

THE EFFECTS OF THE PROGRAMMED TRAINING ON THE TRANSFORMATION OF THE QUALITATIVE LEVEL IN THE SITUATIONAL-MOTOR SKILLS WITH HANDBALL PLAYERS AGED 11-14

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Abstract

82 young handball players, all of them in a training process at least one year, aged 11-14, underwent a three month programmed transformational procedure. Basic principle of this procedure was situational methods. Structurally – qualitative changes of the situational-motor skills in the structure of the relations are significant. Two latent specific movement mechanisms are isolated, with 73% of common variability. Se we are safe to assume that a large number of the variability in the specific tests is implemented, where as a criterion Guttman-Kaiser is taken, these two factors describe the essence of handball: 1) movement and controlling the court, and 2) achieving the goal (scoring). Analysis of the structural changes, done with the Cramer model with the more accurate identification, shows the biggest changes in variables SMGLC (hitting the mark with a ball) and SMŠZ20 (throwing the ball against the wall), so we can conclude that this procedure affects Accuracy and Speed of movement without a ball. The general conclusion stemming from this analysis suggests that this handball program made significant changes in the structure of the situational-motor skills.

Key words: handball, transformation, changes

Introduction

Creating players is a long-term, arduous and complex task, a procedure which requires completion of many demands along the process. For those reasons in the pyramid of monitoring, valuating and the control of the effects of the training, younger categories must take precedence and must rely on quality, in order for the transformation processes to have their projections in future work. Kinesiology and the appliance of the sport technology tells us that 10-15 or more years is needed for a top handball result to be produced. Handball players reach their maximum at the ages 22-25 or more. We can conclude that the period of the preparation for one handball player is marked with long preparations, numerous resources, material demands, and the help from specialists in various activities and disciplines. The goal of this enormous task is a total development of the future player, capable of reaching the ultimate level. As this analysis is pointed towards future, initially we must acquire at least the global parameters and rules so as to program a successful transformational procedure. Motor skills are one of the basic factors to determinate the success of the player.

Each situation that occurs during the game must be realized in training, and this realization with the loco motor system is possible because of the players' strength, stamina, accuracy, speed, coordination, balance and agility. The activities of the handball players are based on general motor abilities, which allow acquiring of the knowledge of the specific situational technical and tactical elements, relevant for the success. The main goal in handball is to score, and that process very much depends on the cooperation among the teammates. The team, based on the optimal technical and tactical efficiency, functions as a specific system of cooperation, structurally based on individual players acting as a personal communication net. The activities of the players are based on general motor skills, which allow gaining the knowledge from specific situational, technical and tactical elements, relevant for the success. Based on relevant researches (Pavlin, Šimenc & Delija, 1982), we can assume that there are 5 latent situational dimensions: the accuracy at hitting the inanimate target, ball handling, speed of movement with a ball, speed of movement without a ball, and shooting power.

Problem and aim

The focus of this work is: transformational processes of the situational-motor skills in handball players aged 11-14. Kinesiology researchers are interested the most in transformational processes in certain periods of time and with strictly defined contents. The tendency is to determine the factors which are decisive in achieving of the certain results in sport, but also to be transformed to a satisfying degree, and that is the reason why this age is selected. The problem in this work represents evaluating of the qualitative changes in the situational-motor skills caused by the training program. The goal of this work is to evaluate the changes in situational-motor skills of the players who were following programmed training process.

Methods

For the purpose of this research, using the longitudinal approach, the situational-motor skills and all the changes during the period of three months were followed. This research involves 82 handball players aged 11-14. The players were members of the following clubs: RK "Ilidža" Ilidža, RK "Olimpik" Sarajevo, RK "Vogošća" Vogošća, RK "Goražde" Goražde. The players underwent medical examinations, and were all physically healthy, without obvious morphological or locomotive defects. The only criterion which they had to fulfill was that they are in a training process for at least one year.

For the evaluation of the situational-motor skills, the tests used for the evaluation of the young players in Italy, Russia, Slovenia, and Germany were used. The sample test entails five latent factors which are responsible for the situational efficiency in handball: 1) Speed of movement with a ball- handling the ball in a slalom (SMVLS), 2) Accuracy- hitting the target with a ball (SMGLC), 3) Throwing power- throwing the ball while moving (SMŠLD); 4) Speed of movement without a ball-running the triangles with the basic defensive position (SMTOS), and 5) Handling the ball- throwing against the wall for 20 seconds (SMŠ20).

