Hazir Salihu
Isa Asllani
Artan R. Kryezi
Qazim Elshani

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FAKTORSKA STRUKTURA ODREĐENIH TESTOVA JUNIORA KOŠARKAŠA

Izvorni naučni rad

Sažetak

Cilj ovog rada je ispitati i definirati faktorsku strukturu testova juniora košarkaša. Predmet istraživanja u ovom radu je 60 aktivnih košarkaša, u dobi od 17 godina, koji pohađaju redovni program obuke u školi košarke u gradu Prištini i Gnjilana. U ovom istraživanju primijenjeno je pet testova za procjenu motoričkih sposbnosti, dok su dva testa primijenjena sa ciljem procjene specifično situacijskih sposbnosti. Analiza osnovnih statističkih parametara pokazuje da vrijednosti ovih pokazatelja imaju normalnu distribuciju. Prema faktorskoj strukturi izolirane su tri latentne dimenzije, označene kao: eksplozivni faktor snage, faktor fleksibilnost noga, faktor preciznost i faktor situacijske preciznosti. Na osnovu podataka, koji su istaknuti u ovom radu, može se zaključiti da su vrijednosti u eksperimentalnoj studiji od velike važnosti u radu s mlađim igračima lige.

Ključne riječi: varijable, područje pokreta, košarkaši, alat, faktorska analiza

FACTORIAL STRUCTURE OF CERTAIN MOVEMENT TESTS OF JUNIOR LEAGUE BASKETBALL PLAYERS

Scientific work

Abstract

This paper aims to examine and define the factorial structure in the area of movement tests of the junior league players. Subject of study in this paper are 60 active basketball players aged 17 years, who attend a regular training program of school basketball in the city of Prishtina and Gjilan. In this experiment five tests of basic movements areas were applied, while two typical situational indicators pertain to the basketball game. The analysis of basic statistical parameters in the movements' area shows that the values of these indicators have a normal distribution. According to the factorial procedure, in the latent area of movable variables three latent dimensions labeled as explosive power factor, feet factor flexibility and accuracy (precision) and situational accuracy factor (precision) are isolated. Based on the data that are highlighted in this paper, and in the paper itself it can be concluded that the values of the experiment-study are of a significant importance while working with junior league players.

Key words: Variable, movement area, basketball players, tools, methods and factorial analysis

1. INTRODUCTION

The basketball game has constantly evolved in terms of improvement while demonstrating significant growth and the dynamic of the development of the game in the basketball court flooring. The basketball game is characterized by major and numerous changes in terms of the increased movements and attractive actions. Based on situational characteristics of the game, in basketball a hypothetical link of situational-movement factors has been formed. And also the

reliability and validity of situational-movement tests is managed to be proofed, with which it was concluded that the application of tests has a satisfying value of reliability whereby testing of achieved factorial values by the following international authors was enabled to be applied: (Blašković, M., Milanovic, D. & Markovic, B. 1982). The new approach and understanding the science of teams and future players are being based on significant contributions to the development of kinesiological processes (Trninić, 1995). The main element of the game of basketball is the shot (efficiency), respectively making score points while throwing a ball through a basket which however depends on the defense strategy of the players, respectively the movement (agility) of the players during the defense due to the fact that the best indicator of defense is always the effective attack itself considered as important during the game (Separovic, 2008). The game of basketball has a specific structure and the functional characteristics which distinguish it from other sports that work together and operate based on their structure and level of competition (Trninić, 2010). Research studies of factorial analysis aims to create latent structures of effective training which is determined by the dominant characteristics, movement skills and competencies of players (Kenneth, 2002). Good knowledge of movement area is certainly conditional on the knowledge of other important areas in the game of future basketball players. During the testing of young players, as it is our research area, we have been able to see players who promise much, both in terms of tactical and technical indicators as well as the assessment of basic movement tests and typical situational of the basketball game.

1.1. Purpose and the hypothesis of the paper

This paper aims to examine and define the factorial structure in the area of few movement tests of the junior league players. Another aim is to know the value and definition of the movement area, how important they are to future players who play basketball or those who attend training sessions. Based on the purpose of this research and the methods used to process the results, the following hypothesis are presented: It is anticipated to verify the important movement value, based on certain basic movement characteristics among future (young) basketball players. Three (3) factors that will determine the latent movement area will be identified.

2. RESEARCH METHODOLOGY

2.1. Model (samples) of entities

Subject of this study are 60 young players aged 17 years, the sample of the tested persons for this study was drawn from the population of future players who attend the training program in basketball in the city of Prishtina and Gjilan. In this model/ sample have been included male players of the junior league who are healthy and have quality and affinity, and are selected as players for the basketball. In this research, young people have been involved who follow the teaching process in addition to training sessions of the basketball game, with an average training of two years, three times a week, with one hour and thirty minutes exercise a day.

2.2. The sample of variables

To verify the movement area, movement indicators have been included, in order to assess the basic movement variables five variables have been applied, while in the typical situational area for the basketball game two tests have been applied.
Basic movement tests: DJFP - Distant jumping from place; SAR_1 - Higher jumping from place; SAR_2 -Jumping from place with approaching with feet; SPR 40 m - Sprint 40 meter; DKBF - Deep knee bending in front of the bank.

Specific movement tests: THBSD -Throw the ball in the basket in the same direction; THBTC 45^0 -Throw the ball in the basket in the corner of 45^0 degree.
The results were processed and analyzed using the statistical software SPSS version 16.0 for Windows, through basic statistical analysis the following statistical method were used: the minimum value (Min), maximum value (Max), the arithmetic average (Average), standard deviation (Std. Dev.), the asymmetry of the distribution curve (Skewness) and the arching of the distribution curve (Kurtosis). Research of the latent movement structure of the space has been explored through factorial analysis.

