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Comparison of two outcome measures to detect changes in physical function for patients after open abdominal surgery

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Abstract

Background: Open abdominal surgery is performed daily globally, but there is limited evidence available regarding responsive physiotherapy-related outcome measures to assess these patients' physical function during their postoperative recovery in an intensive care unit (ICU) setting in South Africa. The Physical Function in Intensive Care Test-scored (PFIT-s) assesses physical function based on strength, endurance, and exercise capacity whereas the Chelsea Critical Care Physical Assessment (CPAx) assesses respiratory function, physical function, muscle mass and strength.

Objectives: To measure and compare the responsiveness to changes in physical function scores; the minimal clinically important difference (MCID) in physical function scores obtained; the floor and ceiling effects of scores obtained; and, the level of convergent validity for scores obtained with the CPAx and PFIT-s tools for patients recovering from open abdominal surgery.

Design: A prospective observational longitudinal cohort study.

Methods: Participants were recruited from the Transplant ICU and Surgical ICU of the Wits Donald Gordon Medical Centre. Participants were assessed on days one, three and five and on ICU discharge with the CPAx and PFIT-s tools in a randomised manner. Data collection took place from 12 August 2019 until 4 November 2019. Descriptive and inferential statistics were used to analyse the data.

Results: Sixty-nine participants underwent open abdominal surgery. Mean age was 54 (±15.50) years and majority were female (n=43, 62.3%).

The Effect Size Index (ESI) for CPAx = 0.91012 indicating large responsiveness to change and ESI of PFIT-s = 0.7122 indicating moderate responsiveness to change.

The MCID for the CPAx = 4.4 and PFIT-s = 0.8. The CPAx had a limited floor and ceiling effect on ICU admission and discharge. The PFIT-s demonstrated a significant ceiling effect (46.38%) on ICU discharge.

Convergent validity: CPAX and PFIT-s ICU admission scores demonstrated a r=0.60, n=69 p=0.00, and CPAX and PFIT-s ICU discharge scores demonstrated a r=0.51 n=68 p=0.00.

Discussion: The CPAx demonstrated a large responsiveness to change and a limited floor- and ceiling effect, with a clinically significant MCID of 4.4. The PFIT-s showed moderate responsiveness to change but with a significant ceiling effect on ICU discharge. A moderate convergent validity was demonstrated between PFIT-s and CPAx with their construct being physical function scores.

Conclusion: Both the CPAx and PFIT-s are valid for assessing physical function, but the CPAx is more responsive to detect improvement in physical function in this cohort recovering from open abdominal surgery in an ICU setting.

Biography

Marelee Fourie currently works for Carr and Associates Physiotherapy at the Wits Donald Gordon Medical Centre. In 2009, he finished his Degree in BA Human Movement Sciences from the University of Pretoria while completing my internationally recognised Body Arts and Science International (BASI) Pilates Training. After he moved onto BSc Physiotherapy, which he completed in 2013 from the University of Witwatersrand. He worked at Helen Joseph Hospital during my community service.

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