

Introduction Bioimpedance spectroscopy (BIS):

- measures body composition – tissue and fluid.
- senses the resistance, capacitance and phase shift of a tiny alternating current passing through the body.
- is reliable in burn patients.
- is a valid technique to measure of acute burn oedema.

Yet to establish if BIS raw variables provide a measure of muscle mass (and strength) in burn patients.

Hypothesis Raw variables **Ri** and **R∞** related to the intracellular fluid (ICF) compartment are significantly associated with muscle mass (and strength).

Aim To determine if BIS Ri & R∞ values were valid non-invasive measures of muscle mass and strength.

Methods Study Cohort: n= 48, 88% male

Paired, triplicate BIS and isometric strength*, 2 x week (*R & L bicep, tricep, deltoid, quads + combined grip, arm & leg press)

TBSA = 15.5% (SD=8) (Range 5 – 40%)

Age = 33.1yrs (SD=11)

Analysis Muscle **mass** construct validity was established using **gender** and **TBSA**, in post-surgery measures only. Multivariable linear mixed models predicted **strength** using **Ri** and **R∞**, adj for highest pain score and gender.

Results



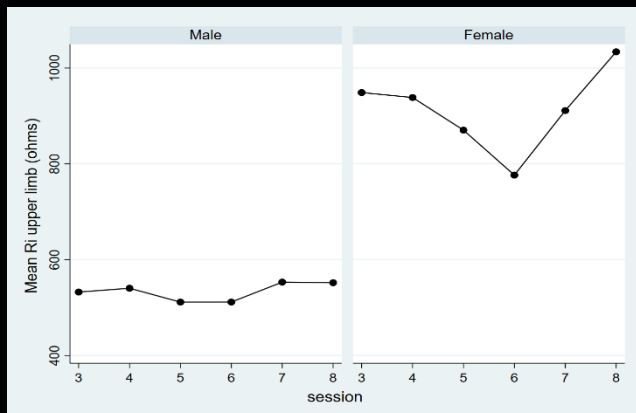
The Investigative Team

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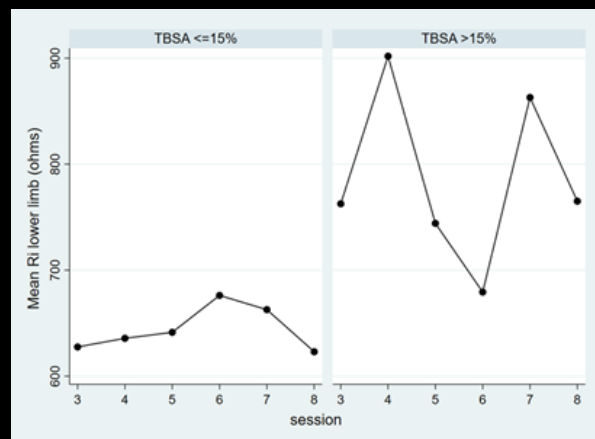
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Results: BIS = Valid Muscle Mass Measure

Gender

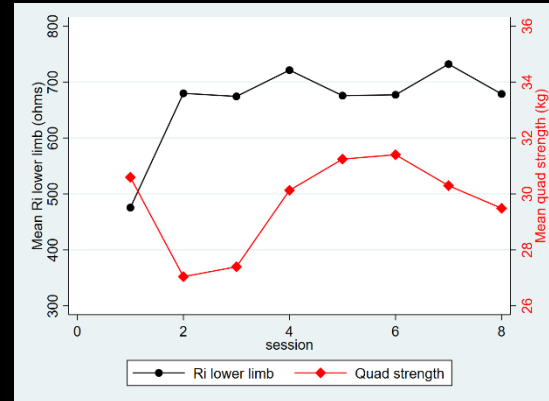
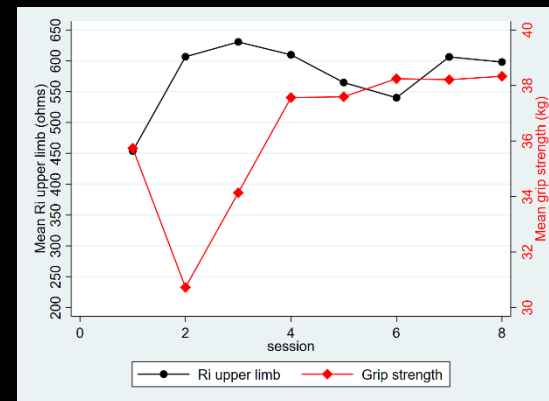


TBSA



Results: Increased BIS = Decreased Strength

1 kg ↑ strength = resistance (Ri) ↓ 100 Ω



Conclusion

Reduced resistance (Ri & R∞) values using the bioimpedance spectroscopy method are a valid non-invasive measure of increased muscle mass and strength.