INNOVATION ROUNDS:
Sensors for Measuring Temperature and Muscle Contraction in Custom Made Orthotic Devices

Mike Szekeres, Joy MacDermid, Graham King

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The Problem

- 3.5 million upper extremity injuries each year in the United States and 418,000 injuries each year in Canada.
- Splinting is a standard of care for many fractures, soft tissue injuries, repetitive strain injuries, and arthritis conditions.
- Are they worn?
- How does wearing time correlate with outcomes?
- How well do these devices provide rest to tissue?
Current Work
The Problem

- The sensor is obvious – not full deception
- Not customizable in form factor
- Currently reliant on external manufacturers for sensors
- Currently only measuring temperature
Project Objectives

Development of 1-2 Prototype Sensors
These sensors will be of a form factor that easily allows them to be mounted to the underside of a customs splint, measuring temperature and surface EMG activity

Validate the Sensors
Compare data from prototypes to current commercially available sensors
Multidisciplinary Approach

- Partnerships across OT, PT, and orthopaedic/plastic surgery
- Clinical Partnership with Roth McFarlane Hand & Upper Limb Centre
Project Status

- Finalized the specification requirements for sensors
- In process of purchasing possible components
Challenges

Implementation Challenges
Acquiring meaningful data
Coordinating between surgical clinics, therapy visits, and clinical research laboratory

Patient Engagement Challenges
Enrolling study participants
Collecting accurate diary data
Reminders to wear orthosis

Technical Challenges
Form Factor
Battery Life
Data Memory
EMG
THANK YOU!

How can I seek support from MSK-IF to develop my idea further?

Reach out to mskif@uwo.ca if you have an idea you would like to develop further!

Please feel welcome to reach out to Mike Szekeres if there is anything you would like to further discuss!

mszeker3@uwo.ca
Any questions?

Does this spark any ideas on how you might use MSK-IF?