THE RELIABILITY OF THE TEST "BUNNY JUMPS FORWARD"

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Abstract
In this paper we designed a new composite test and we named it "bunny-jumps forward". We decided to check the reliability as a metric characteristic of the test. We had two tests 1. the test to check the lap time for nine meters and 2. the test to check the frequency of jumps (the number of jumps) for nine meters. Only for that purpose a special nine-meter long drilling area is arranged for measuring bunny-jumps forward which is calibrated with yellow and red cones that are separated 50 cm from one another. Brower Timing System consists of one pair of photocells which are placed along nine meters of the drilling area and they make contacts with one another. Every pair of photocells is placed near the runway so that when the examinee passes, the photocells transmit the signal to the transmitter which at the same time receives the data and memorizes it in internal memory, which can later be used for further analysis and research. Two tests were used and each of them was repeated two times. The test proved high level of reliability. Other metric characteristics should be used on the same population in the further research so that the results could be compared and the reliability of the newly-designed composite test could be ascertained.

Key words*: new composit test, reliability, bunny jumps, artistic gymnastics*

INTRODUCTION

Searching for better, or, more appropriate, more specific diagnosis, there is a necessity for creating new and more specific tests for evaluation of how successful the performance of each activity was. Those tests should help when predicting the latent structure in a certain sport discipline. The analyses of some metric characteristics in sports gymnastics was made in earlier researches.

Leskošek, B., et al (2010), reliability (also called consistency or repeatability) can be defined as achieving the same results with several measurements of the same subject under identical conditions. A special case of reliability, defined as achieving same results from different persons (judges, assessors, raters, observers) who evaluate the same performance. This later aspect of reliability is most of the reliability measures are based on especially important in gymnastics.

School curriculum for the subject PE and sport in all grades of primary school education included material from the gymnastics and the individuals in his methodical process by which elements of flashover. Lower grades, curriculum, and in accordance with the biological growth of the child elements of the flashover process at low goats and senior classes to work on the big child.

It is interesting that in the school curriculum bunny jumps above are not represented as a special methodical individual with knowledge of their influence in the design flashover we wonder whether such a decision is justified. Of the seven phase flashover bunny jumps hop has five stages, ie five sevenths of that element, and can greatly serve as early element and easier way to jump into the adoption of elements of the analytical method of learning that are commonly used in the adoption of such gymnastic elements.

As the school curriculum for the subject covered similar material from skips and this is a movement that knows every child but different levels of quality. There are those patients who fail to prolong the flight phase and those in which the phase of flight is very short or missing that is why we think for two tests in the direction of lap time and frequency jumps.

Tabaković, M. (2000) in his research "The canonic relation between the motor skills and the success while performing certain elements of sports gymnastics on floor with boys aged between 13 and 15" came to the conclusion that the referees were the right "measuring instrument" for evaluating the elements on the floor. Very high co-relations were established between the evaluation of the referees and the first main component.

Veličković, S., Petrović, E. (2005) in their paper "Objectivity of situational-motor coordination measuring instruments in sports gymnastics" did the research on the sample of 112 boys and girls previously selected for the sports gymnastics from six primary schools in Niš (Serbia). The metric characteristics are established for 19 situational-motor tests of co-ordination which have been known so far and which are applied in selection for sports gymnastics in eight European countries and former Yugoslavian republics. The results show that 18 out of 19 measuring instruments for evaluation of situational-sports co-ordination in sports gymnastics have significant coefficient values when objectivity is concerned and can be recommended for use in practice. Only one abilities evaluation test for precise realization of complex motor tasks is

included in the group of measuring instruments whose objectivity is considered unacceptable and it requires further re-standardization of measuring procedure.

Proje, S. (1982) deals with the problem of designing complex tests for measuring dexterity, establishing their metric characteristics and appropriate in practice on the sample of 81 boys aged nine (+/- 6 months). The pupils who were tested were exercising throughout two semesters in gymnastics classes. The following measuring instruments were designed: 1. the drilling area for alternating movements, 2. the drilling area for spatial orientation, 3. the drilling area with hurdles, 4. the drilling area for dexterity (boomerang). We came to the conclusion that the exercises used in the applied tests are understandable and suitable for the examined population, that they are delicate enough, that the level of homogeneity is very high, whereas the representative quality is slightly lower but still acceptable. Based on the results of the metric characteristics of the applied measuring instruments, the author draws the conclusion that the applied drilling areas are suitable instruments for measuring dexterity.

