

Gee, T.I, and Wright, M.D. (2009)

The validity of the portable Myotest® device for predicting bench press one repetition maximum.

Journal of Sports Sciences, 27 (S2): S90.

One repetition maximum (1RM) strength tests have been the criterion assessment of force producing capabilities of athletes. The bench press exercise is regularly employed to test and train upper body strength. The Myotest® is a small, portable tri-axis accelerometer, which has been validated (in-house) for measurement of barbell velocity and calculation of power output for a given movement. The aim of this study was to assess how accurately Myotest® predicted bench press, 1RM, (based on speed of movement with a series of sub-maximal weights) in comparison to criterion value and thus the validity of the device for prescribing training loads for athletes. With institutional ethical approval, 14 male university students (age mean 23.9, *s* 4.2 years; height mean 180.9, *s* 7.0 cm; weight mean 83.5, *s* 9.2 kg) all with at least 1 year experience of resistance training were selected as participants. After familiarisation, participants were asked to perform up to eight explosive, sub-maximal bench press trials typically progressing to 80% of criterion 1RM using the Myotest®. This followed manufacturer's guidelines, which included a 90-s rest interval. On completion of this test and after a 3-min rest period participants had between three to five attempts to establish a 1RM as described in Earle and Baechle (2006: *Essentials of personal training symposium workbook*. Champaign, IL: Human Kinetics). Predicted versus actual 1RM was compared using linear regression (Hopkins et al., 2001: *Sports Medicine*, 31, 211–234). Means were compared using a paired samples t-test. No significant differences ($P = 0.163$) were found between the mean 1RM predicted by the Myotest (mean 86.0, *s* 20.1 kg) and the actual 1RM established (mean 88.9, *s* 19.9 kg). However, the Pearson correlation coefficient of the relationship between the tests was 0.89 and the typical error = CV 9.8%, the size of this error is characterised as low validity between physical performance tests (Hopkins et al., 2001; *Sports Medicine*, 31, 211–234). The results showed that the Myotest is a useful tool to provide the strength and conditioning coach/ athlete with a convenient way to assess force and power during the bench press. However, because of the poor validity recorded we would recommend this be used in conjunction with traditional 1RM test and not in isolation.