In order to determine qualitative and structural differences in situational-motor skills the most appropriate methods were applied: LSDIF model, CRAMER model, QDIFF1 model and KRZANOWSKY model (Bonacin, 2004)

Results and the Discussion

Table 1. Retained individual values according to GK criterion (the first measurement)

N	L	P	P CUM
1	2.47	0.49	0.49
2	1.16	0.23	0.73

(L= individual value, P= the proportion of the explained variability, P CUM= cumulative explained variance)

Table 2. Retained individual values according to GK criterion (the second measurement)

N	L	P	P CUM
1	2.80	0.56	0.56

(L= individual value, P= the proportion of the explained variability, P CUM= cumulative explained variance)

The structural-qualitative changes of the situational-motor skills in the structure of relations are significant. In the first measurement two latent mechanisms of specific movement are isolated, and they have 73% of the common variability. So we can say that the large portion of the situational-motor variability is covered, which is clear from table 1. where as a criterion Guttman-Kaiser is taken.

Table 3. The formation and the correlation of the diagonally rotated factors in the first measurement

	F1	F2
1VLS	0.90	0.09
1GLC	-0.18	0.73
1SLD	-0.77	0.21
1TOS	0.90	0.05
1S20	0.13	0.87
	F1	F2
F1	1.00	-0.24
F2		1.00

(F1-F2 = factors)

Tables 3 and 4 clearly show that the first latent dimension defines complex slalom movement with a ball (SVLS), long-distance shooting (SLD) and running the triangles (STOS). The second one describes hitting the target with the ball (SGLC) and throwing against the wall (SSOZ). It seems that we have two specific mechanisms for the regulation of the movement, where the first one is responsible for the movement in space, and the other one for shooting and throwing the projectile.

These two factors clearly describe the essence of handball in a situation where the technical level is not high (the first measurement) and after the training process. *F1-movement and winning the space*. The precision of hitting the inanimate target is essential because it is in connection to the situational precision in hitting the target inside the goal, and that corresponds to the precision in real game. The skill of ball handling represents the ability to easily manipulate with the ball either standing or moving. Handling of the ball should be considered a basic requirement for achieving the success in handball. The high level of preparation in ball handling enables the player to use the other, namely tactical qualities of the player. Speed of the movement with a ball, covers the space of player's movement with a ball during the attack, and in certain attacking combinations.

F2-reaching the goal (scoring). The speed of movement without a ball is a characteristic of a defensive play, in attacking play its occurrence is much less, but it is equally important. Attacking moves without a ball are: winning the ground, making yourself available, counter-attacks, and in defensive moves we have running across the court to stop the counter-attack, and different forms of covering and the destruction of the opponents' game. The throwing power is responsible for the situational explosive power of shooting. Throwing the ball in form of passing and shooting are the most common elements in handball. Shooting power is more significant in shooting on goal. Shooting power and precision are the decisive factors in scoring, so it is obvious that the throwing power is one of the determination factors in handball. The modern approach to basic an specific anthropological marks of the handball players, and to specific demands and characteristics of this game, needs scientifically based analyses and knowledge which are attainable only by using scientific research projects. This result is positive and confirms above said. Further proof is in Tables 3. and 4. where GK criterion is used. The acquired factor is integral and balanced, with the projections which tell us that all variables applied are equally involved in hypothetical final mechanism of the specific movement in handball. In Tables 5 and 6 we can see congruencies and correlations of the diagonal formations in the first and the second measurement. The matching of the factors cannot be complete, because of the different number of dimensions.

Table 5. Congruencies of the diagonal formations in the first and the second measurement

		1.Measurement
		F1
PRVO	F1	0.84
MJ.	F2	-0.56

Table 6. . Correlations of the diagonal formations in the first and the second measurement

		2. Measurement
		F1
PRVO	F1	-0.91
MJ.	F2	0.56

However, the first factor has a certain amount of continuity, while the other factor does not have that quality and it is involved in the unique dimension in the second measurement. Structures are significantly different, and programmed handball treatments will generally contribute to the understanding of the specific occurrences with the athletes. This is most probably acquired from study of the specific movement, which ultimately was a goal in this study. In that sense this result is expected and welcome, and it proves that the training treatment realized in this study had a positive effect.

