FACTA UNIVERSITATIS
Series: **Physical Education and Sport** Vol. 6, Nº 1, 2008, pp. 31 - 39

Scientific Paper

THE INFLUENCE OF MOTOR FACTORS ON PERFORMING FUNDAMENTAL MOVEMENT SKILLS – THE DIFFERENCES BETWEEN BOYS AND GIRLS

UDC 796.012:055.25.-055.15

Sunčica Delaš[1], Alen Miletić[2], Đurđica Miletić[1*]

[1]Department of Kinesiology, Faculty of Natural Sciences,
Mathematics and Kinesiology, University of Split, Teslina 12, 21000 Split, Croatia
[2]"Citius-Altius-Fortius" Scientific – Sport Society, Split, Croatia
[*]E-mail: mileticd@pmfst.hr

Abstract. *The impact of certain factors of motor abilities on the performance of some fundamental movement skills (leaping, jumping, rolling and running) in a sample of seven-year-old girls (N=58) and boys (N=42) were investigated during four measuring points (during and after basic gymnastic treatment). The results showed satisfactory metric characteristics (sensitivity and objectivity) for jumping, rolling and running (during and after treatment) for the group of boys and for jumping and running (after treatment) for the group of girls. Four dimensions (of the girls) and three dimensions (of the boys) were isolated by a factorial analysis of nine motor variables: (1) explosive strength and coordination, (2) frequency of movement and coordination in rhythm; (3) flexibility and (4) static strength. The factors of explosive strength and coordination could be defined as the most integrated motor abilities in learning fundamental motor skills (especially jumping and running) for both genders. Based on the results of various studies, jumping and running show the highest metric and applicability standards which allow us to (a) diagnose the present status of the fundamental movement skills for seven-year old boys and girls; (b) perform kinesiological treatment with high accuracy and appropriateness – apply jumping and running tests as a form of transitive assessment of any fundamental movement skills level. Accomplishing an autonomous learning level for jumping and running will directly developed a subject's explosive strength and coordination.*

Key words: *motor learning, motor abilities, seven-year-old boys and girls*

Received February 1, 2007

INTRODUCTION

Fundamental Movement Skills (FMS) are common motor activities with specific observable patterns. Most skills used in sports and movement activities (specialized motor skills according to Burton and Miller, 1998) are their advanced versions. From a philogenetic point of view, FMS represent a cultural heritage enabling a purposeful and effective evaluation of human abilities and skills. The expansion of specialized motor skills is popular today, especially when it comes to sport-specific motor skills. Therefore, kinesiological scientific investigations are aimed at defining the quality and quantity of any knowledge on the performance level, primarily in the case of children and the young, while focusing primarily on the relationship between the process of motor learning and a learner's age (Carroll and Bandura, 1987; Al-Abood et al., 2001; Horn et al, 2003.).

In the physical education process, the development of FMS as well as some specialized motor skills must begin in the earliest years of primary school (Miletić, Maleš and Sekulić, 2003; Miletić and Kostić, 2006). During these years, students are physically and intellectually capable of benefiting from instruction in physical education and are highly motivated and enthusiastic about learning FMS. Mastery of these skills by children is necessary if the optimum development of higher-level skills is to take place. Children who do not master these skills are less able and often less willing to persist with learning more complex motor skills, and will avoid activities which expose them to failure. Ultimately, such children often reject participation in physical activities as part of their lifestyle. Failure naturally leads to rejection. The rejection of physical activity in childhood and adolescence, must have consequences on health and a sense of well-being in adulthood.

Basic motor abilities and skills are of crucial importance in the early phases of the motor learning process (Ackerman, 1998). There are different theories on what should be taken into consideration on designing a motor program (Adams, 1971; Schmidt, 1975; Schmidt and Wrisberg, 2000); however, task duration and structure definitely are crucial characteristics that influence the process (Magill, 1993; Tzetzis et al., 1999; Poon and Rodgers, 2000). The basis of motor learning is a specific motor program, which is created by the motor cortex based on external and internal information (Čoh, Jovanović – Golubović and Bratić, 2004).

