Background

- Importance of physical activity (PA) is amplified for individuals with spinal cord injury (SCI) who use manual wheelchairs (MWC), yet >50% are sufficiently active to accrue health benefits.
- Existing community-based PA programs work, but adherence is low.
- Smartphone-delivered Peer Physical Activity Counselling (SPPAC) answers some theoretical gaps (i.e., autonomy, motivation, self-efficacy).
- A smartphone may promote autonomy, motivation, self-efficacy.
- An individualized, goal-oriented PA program cultivates an autonomy supportive environment.
- Peers can provide a source of motivation and self-efficacy.
- Other potential benefits of SPPAC: cultivate social support, broad geographic reach, low-cost.

Medical Research Council Framework

Theory
1. Explore relevant theory to ensure important variables are considered and good hypotheses made.
2. Identify potential design issues.

Pre-clinical
Design: Scoping/systematic reviews

Methods and Preliminary Results

1. Identify the components of the intervention.

Focus groups: 11 Experts discussed their perceptions/opinions of the SPPAC program: delivery, frequency/duration, components, and barriers. Thematic content analyses were used to create a Delphi survey.

Delphi surveys: 11 experts rated their level of agreement (3-point scale) with 95 statements related to SPPAC program content, delivery and concerns: 70% consensus with 2 rounds.

- 10-15, 30-minute sessions (~ 1/week)
- Individualized to preferences and goals
- Provide choice and motivational strategies

2. Validate appropriate outcome measures.

Objective: Validate an objective measure of PA (actigraphy) in MWC users

Design: Experimental

Participants: n=28 MWC user (14 SCI); 51y, 14 Procedures: Participants wore 2 GT3X actigraphs and completed 8 PAs:
- Low-intensity (eg. reading)
- Moderate-intensity (eg. propelling on flat surface)
- High-intensity (eg. propelling up steep ramp)

Outcomes: Heart rate (HR), Rating of perceived exertion (RPE), Activity counts (AC)

Results:
- AC:HR (r2=0.76, p=0.002)
- AC:RPE (r2=0.48, p=0.03)
- Low-intensity PA = 0 to 45 AC/s
- Medium-intensity PA = 46 to 100 AC/s, AC
- High-intensity PAs = not clear

Conclusion: Combining actigraphy with HR and RPE could be an easy and reliable method to measure PA intensity in the real world.
Actigraphy may discriminate various intensity PA, but further research is needed.

Conclusions & Future Directions

If feasible, SPPAC may offer a program that:
- was developed using a client-centered approach
- decreases barriers (accessibility / transportation)
- provides social supports

A definitive RCT is the next step in the MRC framework.
Insight into a continuum of community-based healthcare/self-care for individuals with SCI.