

MEASURE CHARACTERISTICS OF COMPOSITE MOTOR TESTS AIMING AT SIX-GRADE PUPILS

Kjamil Elmazi

Tetovo, Macedonia

Original scientific paper

Abstract

The measure characteristics of motoric tests (validity, reliability, objectivity) have always been a subject of interest when it comes to research within kinesiology. The most important problem of kinesiology studies and researches is to measure the human reactions and characteristics. The choice of conducting the present type of the study is based on the goal to establish the measure characteristics of motoric tests with 6-grade students. On the base of the received results, it is obvious that regarding the three tests satisfactory measure characteristics are established (validity, reliability and objectivity).

Key words: *validity, reliability, explosive power.*

Introduction

In the former Yugoslavian Federation a number of Croatia authors used to treat that subject: Metikoš, & al., (1989), Milinović, Harasin, and Lamza (2010), Caput-Jogunica, Privitellio, & Ćurković (2011), Peric, & al., (2012) etc. In the Republic of Serbia a particular attention to the problem is paid by the colleagues, among whom are: Bala (1999, 2003), Mirkov, & al., (2004), Stanković & al., (2009), T. Stojanović, N. Stojanović, & Nešić (2011) and Peric, & al., (2012). In the Republic of Macedonia a more intensive work engagement has been marked for the last 20 years. What we claim is, to measure these motoric abilities and characteristics, with observing the principles of validity, reliability, and objectiveness. If the aim is to get more precise diagnose of it, there is a need to create new and specific tests for it's assessment. These tests are supposed to help and make an easy prediction of the directly immeasurable latent structures in a specific sport discipline.

Methods

The sample of respondents consists of 128 male students at the age of 11. They were tested with three composite motor tests to assess the explosive power: High jump (HJ), Running 20 metres (R20) and Standing long jump (SLJ). For the obtained data there calculated: basic descriptive parameters, factor analyses, Cronbach α coefficient of generalisability and Spearman-Brown's coefficient of reliability, according to Vincent (2005).

Results

According to the obtained results related to the validity of tests (Table 2), with the pupils the highest validity present test – Standing long jump (SLJ), High jump (HJ), and Running 20 metres (R20). All of the three motor tests bear the characteristics of satisfactory validity. Their items have same subject of measure. In each case of

factor analysis a singular factor (principal component analysis) is isolated. According to the established coefficients of reliability (Table 2), it is noticed that they are very high with the treated pupils. According to the basic statistic parameters (Table 1), it may be noted that all scores are normally distributed.

Table 1. Basic descriptive statistic parameters

	Mean	StdDev	Min	Max	Skew	Kurt
HJ1	26,74	4,23	16	35,00	-,37	,08
HJ2	28,94	4,50	16	37,00	-,80	,97
HJ3	30,50	4,59	17	39,00	-,55	,69
R201	4,49	,409	3,70	5,61	,82	,34
R202	4,41	,42	3,85	5,84	,96	1,80
R203	4,46	,36	3,80	5,51	,56	,07
SLJ1	1,46	,19	,86	1,81	-,43	-,13
SLJ2	1,45	,19	,88	1,88	-,37	,43
SLJ3	1,45	,18	,86	1,96	-,53	,69

Legend: Mean – arithmetical mean, StdDev – standard deviation, Min – minimal values, Max – maximal values, Skew – skewness, Kurt – kurtosis, HJ1 – High jump first item, HJ2 – High jump second item, HJ3 – High jump third item, R201 - Running 20 metres first item, R202 - Running 20 metres second item, R203 - Running 20 metres third item, SLJ1 - Standing long jump first item, SLJ2 - Standing long jump second item, SLJ3 - Standing long jump third item.

Table 2. Factor validity and coefficients of reliability of the tests

	H	Com	λ	%	α	SB
HJ1	,93	,87	2,57	85,34		
HJ2	,93	,86	,25	8,30	,910	,911
HJ3	,91	,82	,19	6,36		
R201	,94	,89	2,62	87,22		
R202	,94	,87	,22	7,32	,935	,937
R203	,93	,86	,17	5,47		
SLJ1	,96	,93	2,81	93,52		
SLJ2	,97	,94	,10	3,46	,967	,966
SLJ3	,96	,93	,09	3,02		

Legend: H – first main component, Com – communality, λ – lambda (characteristic root), % – percentage, α – Cronbach alpha coefficient of generalisability, SB – Spearman-Brown's coefficient of reliability, HJ1 – High jump first item, HJ2 – High jump second item, HJ3 – High jump third item, R201 – Running 20 metres first item, R202 – Running 20 metres second item, R203 – Running 20 metres third item, SLJ1 – Standing long jump first item, SLJ2 – Standing long jump second item, SLJ3 – Standing long jump third item.