The efficiency of motor reactions is defined by the relations between motor information and the level of abilities and properties that interact differently in various stages of advancement: verbal – cognitive, motor and autonomous (Miletić, Katić, & Maleš, 2004).

Therefore cognitive functions and high-order motor factors are involved in the initial stage of a motor program performance. During structural improvement of the motor program, the impact of these factors gradually decreases, while low-order dimensions from various segments of the anthropologic space play an ever increasing role in the performance of the acquired motor skills. Thus, optimal utilization of all of the anthropologic potentials of an individual is only possible in the automated stage of the acquired motor skill performance, while the success of the performance depends on the level of development of the motor skills/characteristics.

It is known today that learning specific motor skills depends on the FMS level, but according to Burton and Miller (1998), it is not possible to determine the optimal age when the learning of any specialized motor skills should begin. Therefore, it is important to establish objective conditions for assessing the level of FMS in accordance with a subject's age and gender.

This paper deals with a major problem: which combination of motor abilities best describes the performance of the FMS at the age of seven, depending on gender?

Another problem relevant for this investigation is to objectively identify and assess the quality of some fundamental skill realization as performed by seven-year-old boys and girls. Namely, the characteristic 'rough-form performance' of elements as required in the beginning of the teaching-learning process does not enable rigorous evaluation. Yet, differences in the performance quality, as well as in motor abilities (Kostić et al. 2003), among boys and girls probably exists and must somehow be defined and estimated.

The aim of the study was to determine the impact of the factors of motor abilities on some fundamental movement skills (leaping, jumping, rolling and running) on a sample of seven-year-old girls and boys.

The tests for assessing FMS (with the highest metric and applicability standards) will allow us to: (a) diagnose the present FMS status for seven-year-old boys and girls; (b) perform kinesiological processes with a high degree of accuracy and appropriateness – applying the FMS test as the transitive assessment of the FMS level; (c) select appropriate FMS for achieving an autonomous learning level, directed at developing anthropological features which will be in accordance with the subject's biological and training age.

METHODS

Sample of subjects

The study sample included 100 seven-year-old pupils divided into sub-samples based on gender (58 girls and 42 boys), all of them in a good health and without any obvious physical or mental deficiencies.

Measurements

Two batteries of tests were used.

The sample of variables used to assess motor abilities consisted of 9 standard motor tests as proposed by Katić et al. (Schmidt,1975, Schmidt & Wrisberg , 2000, Tzetzis, Mantis, Zachopoulou & Kioumourtzoglou,1999): tests assessing frequency of movement (Hand-tapping, tapping against a wall - f/15 sec), a coordination in rhythm test (Hand-drumming,– f/ *per* 20 s), power tests (Standing jump - cm, 20m run - s), strength tests (Banch standing – s), tests assessing flexibility (Sit-and-reach - cm,) and tests for assessing coordination and agility (Polygon backwards –s and side –steps-s).

All of the tests used to assess the frequency of movement, power, flexibility, coordination, agility and coordination in rhythm of the subjects were performed three times and only the best results were taken for analysis. The tests assessing strength were performed only once.

For assessing performance of the FMS (leaping, jumping, rolling and running), four new constructed test were chosen (Delaš et al. 1997):

(1) *leaping* – from 6 to 8 continuing contralateral leaps in arbitrary but standardized rhythm

(2) *jumping* – both legs jumps over a transversally placed „Swedish bench" (5 times successively in standardized rhythm)

(3) *rolling* – rolling on one's side from a lying position (stretched, hands up), 5 – 6 rotations on mats

(4) *running* – an subject starts running from an upright position and runs as quickly as possible for approximately 30 meters. Marks are given according to the running technique.