Out of seven stages of jump (Longyka, 1969; Prassas, 2002; Čuk, Karacsony, 2004), the bunny-jumps has five stages (taking off, first flight phase, taking weight on hands, second flight phase, two-footed landing), that is 1/7 of the element, so we can use it as a warm-up and easier way of learning elements of jump in an analytical method which is most commonly used while learning gymnastics elements like these.

Sports gymnastics lessons are included in sport and Physical Education curriculum in all grades of primary education, as well as some methodical units which deal with elements of a jump. School curriculum form lower grades of primary school dictates jump practising on a low vaulting horse, whereas higher grades pracitise on high vaulting horse. An interesting fact is that bunny-hops are not included in school syllabus as a separate methodic unit, having in mind that their impact on the very performance of the jump is significant, we cannot but wonder if such a decision is justifiable.

The theme of this research is bunny-jumps performed by pupils from first to ninth grades of primary school, aged from 6 to 15. The problem of this research is checking and ascertaining the level of reliability, as one of metric characteristics, in relation with applied, newly-designed motor test of bunny-jumps forward. The goal of this research is to establish and ascertain the level of reliability as one of metric characteristics when it comes to newly-designed, applied tests of bunny-jumps forward performed by primary-school pupils, aged 6 – 15. The following hypothesis should be emphasized for the data analysis. Statistically significant prediction of reliability is expected.

Picture 1: Changes the position in the important phases of bunny jumps (1-5)

METHODS

The examinees' sample

This research is carried out on the sample of 92 examinees. They are healthy male pupils, aged from 6 – 15 who regularly attended their PE lessons and who do not have any physical disabilities or injuries that could affect the results of this research. All of the examinees are pupils of the primary school "Sveti Franjo" in Tuzla and their grades range from 1st to 8th. It is also important to emphasize that the prerequisites for their PE lessons at school were optimal.

Measurements were carried out on PE classes in the morning shift from 9-12 hours, in the months of March, April and May 2008/09., the school year. All measurements were carried out in a sports hall. Test points were provided the necessary equipment instruments tested the same quality. The order of measurement was always the same. All kids who participated in this study were subjected to testing under the same conditions.

The instruments were calibrated and the standard of each day prior to measurements. All measurements were carried out by two professors of PE and Sport, two teachers of PE and Sport, with the help of students 4 years of the Faculty of Sport of University of Tuzla who were trained to assist in the investigation. In the research methods were used, oral, demonstrations, analytical methods, synthetic, and practical methods combined.

Measurements were performed small gruops at between 13 to 15 kids in the each class. At each workplace measured one timekeeper and one secretary.

Data obtained in this study were analyzed using a software system for multivariate and univariate data analysis SPSS 12.0 and Statistica 5th data processing was performed at the Faculty of PE and Sport of Tuzla and the Faculty of Sport at the University of Ljubljana. We used standard statistical procedures to determine the following basic parameters descriptive variables. Hypothesis that a variable is normally distributed was examined on the basis of the following measures: Skeweness Coefficient of curvature, Kurtosis Coefficient of elongation, The method of Kolmogorov and Smirnov test normality distribution results. Applying the analysis of the intercorrelation matrix of variables (Correlations) determined the contents and value of the matrix of correlation coefficients. A factor analysis (Factor Analysis), we have found qualitative changes in the investigated motor space. The intercorrelation matrix (Correlation Matrix) to calculate the correlation coefficients of variables applied. Compute the communality (Communalities), which represent the knowledge of vector variables in the analyzed region of the vector (as a percentage of the valid variance), or that part of the variance of each variable that can be isolated explain first principal component. Vectors are calculated as the summation of square of projection of the relevant variables on the first principal component. These values represent the length of the vector of manifest variables project the first principal component. The matrix of characteristic roots are the parts of the common variance explained (Total Variance Explained). The analysis of the first principal component (Component matrix) determined the validity of the measured variables and correlation with the general subject of measurement of the first principal component. Chronbach's α coefficinet generalizability (α) which is estimated based on projections of particles on the first principal component is the intercorrelation particles investigated reliability tests applied. Internal correlation (consistency) between the particles is shown in the coefficient of reliability. Was applied univariate analysis of variance (ANOVA) to determine the value univariante test (F-test), and establish relations of significance (significance).

