

The Validity of a Smartphone App (myrecovery©) to Serve as Proxy for Activity Level in Athletes

The "EXPO" Study



Western

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Background

When investigating the effectiveness of interventions to prevent recurrence of sports injuries, measuring exposure time (the time an athlete is at risk of injury) is crucial. (Knowles et al., 2006). Most injured athletes will attempt to return to sport as soon as possible. (Meredith et al., 2020). In doing this, they are increasing their exposure time, thus increasing their risk of re-injury. (Andernord et al., 2014; Beischer et al., 2020; Firth et al., 2021; Ithurn et al., 2019; Kaeding et al., 2015). Athletes returning to sport after injury are at much higher risk of re-injury than healthy athletes with no previous injury. (Mckay et al., 2001; Paterno et al., 2012).

The current methods of measuring exposure time are as follows:

- Hiring personnel to stand field side during practices and games to record minutes at risk.
 - The most accurate method of measuring exposure time.
 - Does not capture other activities in which the athlete may take part that are not part of their formal sport that may put them at risk of re-injury.
 - Requires the funding to pay a research staff member to stand courtside and track this data for hours at a time.
- Asking the athlete to self-report exposure.
 - Often poorly adhered to and rely heavily on the patient to report their activity accurately and in a timely manner. (Leenders et al., 2000).

The method of tracking exposure time being tested in this study:

- The myrecovery© Smartphone app
 - Tracks step count, intensity, and other activity parameters that may serve as proxy for exposure time.
 - Completely free to download
 - Requires little effort from the patient, including downloading and registering.

Primary Aim

Prospectively collect patients' hours of activity exposure through self-reported daily activity diaries and the myrecovery© Smartphone app to determine whether the myrecovery© app can be used as a valid proxy for tracking exposure time.

Study Design

This is a Prospective Observational Study

Methods

Patient Population

60 athletes/ functionally active adults

ACLR Patients

- 9-12 months post-op
- Returning to Sport

HTO Patients

- Waiting for surgery
- Functionally active

Patients will be of various sex, age, sport, activity level (none, recreational, competitive, varsity/elite).

Eligibility Criteria

Inclusion - ACL Group	Exclusion - ACL Group
1. The patient is 9-12 months post ACL reconstruction (or has been cleared by a clinician to return to sport).	1. The patient was not cleared/does not want to return to sport.
2. The patient is returning to a sport	2. The patient does not have a mobile device that supports the myrecovery© app.
3. The patient is between the age of 14 and 44 years old.	3. The patient is younger than 14 or older than 44.
4. The patient speaks and understands English.	4. Other: Please clear with study coordinator the reason for exclusion and specify:
Inclusion - HTO Group	Exclusion - HTO Group
1. The patient is waiting for an HTO.	1. The patient's HTO is scheduled within 4 weeks.
2. The patient is functionally active.	2. The patient does not have a mobile device that supports the myrecovery© app.
3. The patient is at least 45 years old.	3. The patient is younger than 45 years old.
4. The patient speaks and understands English.	4. Other: Please clear with study coordinator the reason for exclusion and specify:

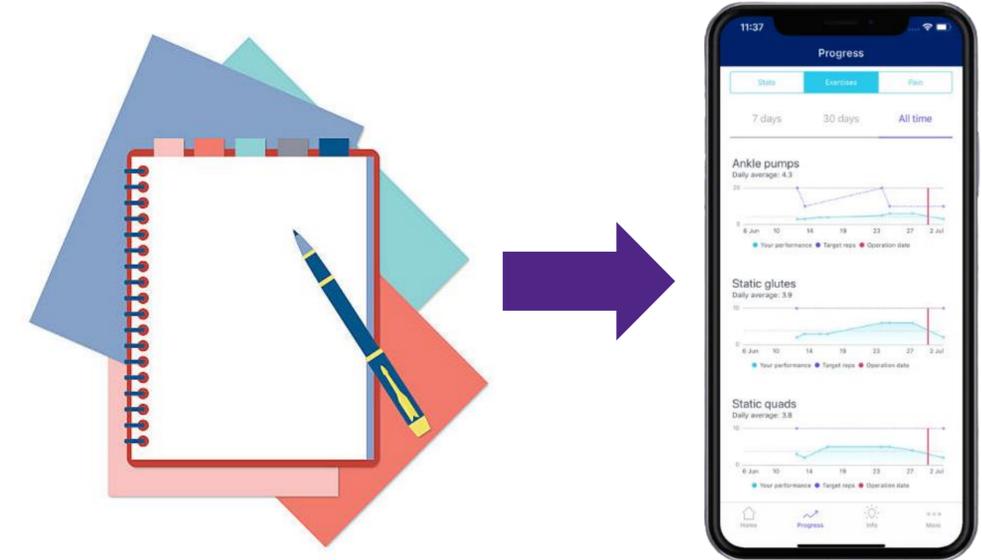
Recruitment

STEPS:

- Patients will be approached by a member of their circle of care who has received appropriate training in both ethics and consent for research purposes.
- Patients will be contacted either in clinic or at home (via email or telephone) with an electronic letter of information and consent in EmPower Health Research Inc.

Once consented, patients will download the myrecovery© app onto their personal smartphone device and turn on the tracking feature. While the app tracks their activity for 4 consecutive weeks, they will also log their exposure time via online self-reported activity diary.

Outcomes



- myrecovery© app
- Daily Activity Diary
- Marx Activity Scale
- Participant Sport Participation Questionnaire
- Demographics

Discussion

Next Steps

I will be comparing the myrecovery© app to the patient reported activity diary to see if the myrecovery© app can be used as a valid proxy for exposure time in athletic/functionally active patients.

Considerations

- Since, athletes cannot carry their phone during games and possibly practices, that the app will be poorly correlated with exposure time.
- Individuals who partake in a higher activity level are more active in general such that the association will be moderate to high.

Impact

If we can identify a relatively low burden method to approximate exposure time, we anticipate huge uptake worldwide by those needing to capture exposure time. Being able to capture exposure time with relatively low burden would mean that resources could be spent conducting larger, more impactful studies rather than smaller studies where exposure time data must be collected at field side (resource intensive).