

Bampouras, Theodoros ORCID: <https://orcid.org/0000-0002-8991-4655> , Relph, Nicola ORCID: <https://orcid.org/0000-0003-3323-3444> , Orme, Duncan and Esformes, Joseph (2010) Validity and reliability of the Myotest Pro® wireless accelerometer. In: Second International Sports Science and Sports Medicine Conference, 19-21 August 2010, Newcastle upon Tyne, UK. (Unpublished)

Downloaded from: <http://insight.cumbria.ac.uk/id/eprint/3808/>

***Usage of any items from the University of Cumbria's institutional repository 'Insight' must conform to the following fair usage guidelines.***

Any item and its associated metadata held in the University of Cumbria's institutional repository Insight (unless stated otherwise on the metadata record) may be copied, displayed or performed, and stored in line with the JISC fair dealing guidelines (available [here](#)) for educational and not-for-profit activities

**provided that**

- the authors, title and full bibliographic details of the item are cited clearly when any part of the work is referred to verbally or in the written form
  - a hyperlink/URL to the original Insight record of that item is included in any citations of the work
- the content is not changed in any way
- all files required for usage of the item are kept together with the main item file.

**You may not**

- sell any part of an item
- refer to any part of an item without citation
- amend any item or contextualise it in a way that will impugn the creator's reputation
- remove or alter the copyright statement on an item.

The full policy can be found [here](#).

Alternatively contact the University of Cumbria Repository Editor by emailing [insight@cumbria.ac.uk](mailto:insight@cumbria.ac.uk).

# INTERNATIONAL SPORTS SCIENCE + SPORTS MEDICINE CONFERENCE

NEWCASTLE UPON TUNE, ENGLAND, 19-21 AUGUST 2010

Validity and reliability of the Myotest Pro® wireless accelerometer

Bampouras, T.M.<sup>1</sup>, Relph, N.<sup>1</sup>, Orme, D.<sup>1</sup>, Esformes, J.I.<sup>2</sup>

<sup>1</sup>Human Performance Laboratory, School of Sport, University of Cumbria, Lancaster, UK

<sup>2</sup>Sport and Exercise Physiology, University of Wales Institute, Cardiff, Cardiff, UK

Assessing strength and power is crucial for evaluating muscular performance and function. As laboratory testing can be time-consuming or inaccessible to many athletes, portable accelerometers have been developed to assess strength and power on the field. Recently, a wireless accelerometer was introduced to allow for even greater flexibility in assessment. Nevertheless, any assessment tool must be valid and reliable. The aim of the current study was to assess the validity and reliability of a commercially available accelerometer. Forty-eight physically active subjects (males, n=32: age 29.2±8.8 yrs, height 1.79±0.12 m, body mass 82.0±14.3 kg; females, n=16: age 27.4±6.3 yrs, height 1.71±0.06 m, body mass 63.8±7.4 kg) completed two countermovement jump squats on a force plate (FP) with at least one minute rest, on two separate occasions. The accelerometer was secured on a lightweight bar, which rested on the subjects' shoulders whilst jumping. The jump with the highest force generation was selected from each occasion for further analysis. Validity was determined from the Pearson correlation coefficient (r) between the accelerometer and the FP. Bias was also calculated, using a t-test. Reliability was assessed by the intraclass correlation coefficient (ICC) and coefficient of variation (CV), whilst test-retest differences were examined with a t-test. The accelerometer demonstrated significant and high correlation to the force plate (p=0.001, r=0.85), whilst it overestimated force production by 7.8% (p=0.001). Repeatability for both devices was the same (ICC=0.87), with small CV (accelerometer=7.5%, FP=6.1%) and test-retest differences (accelerometer=0.1%, FP=1.1%). The results indicate that the Myotest Pro® accelerometer is a valid and reliable tool for assessing force in the field. However, caution needs to be exercised when the results are compared to data obtained from

a force plate, as the Myotest Pro® calculation method overestimates the maximum force produced.