The experiment

The experiment design had two phases: measuring the motor abilities and measuring the FMS. The motor tests were implemented during the first phase (throughout the 1st month of practice). The standard basic gymnastic training program for beginners was implemented three times a week throughout the duration of the second phase, during a period of eight months (4 hours *per* week). The performance of the FMS was tested during four measuring points: (1) three months after the beginning of the kinesiological treatment – *transitive measuring*; (2) at the end of the learning process – *final measuring*; (3) three weeks after finishing kinesiological treatment – *first retention*; (4) seven weeks after finishing the kinesiological treatment – *second retention.*

All of the participants were videotaped to avoid any subjective evaluation. Then three independent judges evaluated their performance on the Likert scale (from 1 to 5) by watching the videotaped material. The subjects performed all 4 elements four times (during the four measuring phases). The judges were previously instructed to evaluate the specific rank of five motor assessment levels.

Statistics analysis

The methods used for data analysis included basic statistical parameters, a standard factorial analysis, and a correlation regression analysis. For assessing some metric characteristics (sensitivity and objectivity) of the FMS tests, the Cronbach Alpha, the Kolomogorov-Smirnov test and an inter-item correlation were calculated. The basic variable parameters (mean ± SD), the varimax factor complex, characteristic factor values (lambda) and percentage of the common variance explained (variance %) were calculated for each group of manifested variables. The factors were considered significant when the explained variance (lambda) exceeded 1. In this way, latent variables in the motor space were defined. Factor scores for the defined latent variables were used in the statistical procedures that followed. The standard linear regression analysis was performed to determine the relations between motor latent variables as the predictors and individual FMS variables as the criteria. The BETA partial regression coefficient, the predictor to criterion correlation coefficient, i.e. multiple correlation (RO), and the significance of regression coefficients and multiple correlation are all shown.

RESULTS AND DISCUSSION

According to the standard statistical indicators (Table 1), all of the tests have satisfying metric characteristics of sensitivity and objectivity in the first (transitive) measuring point for the population of boys, while for the population of girls, only *jumping* and *rolling* are metrically good.

Table 1. Arithmetic means (Mean); standard deviation (SD), Kolmogorov – Smirnov test (K-S), inter-item correlation (IIr) and Crombach alpha coefficient (α) for the FMS variables (during the four phases of measurement)

		Girls				Boys			
		Mean±SD	K-S	IIr	α	Mean ±SD	K-S	IIr	α
1	Leaps	3.57±1.5	**0.27**	0.91	0.97	2.82±1.5	0.16	0.89	0.95
	Jumps	3.50±1.3	0.16	0.94	0.98	3.15±1.3	0.19	0.92	0.97
	Rolling	3.33±0.9	0.18	0.82	0.92	3.54±1.1	0.14	0.84	0.93
	Running	2.64±0.8	0.12	0.70	0.87	2.85±0.9	0.12	0.79	0.90
2	Leaps	3.89±1.0	**0.26**	0.83	0.93	3.50±1.2	**0.29**	0.90	0.95
	Jumps	3.74±1.1	0.19	0.84	0.94	3.74±1.1	0.18	0.89	0.95
	Rolling	3.66±0.7	0.15	0.59	0.81	3.46±0.8	0.14	0.80	0.92
	Running	3.13±0.9	0.18	0.77	0.90	2.99±1.1	0.13	0.88	0.96
3	Leaps	3.89±1.0	**0.20**	0.84	0.94	3.65±0.9	**0.24**	0.85	0.94
	Jumps	3.64±1.1	0.18	0.86	0.94	3.89±.1.1	0.19	0.89	0.95
	Rolling	3.67±0.8	0.12	0.74	0.89	3.49±0.8	0.15	0.79	0.91
	Running	3.09±0.9	0.17	0.83	0.93	3.11±1.0	0.14	0.81	0.92
4	Leaps	3.93±0.8	**0.21**	0.71	0.87	3.16±1.1	**0.24**	0.84	0.93
	Jumps	3.81±1.0	**0.22**	0.81	0.92	3.80±0.9	0.20	0.87	0.95
	Rolling	3.49±0.8	**0.20**	0.79	0.91	3.36±1.0	0.12	0.84	0.93
	Running	2.88±0.8	0.13	0.70	0.87	3.04±1.0	0.11	0.83	0.93

K-S for N=42. $p<0.21$; K-S for N=58. $p<0.18$

In the second (final) measuring point, at the end of the kinesiological treatment, the girls, on average performed better on all of the four motor skills than boys (according to the values of the arithmetic means). All of the tests, except *rolling* for the population of girls, show satisfying metric characteristics.