If it is greater variance between similar items and then increases the reliability coefficient was recommended that some of the different dimensions of the sample that may cause the increase in reliability. Since up to now nobody evalution this test, so we wanted for initial phase increase the size of the variance (age) and catch-research would be needed to verify the reliability and the particular age.

The sample of variables

Two tests were applied with the examinees and each of them was repeated three times. On the occasion of the experience of other motor tests that were available to us in artistic gymnastics (Tabaković, 2000; Velicković, S., Petrović, E. 2005; Proje et al. 1982), we decided that the number of repetitions is not provided for three rather than the usual six. The reason a small number of repeats was in addition to the above-mentioned subjects, and the fatigue test, which until now have not had a chance to run normally at the classes of PE and Sports.

The measuring techniques

TEST (MSZSPV9 - motor situation bunny jumps lap time of 9 m)

Factor: the goal of this measuring is to calculate the speed of movement

The time: the estimation of the entire duration of the test for one examinee is three minutes

The number of examiners: one examiner

The requisites: only for that purpose a special nine-meter long drilling area is arranged for measuring bunny-jumps forward which is calibrated with yellow and red cones that are separated 50 cm from one another. Brower Timing System which consists of one pair of photocells which are placed along nine-meter length and they make contacts with one another. Namely, the apparatus consists of a mobile receiver which telemetrically makes the connection with the photocells. The photocells function in pairs and they are placed on a tripod which enables the position of photocells on different levels depending on the needs of the research. Each pair of photocells is placed near the runway so that when the examinee passes, the photocells transmit the signal to the transmitter which at the same time receives the data and memorizes it in internal memory, which can later be used for further analysis and research.

The venue description: 12 x 3 meters room, minimally

The task:

-Assuming the starting position: the examinee starts by assuming the sarting position on the start line where a takeoff mark is placed. He is facing the drilling area where the Brower Timing System is set and calibrated.

-The performance of the task: the examinee's task is to cross the nine-meter distance as quickly as possible by properly performing bunny-jumps. The task is performed three tiimes and it is finished after the distance of nine meters is crossed.

-The examiner's position: the examiner is positioned so as not to disturb the camera angle, holding the Timing System receiver where all the data are collected upon the completion of the task. It is examiner's duty to make sure that all data are memorized in the receiver's software.

-The assessing: the time of examinee's crossing the distance is registered.

-The instructions to the examinee: the task is demonstrated and the examinee is instructed at the same time.

TEST (MSZSFRS - Bunny jumps forward the frequency - number of jumps)
Factor: the goal of this measuring is to calculate the frequency of movement.
The time: the estimation of the entire duration of the test for one examinee is three minutes
The number of examiners: one examiner
The requisites: only for that purpose a special nine-meter long drilling area is arranged for measuring bunny-jumps forward which is calibrated with yellow and red cones that are separated 50 cm from one another. Brower Timing System which consists of one pair of photocells which are placed along nine-meter length and they make contacts with one another. Namely, the apparatus consists of a mobile receiver which telemetrically makes the connection with the photocells. The photocells function in pairs and they are placed on a tripod which enables the position of photocells on different levels depending on the needs of the research. Each pair of photocells is placed near the runway so that when the examinee passes, the photocells transmit the signal to the transmitter which at the same time receives the data and memorizes it in internal memory, which can later be used for further analysis and research.
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-The performance of the task: the examinee's task is to cross the nine-meter distance as quickly as possible by properly performing bunny-hops. The task is performed three tiimes and it is finished after the distance of nine meters is crossed.
-The examiner's position: the examiner is positioned so as not to disturb the camera angle, holding the Timing System receiver where all the data are collected upon the completion of the task. It is examiner's duty to make sure that all data are memorized in the receiver's software.
-The assessing: the number of correct bunny-jumps is registered.
-The instructions to the examinee: The task is demonstrated and the examinee is instructed at the same time.