Conclusion

On the base of the received results, it is obvious that regarding the three tests satisfactory measure characteristics are established (validity, reliability and objectivity).

References

- Bala, G. (1999). Some problems and suggestions in measuring motor behaviour of preschool children. *Kinesiologicala Slovenica*, 5(1-2), 5-10.
- Bala, G. (2003). Quantitative differences in motor abilities of pre-school boys and girls. *Kinesiologicala Slovenica*, 9(2), 5-16.
- Bubanj, S., Stanković, R., Bubanj, R., Bojić, I., Đinđić, B., & Dimić, A. (2010). Reliability of miotest by countermovement jump. *Acta Kinesiologicala*, 4(2), 46-48.
- Caput-Jogunica, R., Privitellio, S., & Ćurković, S. (2011). Metrical characteristics of the battery of body power tests suitable for pre-school children. *Sport Science*, 4(1), 68-72.
- Metikoš, D., Prot, F., Hofman, E., Pintar, Ž., & Oreb, G. (1989). *Mjerenje bazičnih motoričkih dimenzija sportaša*. [Measurement of basic motor dimensions athletes. In Croatian.]. Zagreb: University of Zagreb, Faculty of Physical Education.
- Mijanović, M., & Vojvodić, M. (2010). Metric characteristics of tests for coordination estimation. *Acta Kinesiologicala*, 4(2), 57-61.
- Milinović, I., Harasin, D. i Lamza, D. (2010). Konstrukcija i validacije mjernog instrumenta za procjenu agilnosti. 19. *Ljetna škola kineziologa Republike Hrvatske*. [Construction and validation of the measuring instrument for assessing agility. 19th Summer School of kinesiologists of the Republic of Croatia. In Croatian.]. 276-261.
- Mirkov, D.M., Nedeljkovic, A., Milanovic, S., & Jaric, S. (2004). Muscle strength testing: evaluation of tests of explosive force production. *Eur J Appl Physiol*, 91, 147-154.
- Peric, M., Zenic, N., Furjan Mandic, G., Sekulic, D., & Sajber, D. (2012). The reliability, validity and applicability of two sport-specific power tests in synchronized swimming. *Journal of Human Kinetics*, 32, 135-145.
- Stanković, D., Joksimović, A., Raković, A., Michailov, M., & Piršl, D. (2009). Metric characteristics of the specific strength sports climbers tests. *Facta Universitatis, Series: Physical Education and Sport*, 7(2), 161-169.
- Stojanović, T., Stojanović, N., & Nešić, G. (2011). Metric characteristics of new tests constructed to assess jumping agility. *Serbian Journal of Sports Sciences*, 5(2), 51-59.
- Vincent, J.W. (2005). *Statistics in kinesiology*. Champaign: Human Kinetics.

On the base of the obtained results in the research, the following conclusions are reached:

1. The applied motor tests have same subject of measure – explosive power.
2. About the three applied tests for pupils there is established a high level of validity and reliability.
3. We recommend the applied tests to be used for assessing the motoric ability of explosive power with young people.

In kinesiology, by using motor tests, we indirectly form a concept about the motor abilities of the respondents. That is why; it is of great importance to use tests that have satisfactory measure characteristics. The used tests are recommended for application in assessing motor abilities – explosive power.

MJERNE KARAKTERISTIKE MJEŠOVITIH MOTORIČKIH TESTOVA

Sažetak

Karakteristike mjera motoričkih testova (valjanost, pouzdanost, objektivnost) uvijek su bili predmetom interesa kada je u pitanju istraživanje u kineziologiji. Najvažniji problem kineziološkim istraživanjima i istraživanjima je mjerenje ljudskih reakcija i karakteristika. Sadašnji tip studija temelji se na cilju utvrđivanja karakteristike mjera motoričkih testova sa učenicima šestog razreda. Na temelju dobivenih rezultata, očito je da su u vezi sa tri testa utvrđene zadovoljavajuće karakteristike mjera (valjanost, pouzdanost i objektivnost).

Ključne riječi: valjanost, pouzdanost, eksplozivna snaga.

Received: January 03, 2017
Accepted: February 18, 2017
Correspondence to:
Kjamil Elmazi
Tetovo, Macedonia
Tel: + 389 70 535 190
E-mail: qamilelmazi@hotmail.com