After the first week of not practicing, in the third measuring point (or first stage of retention) all of the tests kept the metric characteristics from the previous, or final measuring point. Consequently, the *leaping* test did not show good metric characteristics of sensitivity for both genders and the *rolling* test did not show good metric characteristics of objectivity and homogeneity. Both genders kept their level of knowledge from the previous measuring point.

In the fifth measuring point (or the second stage of retention), all of the tests carried out on the population of boys exhibit the characteristics from the previous measuring point – only the *leaping* test did not show good sensitivity, while the parameters of objectivity and homogeneity have even better values, particularly the *rolling* and *running* tests. All of the test characteristics from the previous measuring point were no longer the same in general for the population of girls. K – S test shows a significant deviation from normal distribution in the *leaping, jumping* and *rolling* tests. The tests carried out on the population of girls lost the characteristics of subject discrimination after a three-week break and their objectivity and homogeneity declined.

The test used for assessing the performance of some fundamental movement skills (*jumping* and *running*) are applicable only for the subsample of girls during the motor stage of learning (as transitive measuring). The girls probably did not reach the autonomous learning level of *jumping* and *running* and those FMS could not be assessed properly after the process of learning (in the second retention measurement).

The following group of motor variables were chosen to assess the basic motor abilities identified in previous studies as relevant for the successful performance of motor skills

among seven year old children (Miletić at al. 2004; Katić et al. 2002.): psychomotor speed, rhythmic coordination, strength (explosive, repetitive and static), and flexibility.

The factorial analysis (Table 2 for the subsample of girls) of the group of 9 motor variables yielded four factors: (1) explosive strength and coordination, (2) frequency of movement and coordination in rhythm; (3) flexibility and (4) static strength.

Table 2. Basic statistics and factor analysis (Varimax rotation) of motor variables for girls: (χ, mean; SD, standard deviation V- correlation between the variable and the associated factor

Variable	$\chi \pm$ SD	V1	V2	V3	V4
Hand-tapping (f/15 sec)	23.4 ± 3.0	0.20	-0.55	-0.48	0.46
Tapping against a wall (f/15 sec)	15.0 ± 2.2	0.11	**-0.86**	0.17	-0.07
Hand drumming (f/20 sec)	8.9 ± 2.9	0.11	**-0.78**	0.00	-0.07
Standing jump (cm)	114.4 ± 14.9	**0.75**	-0.15	0.32	0.05
20 m run (s)	4.5 ± 0.5	**-0.87**	0.06	0.10	0.09
Bench standing (s)	14.5 ± 10.4	0.04	0.13	0.04	**0.92**
Sit-and-reach (cm)	58.5 ± 10.8	0.07	-0.14	**0.91**	0.05
Polygon backwards (s)	17.8 ± 3.5	**-0.74**	0.01	-0.10	-0.39
Side steps (s)	13.4 ± 1.1	-0.65	0.37	0.30	0.01
Lambda		2.37	1.86	1.31	1.24
Variance %		0.26	0.21	0.15	0.14

The factorial analysis (Table 3 for the subsample of boys) of the group of 9 motor variables yielded three factors: (1) explosive strength and coordination, (2) frequency of movements and coordination in rhythm and (3) flexibility.