3. RESULTS AND THEIR INTERPRETATION

In this paper seven (7) motor variables are applied of which five (5) tests are from the basic movement space, two (2) typical movement indicators pertain to the game of basketball. The values shown are indicative of a normal distribution of movement tests in general, with the exception of the deep bending test before the bank (PTHPB 1451), which exceeds the value of the asymmetry of the distribution curve (Skewness) over 1000, while other tests are homogeneous, expect the jumping from place to distance test (KVLG - .022), jumping from place to height, (SAR1 - .847) and jumping from place approaching with foot (SAR2 - .916) that have negative asymmetry while other tests have positive asymmetry.

Table 1.- Basic statistical parameters in manifest area

Varijable	N	Min.	Max.	Mean	Std. Dev.	Skewness	Kurtosis
DJFP	60	150.00	243.00	201.15	17.52	-.022	.480
SAR_1	60	20.00	63.00	48.15	8.92	-.847	.684
SAR_2	60	20.00	66.00	50.48	8.78	-.916	1.327
SRP40m	60	522.00	719.00	612.29	49.14	.176	-.923
SKBF	60	.00	20.00	4.52	3.85	1.451	3.644
THBSD	60	.00	4.00	2.05	1.12	.219	-.756
THBTC 45°	60	.00	5.00	2.14	1.08	.242	.046

Spatial analysis of latent factor

In able 2 are shown the characteristic roots (LAMBDA), and the partial (%) and cumulative contribution to explain the overall variability. According to the method of Hotteling and CG criterion (Kaiser-Gutman), three main components were extracted, which explain 71.60% of the total variance. The first characteristic root explains 37.93% of the total variance of the system; the second root explains 17.94%, while the third root explains 15.72% of the total variance.

Table 2. - The main characteristic roots of variables in motor area

Comp.	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	**2.655**	**37.935**	**37.935**	**2.655**	**37.935**	**37.935**
2	**1.256**	**17.945**	**55.880**	**1.256**	**17.945**	**55.880**
3	**1.101**	**15.726**	**71.606**	**1.101**	**15.726**	**71.606**
4	.881	12.587	84.192			
5	.582	8.314	92.506			
6	.481	6.868	99.374			
7	4.382	.626	100.000			

Table 3 shows the matrix of the main components with three of the factors and communalities for variables. In the first major component projections significant tests have been realized, distant jumping from place, higher jumping from place, jumping from one place approaching with one feet and 40 meters sprint from .690 to .907. The Indicator higher jumping from place has achieved

the highest projection of .907. The second components is defined by the depth test knee bending in front of the bank and throw the ball in the basket in the same direction with coefficient from .608 to .725. The third component is defined to test the basket ball shot in the angle of 45 degree with the optimal value of .798.

Table 3.- Key components and communalities

Varijable	1	2	3
DJFP	**.690**	.361	-.578
SAR_1	**.907**	-.248	.179
SAR_2	**.896**	-.251	.185
SRP40m	**-.704**	-.250	.267
SKBF	.239	**.725**	-.478
THBSD	.758	**.608**	.313
THBTC 45°	-.457	.324	**.798**

In table. 4 are shown the matrix of parallel projections, which contains projections parallel latent variables in oblimin factors. With the inspection of this matrix is shown that higher projections in the first factor jumping from place to distance has been realized , higher jumping from place, jumping from one place with approaching with a feet and 40 m sprint coefficients from .260 to .341. Therefore, based on these projections, the first factor can be defined as complex factor of explosive force.In the second factor, the following higher projections have been realized: deep bending in front of the bank and throw the ball toward the basket with the same value of .484 to .577. Based on projections of the projected variables the second factor can be interpreted as a feet flexibility factor and situational accuracy (precision). In the third factor the higher projections has been realized by indicator in basket ball shot in the angle 450 worth of .725. The third factor can be defined as a factor of situational accuracy (precision).

Table 4.- Matrix of parallel projections

Varijable	1	2	3
DJFP	**.690**	.361	-.578
SAR_1	**.907**	-.248	.179
SAR_2	**.896**	-.251	.185
SRP40m	**-.704**	-.250	.267
SKBF	.239	**.725**	-.478
THBSD	.758	**.608**	.313
THBTC 45°	-.457	.324	**.798**

While looking at the inter-correlation matrix of latent factors(Table No. 5) we can see that the first factor with the second and third factor have realized low correlations (.000). Based on this we can conclude that the factors are independent of each other.

Table 5.- Correlation matrix between rotated factors

Komp.	1	2	3
1	1.000	.000	.000
2	.000	1.000	.000
3	.000	.000	1.000

4. DISCUSSION AND CONCLUSION

In this paper the following hypotheses have entirely been carried out: The first hypothesis is fully certified, because in the most basic rotated and situational variables important values between future players were presented. Three rotated factors were extracted and based on this we can

conclude that the second hypothesis is determined. The sample was composed of 60 active basketball players aged 17 years, attending a regular training program of school basketball in the city of Prishtina and Gjilan. In this experiment seven (7) rotated variable were applied, five (5) tests are from the basic motor rotated area, while two (2) typical situational indicators pertain to the game of basketball. Based on the analysis of basic statistical parameters is found that the values of these parameters indicate that they have a normal distribution tests except the test knee bending in front of the bank. Based on factorial procedure, within the latent area of basic and situational three latent rotated dimensions were isolated labeled as: complex factor of explosive force, feet flexibility factor and accuracy (precision) and accuracy factor (precision). Based on the data pointed out in this paper, we can conclude that the value of the experiment -study matter is valuable while working with junior league players.

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Korespondencija:
Hazir Salihu
Fakultet Sporta, Pristina, R. Kosovo
Tel.: + 386 49448570
E-mail: bhsg@live.com