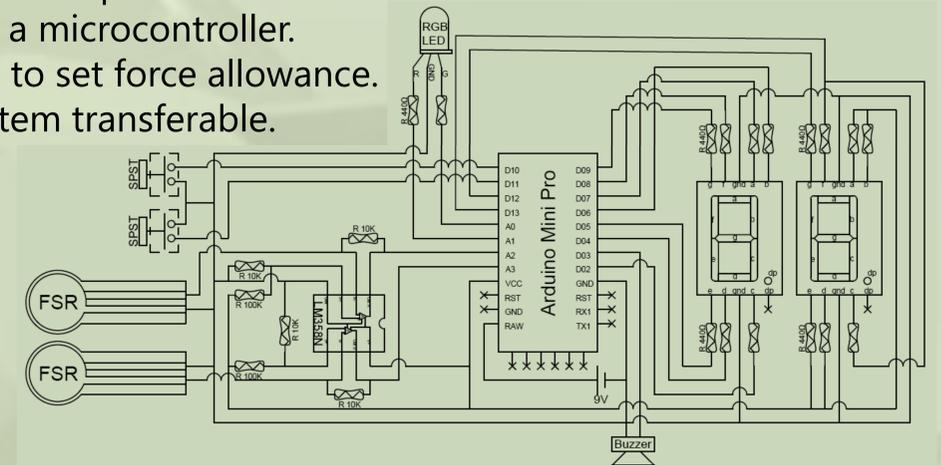
Opportunity

- Patients with lower limb injuries are often placed under partial weight bearing status, given a specific amount of weight to place on their injured limb.
- Using typical feedback training methods, patient are on average 20 to 30 percent off when trying to replicating the weight status they were trained at.
- Training with a bathroom scale led to retention period of under an hour.
- In office training using biofeedback provides higher retention period but is forgotten after 1 to 2 days.
- Healing Soles removes the need to remember or worry about the weight placed on injured limbs because it will inform patients if they are out of compliance with their weight bearing status.

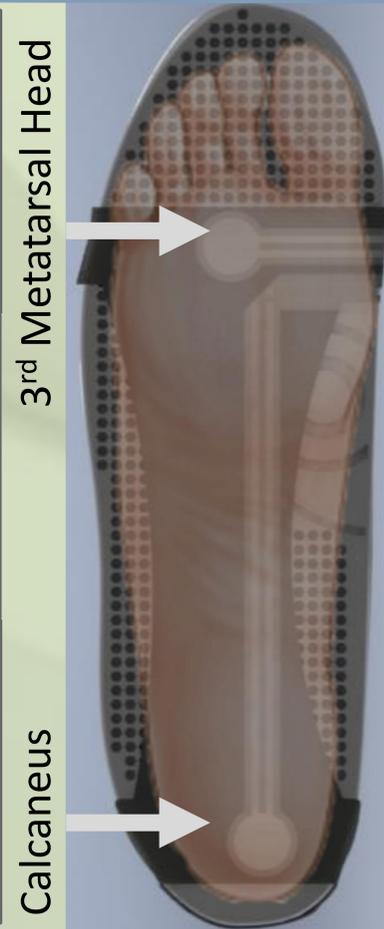
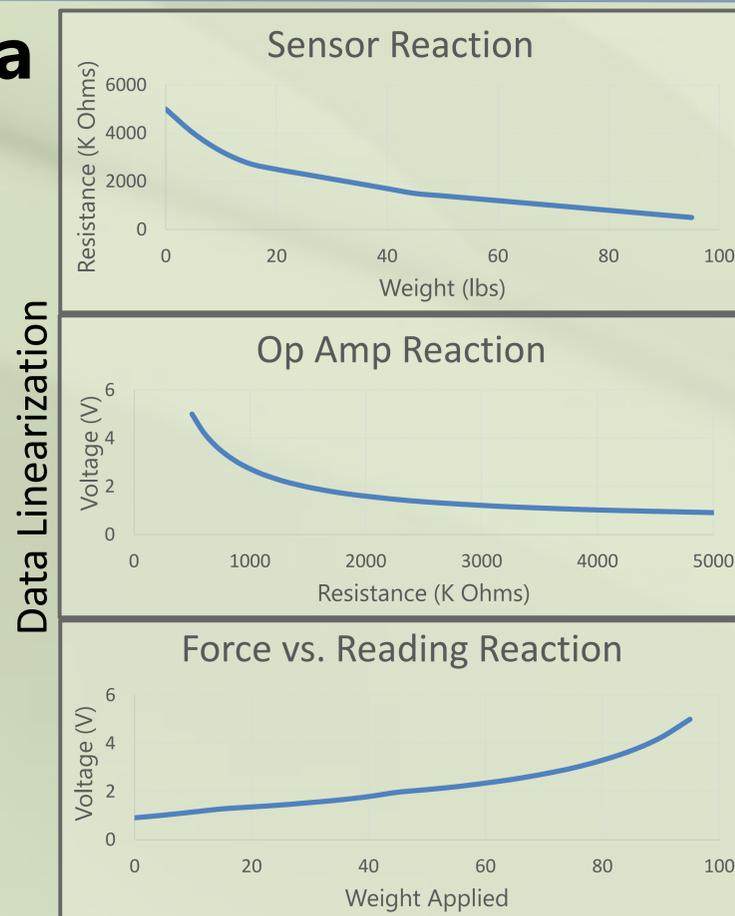
Approach

Order of priorities:

1. Determine the force the patient is placing on the ground with force sensing resistors.
2. Create system that provides both a visual and audio feedback to the patient using a microcontroller.
3. Allow patient to set force allowance.
4. Make the system transferable.



Data



Impact

- Healing Soles provides real-time feedback for patients placed into partial weight bearing status during recovery from lower limb injuries.
- The system will grow with the patient, allowing them to up the weight limit as they recover.
- The system can protect the more than 5 million patients with lower limb injuries each year in the U.S. from injuring themselves more through over or under use of their injured limb.
- In a vulnerable time, patients can take comfort in that their form is being constantly monitored to protect them.
- Patients can spend less time focused on recovery techniques and more time getting back to normalcy.
- Healing Soles has the potential to be as common as a pair of crutches when prescribing equipment.