Table 3. Basic statistics and factor analysis (Varimax rotation) of motor variables for boys: (χ, mean; SD, standard deviation V- correlation between the variable and the associated factor

Variable	$\chi \pm$ SD	V1	V2	V3
Hand-tapping (f/15 sec)	23.8 ± 4.2	-0.17	0.68	-0.27
Tapping against a wall (f/15 sec)	15.1 ± 2.4	-0.43	0.68	0.06
Hand drumming (f/20 sec)	8.4 ± 3.0	0.05	**0.83**	0.21
Standing jump (cm)	120.9 ± 17.1	**-0.78**	0.16	0.14
20 m run (s)	4.3 ± 0.3	**0.79**	-0.15	0.20
Bench standing (s)	11.8 ± 10.6	-0.48	0.48	0.29
Sit-and-reach (cm)	50.7 ± 7.9	-0.07	0.10	**0.89**
Polygon backwards (s)	16.2 ± 3.3	**0.80**	-0.03	-0.10
Side steps (s)	13.1 ± 1.3	0.65	-0.30	0.49
Lambda		2.75	2.00	1.31
Variance %		0.30	0.22	0.14

The tests used for assessing coordination (the polygon backwards) and the tests used for assessing strength (the standing jump and 20 m run) showed the highest projection on the first factor for the subsamples of boys and girls, the ability to coordinate integrated various movement routines into an integral, single movement structure (Katić, 2003; Katić, Pejčić and Viskić – Štalec, 2004). The performance of complex movements activates the mechanisms responsible for manifesting the basic motor abilities in terms of strength and force regulation, synergistic regulation and muscle tone regulation. Therefore, coordination in terms of the cortical regulation of movements, as a mechanism supe-

rior to the mechanism of force and speed regulation is always present during the performance of some movement skills with exact rhythm.

The tests used to asses the ability to perform rhythmic structures and the tests used to asses the frequency of movements showed the highest projection on the second factor. The second isolated factor mostly integrated the frequency of movements and repetitive strength of the trunk and is manifested as a general psychomotor speed factor dependent on subcortical regulatory mechanisms. The subcortical regulatory mechanisms allow fast impulse flow through the central control subsystems and the formation of simple, as a rule rhythmic, motor structures.

The third motor factor was defined by the variable used to asses flexibility (the Sit-and- reach), thus being defined as the factor of flexibility for both genders. The fourth isolated motor factor was defined by the variable for assessing static strength (the Bench standing) only for the subsample of girls.

On the basis of the multiple correlation coefficients values (Table 4), it can be concluded that a very strong linear connection exists between the predictor latent dimensions (explosive strength and coordination; frequency of movements and coordination in rhythm and flexibility) and the criterion variables (*jumping* and *running*) for the subsample of girls. There is no significant multiple correlation coefficients for the *rolling* skill as criterion variable in all four measurements carried out on the subsample of boys.

Table 4. Regression analysis of motor latent space and basic motor skills (*jumping* and *running* for girls, and *jumping*, *rolling* and *running* for boys): BETA=regression coefficient; RO=multiple correlation; *p<0.05; **p<0.01; ***p<0.001.

	Latent dimension	Girls		Boys		
		Jumping	Running	Jumping	Rolling	Running
		BETA	BETA	BETA	BETA	BETA
1	V1	0.60 ***	0.50 **	-0.63 ***	-0.02	-0.49 **
	V2	-0.28 **	-0.14	0.18	0.25	0.06
	V3	0.22 *	0.04	0.08	0.25	0.04
	V4[g]	0.14	0.00			
	RO	0.72 ***	0.53 **	0.65 ***	0.35	0.49 *
2	V1	0.55 **	0.58 **	-0.48 **	-0.21	-0.51 ***
	V2	-0.11	-0.03	0.10	0.09	-0.02
	V3	0.08	-0.03	0.17	0.02	0.19
	V4[g]	0.24 *	0.18			
	RO	0.62 ***	0.61 ***	0.52 **	0.23	0.54 **
3	V1	0.58 **	0.60 **	-0.49 **	-0.14	-0.38 *
	V2	-0.17	-0.18	0.01	-0.11	-0.15
	V3	0.16	-0.10	0.15	0.04	-0.10
	V4[g]	0.09	0.02			
	RO	0.63 ***	***	0.51 **	0.18	0.42 *
4	V1			-0.53 ***	-0.08	-0.46 **
	V2			0.00	0.16	-0.17
	V3			0.14	0.24	-0.05
	V4[g]					
	RO			0.55 **	0.30	0.49 *

[g] varimax factor extracted only for the population of girls

Varimax factors: (V1) = explosive strength and coordination; (V2) = frequency of movements and rhythm coordination; (V3) = flexibility; (V4) = static strength

Measurement phases: (1) = transition; (2) = finalization; (3) = first retention; (4) = second retention.

