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# RELIABILITY AND VALIDITY OF EXPLOSIVE PUSH-UP POWER TEST

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### Introduction

Successful performances in sports often require high power output movements of both the upper- and lower-extremities. The assessment of muscular power is essential for understanding the performance capacity of an individual (Newton et al, 1997). Because of limitations of various tests for upper-body power assessment, we developed a simple test based on push-up movements that requires the same equipment as the standard maximum jumping tests (i.e., either a contact mat or a contactless mat with infrared beams). The aim of this study was to establish reliability and validity of the novel test for the assessment of upper-body power.

### Methods

Nineteen male junior basketball players (national junior team) performed explosive push-up power test (EPPT) for height, chest pass (CP) and bench press throw (BPT) with loads of 40, 60 and 80% of 1RM. The chest pass and bench-press throw were used as criterion measures.

### Results

The maximal height of the explosive push-up test (data averaged across three consecutive trials) were 19.8 cm, 19.0 cm and 19.4 cm, respectively, and no significant differences among them were found. The intraclass correlation coefficient revealed 0.994. Coefficient of variation of 6.2% suggested a low intra-subject variability. Concerning the validity of the evaluated test, significant correlations were obtained between the height in EPPT and distance in CP (r=0.51) and the maximal power in BPT with all of the applied loads (0.69, 0.72, 0.70, respectively, for 40%, 60% and 80% of 1 RM). The highest correlation of the evaluated test was obtained with maximal power in BPT (r=0.73).

### Discussion

In general, when studying sport specific abilities, the development of the assessment tools is of particular concern. The evaluation of upper-body power may be accomplished through a multitude of assessment techniques or tests, like chest pass or bench press throw (Cronin and Owen, 2004). High intraclass correlation, low intra-subject variability and high correlations between trials (Hopkins, 2000) and significant correlations with criterion measures, suggest that that the evaluated explosive push-up test could be a valid and reliable test for the upper-body power assessment. Taking also into account its simplicity and cost-effectiveness, the explosive push-up test could provide coaches and strength and conditioning professionals important information concerning both the individual abilities and the choice of training programs.

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