MHEX
MENTAL HEALTH & EXERCISE RESEARCH GROUP

Government of **Western Australia**
South Metropolitan Health Service
Fiona Stanley Fremantle Hospitals Group

The feasibility and reliability of physical fitness tests within an Inpatient Mental Health Service

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Background

Despite evidence linking low physical fitness to poorer health outcomes in individuals with severe mental illness, the clinical utility of physical performance assessments in acute inpatient settings remains underexplored. This study evaluated the feasibility and reliability of a standardised physical assessment battery within an adult inpatient mental health service.

Methods

Feasibility was assessed according to four domains of the Bowen et al. (2009) framework: demand, acceptability, implementation, and practicality. To assess reliability, a subset of participants completed the physical assessment battery on two occasions within 14 days. Outcomes measured included isometric grip strength and a submaximal graded cardiorespiratory fitness (CRF) cycling test with a threshold set at 85% of predicted maximum heart rate (HR). Reliability was examined using paired samples t-tests, effect sizes (Cohen's d), and intraclass correlation coefficients (ICCs) with 95% confidence intervals.

Results

Figure 1: Study Flow

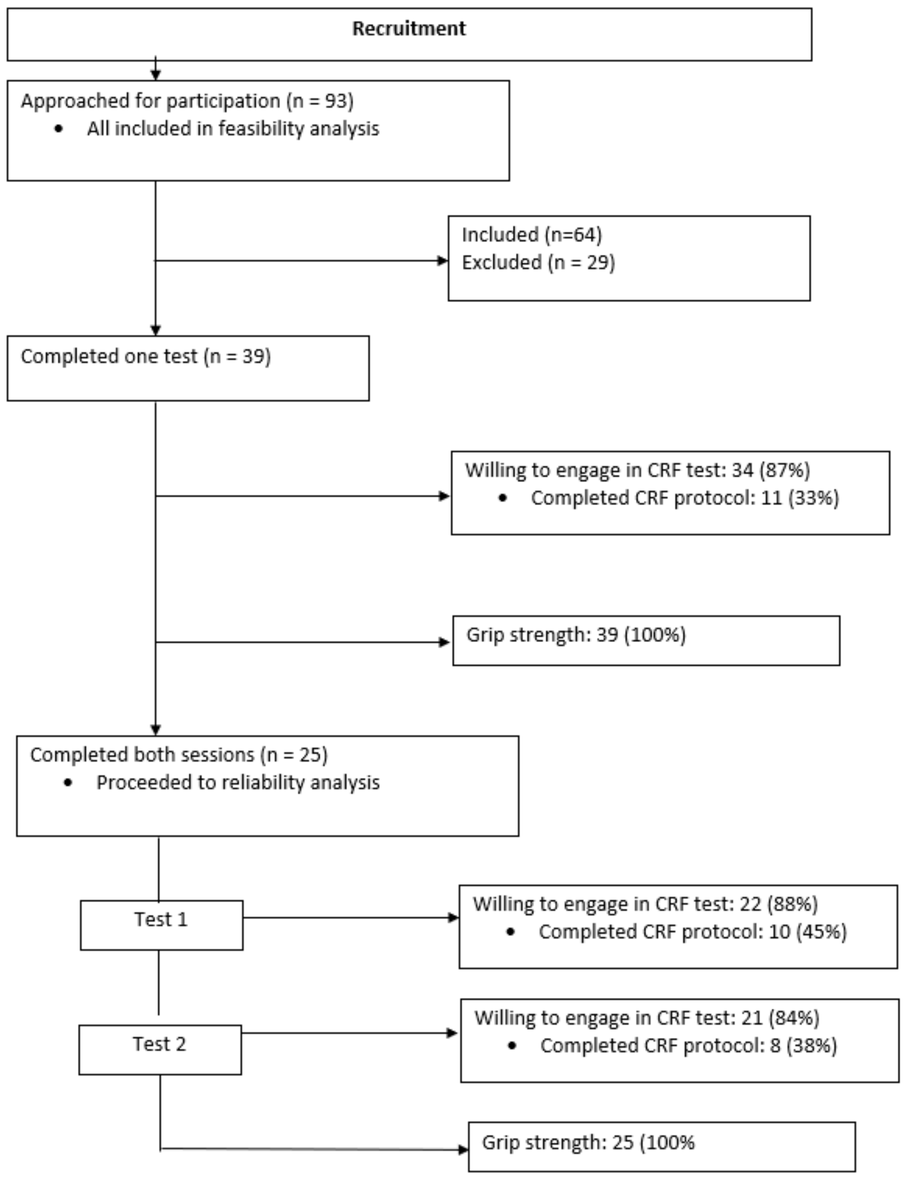

Table 1: Feasibility Assessment

Domain	Documented outcomes	Results
Demand	Engagement with intervention/testing.	69% of inpatients choose to voluntarily participate.
Acceptability	Participants reaction to the intervention.	39 participants completed one testing session and 25 completed both sessions. The main reasons for early test termination were leg fatigue, and discomfort. No adverse events.
Implementation	Likelihood the intervention can be executed as planned (e.g., successful completion., ceasing protocols early, and any adverse events).	Across all sessions, willingness to engage in CRF testing ranged from 84-87%, and protocol completion to target HR ranged from 33-45%. Willingness and completion of grip strength was 100% across all sessions.
Practicality	Impact of conducting testing on the service with consideration of resources and staff time.	Mean duration of the CRF testing was 17 minutes, with grip strength ~5 mins.

Reliability

- Both dominant and nondominant handgrip strength demonstrated good to excellent reliability (ICC =0.88 and 0.92, P=<0.001).
- 95% confidence intervals for handgrip strength were narrow, supporting strong measurement stability (0.742 – 0.963).
- CRF outcomes including time to fatigue (ICC = 0.85), predicted VO2max (ICC = 0.80), and heart rate at final minute (ICC = 0.81) all showed good reliability (ICC = 0.80–0.85, P<0.001).
- CRF variables displayed wider confidence intervals (0.530 – 0.937) suggesting weaker measurement stability.

Conclusion

Physical fitness testing was acceptable to acute mental health inpatients, with high uptake. Grip strength testing was highly feasible and reliable. Submaximal CRF testing showed implementation and completion challenges but demonstrated good reliability. Overall, findings support integrating a standardised physical assessment battery into routine inpatient care. Future research should examine lower-intensity aerobic fitness protocols to reduce participation barriers and the integration of outcomes into medical care.

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The MHEX Team acknowledges all Aboriginal and Torres Strait Islander Traditional Custodians of Country and recognises their continuing connection to land, sea, culture and community. We pay our respects to Elders past, present and emerging.

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