On the basis of the regression coefficient analysis and its significance, obtained from the values of the BETA-coefficients, it can be concluded that the greatest influence on the criterion variables comes from the predictor latent dimension for the assessment of coordination and explosive strength.

The latent dimensions for assessing frequency of movement and coordination in rhythm and flexibility had a significant predictive value (the BETA coefficient) in the case of the successful performance of jumping by the girls, but only during the motor stage of learning (the first measuring).

CONCLUSION

From the presented results in this study we can conclude:

- The test used to asses the performance of some fundamental movement skills (*jumping*, *rolling* and *running*) is applicable for boys during the motor stage of learning and in the retention stage (after finishing the process of kinesiological treatment).
- The test used to asses the performance of some fundamental movement skills (*jumping* and *running*) is applicable, in the case of the subsample of girls, only during the motor stage of learning (as transitive measuring).
- Because of poor sensitivity and objectivity parameters, the test used to asses *leaping* is not recommended for practice at all.
- Coordination and explosive strength could be said to be the most integrated motor abilities in learning FMS (especially *jumping* and *running)* for 7 years old boys and girls.

Based on the results of this study, gender differences in motor abilities during the FMS learning process and their specific influence on the successful performance of *jumping* and *running* should be taken into consideration in training processes and physical education.

Acknowledgments *The study is part of the project of the Ministry of Science Education and Sports of the Republic of Croatia (No. 177-1773397-3333)*

REFERENCES

1. Ackerman, L. (1998) Determinants of individual differences during skill acquisition: cognitive abilities and information processing. *Journal of Experimental Psychology,* 117, 288-318.
2. Adams, J. A. (1971). A closed- loop theory of motor learning. *Journal of Motor Behavior, 3,* 111-150.
3. Al-Abood, S. A., Davids, K., & Bennett, S. J. (2001). Specificity of task constraints and effects of visual demonstrations and verbal instructions in directing learners' search during skill acquisition. *Journal of Motor Behavior, 33(3),*295-305.
4. Burton, A. W., Miller, D. E. (1998). *Movement Skill Assessment*. Champaign, IL,: Human Kinetics.
5. Carroll, W. R., & Bandura, A. (1987). Translating condition into action: The role of visual guidance in observational learning. *Journal of Motor Behavior, 19,* 385-398.
6. Čoh, M., Jovanović – Golubović, D., Bratić, M. (2004). Motor learning in sport. . *Facta Universitatis, Series: Physical Education and Sport,* 2(1), 45-59.
7. Delaš, S. Božanić A., Miletić A. & Miletić Đ. (2007). Follow up analysis of metric characteristics of fundamental motor skills. *In: B. Maleš (Ed.), Proceedings: „Contemporary Kinesiology*"(pp: 111-117). Mostar.
8. Horn, R. R., Williams, A.M., & Scott, M. A. (2002). Learning from demonstrations: the role of visual search during observational learning from video and point-light models. *Journal of Sports Sciences 20(3),* 253-269.

