Development of a Holistic Battery of Fitness Assessments: Results from the Physical Fitness Self-Rated Health Scale

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INTRODUCTION

- Improving physical fitness may help improve musculoskeletal health in physically active populations
- Physical fitness can be difficult to monitor at frequent intervals over time, but it may be approximated with self-rated health questions (e.g,. "In general how would you rate your…")
- A battery of short multidomain scales that could be taken as needed may uncover musculoskeletal health risks and subsequent management strategies
- **Purpose:** To develop a Physical Fitness Self-Rated Health Scale (PF-SRH) for service members (SM) and civilians

METHODS

- Online survey respondents (Centiment internet panels) completed one 15-minute survey
- Respondents consisted of general population and military samples

Phase I: Item Development

- General population sample (n=721, 52% female, 48±16 years old)
- Iterative samples used to test item distributions, dimensions, readability, and item response theory (IRT) models
- Started with 39 candidate PF items
- Pruned to 9 items with optimal IRT characteristics

Phase II: Scale Validation

- Sampled civilians and current/former service members (n=2474, 53% female, 47 ± 15 years old, 12% current or former SM)
- IRT model validation
- Created three-item short-form
- Tested associations with criterion measures (PROMIS global health; physical activity; sedentary time; diet-screener; BMI)

RESULTS

Physical Fitness Self-Rated Health Scale
PF-SRH

This set of questions asks you to rate different aspects of your physical fitness and health. Please select the response that you feel is most appropriate for you, based on your personal interpretation of the question.

In general, how would you rate your…

1. Physical fitness?
○*Poor* ○*Fair* ○*Good* ○*Very good* ○*Excellent*

2. Physical endurance?
○*Poor* ○*Fair* ○*Good* ○*Very good* ○*Excellent*

3. Confidence in being physically active?
○*Poor* ○*Fair* ○*Good* ○*Very good* ○*Excellent*

4. Motivation to exercise?
○*Poor* ○*Fair* ○*Good* ○*Very good* ○*Excellent*

5. Daily level of exercise?
○*Poor* ○*Fair* ○*Good* ○*Very good* ○*Excellent*

6. Physical capacity to engage in cardiovascular exercise?
○*Poor* ○*Fair* ○*Good* ○*Very good* ○*Excellent*

7. Physical capacity to engage in strength training?
○*Poor* ○*Fair* ○*Good* ○*Very good* ○*Excellent*

8. Physical ability to take a fast walk?
○*Poor* ○*Fair* ○*Good* ○*Very good* ○*Excellent*

9. Physical ability to climb a flight of stairs?
○*Poor* ○*Fair* ○*Good* ○*Very good* ○*Excellent*

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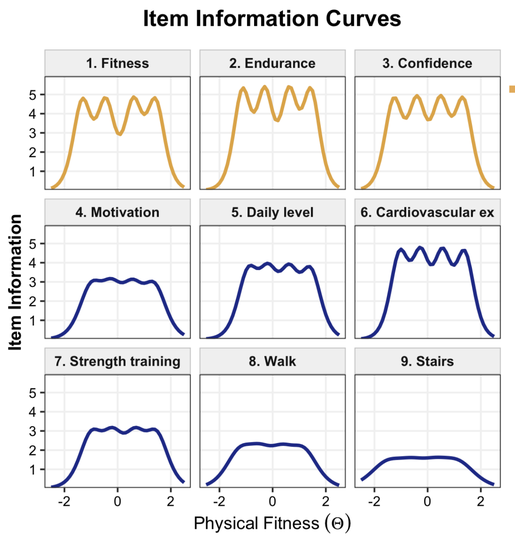
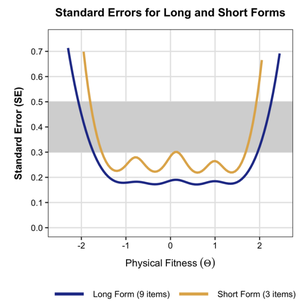
Item Properties

Item Information Curves



Higher-information items used to create a three-item short form.



- Short and long-forms strongly correlated with global physical and mental health, physical activity, and sedentary time (r's~0.5-0.6), and moderately with BMI, healthy eating, and sleep (r's~0.3-0.4).

CONCLUSION

- The PF-SRH measures PF in as few as three items, and correlates with many self-reported health and activity scales
- IRT-calibrated scales with high-discrimination items are sensitive to within-person changes
- PF-SRH may aid in monitoring physical fitness during periodic health assessments and routine surveillance
- Future research should test associations between PF-SRH and other aspects of PF (e.g. PF test scores, physiological markers) and assess whether PF-SRH changes track improvements following musculoskeletal interventions