RESULTS

Distribution of the results (table 1) in the tests MSZSPV9 1, MSZSPV9 2, MSZSPV9 3, MSZSFRS 1, MSZSFRS 2, MSZSFRS 3, does not have a statistically significant deviation from the regular distribution in the first three repetitions. From the insight into the Kolmogorov – Smirnovog test results, the third variable proved an abnormal distribution in both tests – MSZSPV9 – 3(,028) and MSZSFRS 3 (,041). Since the majority of the tests were normally distributed into the further analyses, we decide to take all three repetitions into consideration. It is also assumed that the memory of the first measuring was used while measuring for the second time and the strength was greater than with the third measuring. Therefore, it is assumed that the second measuring will show the best results.

Table 1
One-Sample Kolmogorov-Smirnov Test (MSZSPV9 i MSZSFRS)

Tests		MSZSPV9 1	MSZSPV9 2	MSZSPV9 3		MSZSFRS 1	MSZSFRS 2	MSZSFRS 3
N		92	92	92		92	92	92
Nor. Par.(a,b)	Mean	8,19	7,6592	11,46		11,37	11,93	11,93
	Std.Dev.	3,411	3,05173	3,276		3,274	3,619	3,619
Most Ext. Diff.	Absolue	,109	,108	,130		,119	,145	,145
	Positive	,109	,108	,130		,119	,145	,145
	Negative	-,081	-,084	-,059		-,073	-,106	-,106
Kolmogorov-Smirnov Z		1,046	1,038	1,460		1,245	1,138	1,395
Asymp. Sig. (2-tailed)		,224	,232	,028		,090	,150	,041

a Test distribution is Normal. b Calculated from data.

Analyzing the central tendency parameters (table 2), the arithmetic mean, the standard deviation, variance, kurtosis show the balance of the results distribution on the sample (N) of 92 examinees

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Table 2
Descriptive statistics MSZSPV9 and MSZSFRS

Tests	Min.	Max.	Mean		Std.	Variance	Skewness		Kurtosis	
	Stat.	Stat.	Stat.	Std.Er.	Stat.	Stat.	Stat.	Std.Er.	Stat.	Std.Er.
MSZSPV9 1	3	20	8,19	,356	3,411	11,634	1,114	,251	1,462	,498
MSZSPV9 2	3,45	16,48	7,659	,3181	3,0517	9,313	,828	,251	,052	,498
MSZSPV9 3	3,25	19,28	8,199	,3652	3,5028	12,270	,784	,251	-,053	,498
Tests										
MSZSFRS 1	6	21	11,46	,342	3,276	10,734	,745	,251	,456	,498
MSZSFRS 2	6	20	11,37	,341	3,274	10,719	,353	,251	-,671	,498
MSZSFRS 3	6	20	11,93	,377	3,619	13,095	,401	,251	-,886	,498

Having inspected and analyzed Pearson's matrix of intercorrelation which is applied on measuring of motor variables MSZSPV9 and MSZFRS (table 3), it can be observed that the matrix includes coefficients of correlation which have statistically high values on the statistically significant level of 0,001. High values can be observed in all inter-correlations of the results .

Table 3
The analysis of the matrix of motor variable intercorrelation MSZSPV9 and MSZFRS

Tests		MSZSPV9 1	MSZSPV9 2	MSZSPV9 3
MSZSPV9 1	Pearson Correlation	1	,787**	,756**
MSZSPV9 2	Pearson Correlation	,787**	1	,901**
MSZSPV9 3	Pearson Correlation	,756**	,901**	1
Tests		MSZSFRS 1	MSZSFRS 2	MSZSFRS 3
MSZSFRS 1	Pearson Correlation	1	,872(**)	,843(**)
MSZSFRS 2	Pearson Correlation	,872(**)	1	,919(**)
MSZSFRS 3	Pearson Correlation	,843(**)	,919(**)	1

**. Correlation is significant at the 0.01 level (2-tailed)

In the matrix of characteristic roots and explained parts of the common variance (table 4), having solved the characteristic equation of intercorrelation matrix, the first main component is isolated (Total) which is 2,631 as well as the characteristic vectors of that matrix, the explained parts of the common variance, which explain the common variance of the isolated main component. In the column marked (% of Variance) the relative cumulative contribution of the first main component is stated which comes to 87,695% and it is very high.

Table 4
The main component of common variances and MSZSPV9

Component	Initial Eigenvalues				Tests	Initial	Extraction
	Total	% of Variance	Cumulative %		MSZSPV9 2	1,000	,919
1	2,631	87,695	87,695		MSZSPV9 3	1,000	,898
2	,272	9,064	96,759		MSZSPV9 1	1,000	,814
3	,097	3,241	100,000				

Extraction Method: Principal Component Analysis.