Table 7. The results of the LSDIF analysis

TRACE	0.52
HI-2	21.30
DF	5
P	0.0011

(TRACE = the real trace of the matrix of difference, HI-2 = trace hi-square function, DF = degrees of freedom, P = probability)

The results of structural changes in the model LSDIF can be seen in Table7. In Table 8 where the Krzanowsky model is applied is clearly seen that the structural changes visible across all of the variables, with a slightly lower intensity in running triangles in the defense. This is understandable, because if for the success of this research is responsible, along with the specific qualities of handball, also some functional and energetic motor attribute , then it is natural that in a group of specific movements which are learnt during the training process, such movement has a less intense specific appliance.

This results proves that there occurred restructuring of the dimensions along the entire sample of the entity, and all the variables.

Table 8. The results of Krzanowsky's

Var.	D
SVLS	0.98
SGLC	0.92
SSLD	-0.91
STOS	0.87
SSOZ20	0.90

Table 9. The results of the QDIFF1 analysis

Var.	S	R
SVLS	0.80	0.10
SGLC	0.64	0.20
SSLD	0.81	0.10
STOS	0.83	0.09
SSOZ20	0.73	0.15
RO	0.071	
ALRO	0.964	

S = local similarities (>0.85) and differences (R) RO = global measure of similarity ALRO = global measure of the differences)

In Table 9, where CRAMER method is used with the more precise identification, the biggest changes are in variables SMGLC (hitting the target with a ball), and SMŠŽ20 (throwing the ball against the wall). This is not unexpected, because the goal is for all the other actions and movements to be successfully executed (especially with the ball). In order to achieve that, the anticipation and passing of the ball must be mastered, which is a basic requirement for playing the game, and that is the technique which was the center of attention of training process.

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Table 10. The results of the QDIFF1 analysis

Var.	D
SVLS	0.12
SGLC	0.19
SSLD	0.09
STOS	0.08
SSOZ20	0.12
G	0.109

D = local measures of changes (> 0.10, >0.15), G = global measure of changes

Conclusion

Structurally-qualitative changes in the situational-motor skills in the structure of relations are significant. Two latent mechanisms with the specific movement are isolated, with a total of 73% of common variability. In this way we can say that a large portion of the variability of the special tests is covered. Here as a criterion Gutman Kaiser is taken. These two factors clearly describe the essence of handball: F1-movement and winning the space, and F2-reaching the goal (scoring).

Analysis of the structural changes under the CRAMER model with the more accurate identification according to which the biggest changes are on variables SMGLC (hitting the target with a ball) and SMŠŽ20 (throwing the ball against the wall), and that is: Accuracy and Speed of the movement without the ball. The general conclusion which stems from the analysis of the qualitative changes in the situational-motor skills is that after a three-month programmed handball training we can see significant changes in the structure of situational-motor skills.

EFEKTI PROGRAMIRANOG TRENINGA NA TRANSFORMACIJU KVALITATIVNOG NIVOVA SITUACIONO-MOTORIČKIH SPOSOBNOSTI RUKOMETASA UZRASTA 11-14 GODINA

Sažetak

Uzorak od 82 mlada rukometaša, svi uključeni u trenažni proces trajanja jednu godinu, uzrasta 11-14 učestvovali su u tromjesečnom programiranom transformacijskom postupku. Temeljni princip ovog postupka bile su situacijske metode. Strukturalno-kvalitativne promjene specifičnih situaciono-motoričkih sposobnosti u strukturi relacija su bile značajne. Dvije latentne dimenzije situaciono-motoričkih mehanizma gibanja su izolirane, sa 73 % zajedničkog varijabiliteta. Tako se sa sigurnošću može zaključiti da veliki broj varijacija specifičnih testova pod Guttman-Kaiserovim kriterijem možemo svesti na dva bitna: 1) gibanje i kontrola terena, i 2) postizanje cilja (pogotka). Analiza strukturalnih promjena, urađena pod modelom Cramera s ciljem preciznije identifikacije, pokazala je najveće promjene kod pogađanja označenog cilja loptom, kao i kod bacanja lopte u zid. Na temelju toga je zaključeno da je postupak naročito angažovao preciznost i brzinu pokreta vezanih uz loptu. Opći zaključak koji se nameće iz ovog istraživanja sugerira da je rukometni program izvršio značajne efekte na strukturu situaciono-motoričkih dimenzija.

Ključne riječi: rukomet, transformacije, promjene

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