9. Katić, R., B. Maleš, & Miletić, Đ. (2002). Effect of 6 – Month Athletic Training on Motor Abilities in Seven – Year –Old Girls. *Collegium Antropologicum,* 28(2),727-737.
10. Katić, R. (2003). Identification of biomotor structures as a precondition for programing kinesiological education in children aged seven to nine years. *Collegium Antropologicum,* 27(1), 351-360.
11. Katić, R., Pejčić, A., Viskić – Štalec, N. (2004). The mechanism of morphological – motor functioning in elementary school female first – to fourth - graders. *Collegium Antropologicum,* 28(1), 261-269.
12. Kostić, R., Miletić, Đ., Jocić, D., Uzunović, S. (2003). The influence of dance structures on the motor abilities of preschool children. *Facta Universitatis, Series Physical Education and Sport,* 1(9), 83-90.
13. Magill, R. A. (1993). Modeling ad verbal feedback influences on skill learning. *International Journal of Sport Psychology, 24,*358-369.
14. Miletić, Đ., Katić, R., & Maleš, B. (2004). Some Anthropologic Factors of Performance in Rhythmic Gymnastics Novices. *Collegium Antropologicum,* 26(2),533-538.
15. Miletić, Đ., Maleš, B., & Sekulić, D. (2003). Dance steps: differentiating between more and less successful 7 – year old girls. *Facta Universitatis, Series Physical Education and Sport,* 1(7), 49-55.
16. Miletić, Đ., & Kostić R. (2006). Motor and Morphological conditionality for performing Arabesque and Passe pivots. *Facta Universitatis, Series Physical Education and Sport,* 4(1), 17-25.
17. Poon, P. P. L., & Rodgers, W. M. (2000). Learning and Remembering Strategies of Novice and Advanced Jazz Dancers for Skill Level Appropriate Dance Routines. *Research Quarterly for Exercise and Sport, 71,* 135-144.
18. Schmidt, R. A. (1975). A schema theory of discrete motor skill learning. *Psichological Review, 82*, 225-260.
19. Schmidt, R. A., & Wrisberg C. A. (2000). *Motor learning and Performance*. (2nd ed.) Champaign, IL.: Human Kinetics.
20. Tzetzis, G., Mantis, K., Zachopoulou, E., & Kioumourtzoglou, E. (1999). The effect of modeling and verbal feedback on skill learning. *Journal of Human Movement Studies 36(3):*137-151.

UTICAJ FAKTORA MOTORIČKIH SPOSOBNOSTI NA IZVOĐENJE BAZIČNIH MOTORIČKIH ZNANJA – RAZLIKE IZMEĐU DEVOJČICA I DEČAKA

Sunčica Delaš, Alen Miletić, Đurđica Miletić

Uticaj faktora motoričkih sposobnosti na izvođenje bazičnih motoričkih znanja (poskoka, skokova, kolutanja i trčanja) na uzorku sedmogodišnjih devojčica (N=58) i dečaka (N=42) istraživano je kroz četiri vremenske tačke (za vreme i nakon gimnastičkog kineziološkog tretmana). Rezultati pokazuju zadovoljavajuće metrijske karakteristike (osjetljivosti i objektivnosti) kod skokova, kolutanja i trčanja (za vreme i nakon kineziološkog tretmana) na uzorku dečaka, te kod skokova i trčanja (nakon tretmana) na uzorku devojčica. Faktorskom analizom 9 varijabli za procenu motoričkih sposobnosti, izolirana su četiri faktora kod devojčica i tri kod dečaka, i to: (1) faktor eksplozivne snage i koordinacije; (2) faktor brzine frekvencije pokreta i koordinacije u ritmu; (3) faktor fleksibilnosti i (4) faktor statičke snage – samo kod devojčica. Faktor ekspozivne snage i koordinacije u osnovi je intergrirana motorička sposobnost odgovorna za savladavanje bazičnih motoričkih znanja, posebno skokova i trčanja, kod oba pola. Prema dobijenim rezultatima, testovi za procenu skokova i trčanja, pokazuju dobre metrijske karakteristike, te se preporučuje njihova primena u praksi u svrhu (a) utvrđivanja statusa bazičnih motoričkih znanja kod sedmogodišnjaka, (b) sprovođenja bazičnih kineziooloških tretmana s visokom efikasnošću primjenjujući testove za procenu nivoa bazičnih motoričkih znanja skokova i trčanja s ciljem utvrđivanja njihovog tranzitivnog statusa. Dostizanje automatizacijskog nivoa znanja skokova i trčanja, utvrđen kroz fazu retencije, direktno će utjecati na razvoj eksplozivne snage i koordinacije.

Ključne reči*: motoričko učenje, motoričke sposobnosti, sedmogodišnjaci*