In the matrix of characteristic roots and explained parts of the common variance (table 5), having solved the characteristic equation of intercorrelation matrix, the first main component is isolated (Total) which is 2,757 as well as the characteristic vectors of that matrix, the explained parts of the common variance, which explain the common variance of the isolated main component. In the column marked (% of Variance) the relative cumulative contribution of the first main component is stated which comes to 91,900% and it is very high.

In table 4 and 5 the values are presented and they show the acquaintance with the variables' vectors in the vectors' space (as a percentage of the valid variance), actually the part of the variance of each variable which can be explained by the isolated first main component. These values present vector lengths of the manifested variables (MSZSPV9 and MSZSFRS) which are projected on the first main component. The presented communalities' values are high enough, so that the acquaintance with variables' vectors in the analyzed vectors space is satisfactory. The percentage of valid variance is high and even, which will contribute a great deal with defining the first main component.

Tabela 5
The common variances main component and MSZSFRS

Component	Initial Eigenvalues				Tests	Initial	Extraction
	Total	% of Variance	Cumulative %		MSZSFRS 1	1,000	,890
1	2,757	91,900	91,900		MSZSFRS 2	1,000	,943
2	,166	5,527	97,427		MSZSFRS 3	1,000	,924
3	,077	2,573	100,000				

Extraction Method: Principal Component Analysis.

The analysis of the first main component (table 6) shows the significant reliability of the measured variable MSZSPV9. The highest coefficient of correlation with the subject of measuring, actually the highest reliability of grades is proved with MSZSPV9 2, which is followed by MSZSPV9 3, whereas MSZSPV9 1 proved the lowest reliability of grades. Thus ranged measuring should not be treated as best, mediocre or bad, since all three of them are very good, but still MSZSPV9 2 proved the highest value.

Table 6
Component matrix MSZSPV 9

Tests	Component
	1
MSZSPV9 2	,959
MSZSPV9 3	,948
MSZSPV9 1	,902

Extraction Method:
Principal Component Analysis.
1 components extracted.

The analysis of the first main component (table 7) shows the significant reliability of the measured variable MSZSFRS. The highest coefficient of correlation with the subject of measuring, actually the highest reliability of grades is proved with MSZSFRS 2, which is followed by MSZSFRS 3, whereas MSZSFRS 1 proved the lowest reliability of grades

Table 7
Component matrix MSZSFRS

Tests	Component
	1
MSZSFRS 1	,943
MSZSFRS 2	,971
MSZSFRS 3	,961

Extraction Method:
Principal Component Analysis.
1 components extracted.

Cronbach's α coefficient of generalizability, which is estimated from the particles' projections on the first main component on the particles' intercorrelation, proves a very high reliability level of the applied test MSZSPV9. Cronbach Alpha (α) in this research is ,927 reliability and standardized Cronbach is ,929 which is very high reliability level. A coefficient data without participation of the certain particle in the analysis show that three repetitions of the test are sufficient. Cronbach's α coefficient of generalizability, which is estimated from the particles' projections on the first main component on the particles' intercorrelation, proves a very high reliability level of the applied test MSZSFRS. Cronbach Alpha (α) in this research is ,955 reliability and standardized Cronbach is ,956 which is very high reliability level.

Tabela 8
Motor tests reliability coefficients (α – Chronbach)
MSZSPV9 i MSZSFRS

Tests	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
MSZSPV9	,927	,929	3
MSZSFRS	,955	,956	3

After the insight into the applied univalent analysis of the variance on the sample of 92 examinees (table 9) (ANOVA), we ascertained that the value of the univalent test (F-test) is 4,142 so that the contribution of the applied variables is of great significance. However, some important differences between the items were noticed, namely the arithmetic mean and variability. Also, there are no significance relations on the statistically important level of the treated variable, Sig. ,017.

Table 9
Univalent analysis of the variance (ANOVA) MSZSPV9

		Sum of Squares	df	Mean Squares	F	Sig
Between People		2636,772	91	28,976		
Within People	Between Items	17,571	2	8,785	4,142	0,17
	Residual	386,028	182	2,121		
	Total	403,599	184	2,193		
Total		3040,371	275	11,056		

Grand Mean = 8,0160
a. The covariance matrix is calculated and used in the analysis.

Insight into the applied univalent analysis of the variance on the sample of 92 examinees (table 10) (ANOVA), we ascertained that the value of the univalent test (F-test) is 5, 943 so that the contribution of the applied variables is of great significance. However, some important differences between the items were noticed, namely the arithmetic mean and variability. Also, there are no significance relations on the statistically important level of the treated variable, Sig. ,003

Table 10
Univalent analysis of the variance (ANOVA) MSZSFRS

		Sum of Squares	df	Mean Square	F	Sig
Between People		2882,913	91	31,680		
Within People	Between Items	17,043	2	8,522	5,943	,003
	Residual	260,957	182	1,434		
	Total	278,000	184	1,511		
Total		3160,913	275	11,494		

Grand Mean = 11,59 a The covariance matrix is calculated and used in the analysis.

CONCLUSION

In this paper we designed a new composite test which is a situational test. We named it "bunny-jumps forward". We decided to check the reliability as a metric characteristic of the test. We had two tests 1) the test to check the lap time for nine meters and 2) the test to check the frequency of jumps (the number of jumps) for nine meters. The test proved high values of reliability so that further analyses of the test can be carried out. Since it is a composite test, it is important to establish which motor skills and morphological characteristics lead to the more successful performance of the test. The coaches and teachers will benefit from this test while teaching pupils how to properly perform a jump. Having analyzed the received results, we came to the conclusion that only two repetitions of the test are sufficient. Therefore we suggest that the better result is used while measuring. Also, this paper can be the platform for further analyses where the emphasis should be put on exploring new metric characteristics of this reliable composite motor test.

Functional - anatomic analysis of gymnastic movements bunny jumps forward element has its primary goal in establishing the dominant groups of muscles, the performance of the selected element. Based on the functional - anatomic analysis enabled the selection of exercises that will prepare trainees for the proper physical performance of the selected element. Functional - anatomic analysis found that for the successful performance of this bunny jump is necessary streght of arms and shoulders as well as flexibility in the hips.

Since he was the main goal of this study was only to ascertain the reliability of s knowledge of correct hare leap proposed as Next goal is to establish the validity of the test. In the analysis of validity should include at least tetsu from atropometrije and different motor skills to determine that those skills and characteristics that primarily affect the effectiveness of performance zecijeg jump.

Based on the results we received for the applied composite test, used for the performance evaluation of the gymnastics element "bunny-jumps forward", with the purpose of ascertaining its reliability as a metric characteristic, we can put forward the following conclusions:

- a satisfactory reliability coefficient is ascertained for the applied test,
- the applied test is recommended to the researchers in their further analyses, with the note that, while performing, the test should be repeated at least twice and the better result should be taken into consideration.

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POUZDANOST TESTOVA ZEČIJI SKOKOVI NAPRIJED

Originalni naučni rad

Sažetak

U ovom radu konstruirali smo novi kompozitni test. Test smo nazvali zečiji skok naprijed. Odlučili smo da provjerimo pouzdanost (relijabilnost) kao metrijsku karakteristiku testa. Imali smo dva testa: 1. prolazno vrijeme na devet metara i 2. frekvencija skoka (broj skokova) na devet metara. Specijalni namjenski napravljen poligon za mjerenje zečijih poskoka naprijed, dužine devet metara, koji je kalibriran žutim i crvenim čunjevima na udaljenosti svakih pola metra. Brower Timing System koji se sastoji od jednog para fotoćelija, postavljenih na udaljenosti od devet metara koje međusobno ostvaruju kontakt. Svaki par fotoćelija je postavljan pored zaletišta te pri prolasku ispitanika između fotoćelija vrši transmisiju signala do prenosnika koji u isto vrijeme prima podatke i memoriše na internu memoriju, koje poslije koristimo za daljnu analizu i potrebe istraživanja. Korištena su dva testa i svaki test je ponavljan tri puta. Test je dao visoke vrijednosti pouzdanosti. U budućim istraživanjima na istoj populaciji trebalo bi primijeniti i druge metrijske karakteristike kako bi se mogli usporediti dobiveni rezultati i utvrditi ispravnost novokonstruisanog kompozitnog testa.

Ključne riječi: novi kompozitni test, pouzdranost, zečiji skokovi, sportska gimnastika

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