

CHANGES BETWEEN INITIAL AND FINAL STATE OF BASIC-MOTOR SKILLS OF STUDENTS IN STANDARD MODEL OF TEACHING

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Original research:

Abstract:

The aim of this paper was to establish changes in motor abilities in students of Faculty of Sport and Physical Education under the influence of regular sport class activities. Students of first year realized lessons of three subjects: Athletics, Anthropometrics and Judo with two block lessons per week of practical lessons for each subject. Efficiency of changes in motor exercising on development of basic-motor skills was evaluated after 15 weeks. Results of the study, obtained by Discriminative analysis on multi-variant level, showed that statically significant changes occurred ($p=.003$). changes of basic- motor skills of students were determined on univariant level, as well, by T-test for dependent samples. Statistically significant changes in all three tests, that evaluate area of repetitive strength- raising torso on Swedish bench MDTK with significance $p<.000$, Pull-ups MZGN $p=.011$ and Squads with 30% of body weight MCUO $p=.002$, in one test of explosive strength; Five standing jump, MTPS $p=.018$ and in two tests, which evaluate psychomotor agility; Envelope test MKOT $p=.007$ and test Eight with bending MOSS $p=.004$, occurred. Complex program of teaching in subjects: Athletics, Anthropometrics and Judo lead to changes in tests of repetitive strength, agility and one test, which evaluates explosive strength, with its adaptable potential. It is assumed that teaching contents can influence on changes of basic-motor skills in students of other faculties.

Key words: motor skills, students, teaching, changes

Introduction

Motor skills participate in performance of all movements. Efficiency of body systems, especially neuro-muscle, which is responsible for intensity, duration and regulation of movements, is their fundament (Findak, 1998; Hadžikadunić, 1998). These abilities enable strong, fast, long-term, precise or coordinated performance of different motor tasks. In study by Babin et.al., (2001) and Šebić-Zuhrić (2008) was observed that standard athletics, gymnastics and team sports activities in sport classes were responsible for increase in coordination, endurance, strength and flexibility. Subject of the present study were program contents of P.E. lessons (Judo, Anthropometrics, Athletics) of students of the first year of Faculty and their adaptable capacities. Practical lessons of these three subjects were performed in frequency two lessons a week, for each subject. In order to conduct educational process in a planned, rational, organized and systematic way, it needs to be planned and programmed and afterwards performed

and controlled (Milanovic, 2007). Basic problem of the paper was to determine efficiency of realized standard program of regular classes of practical exercises in students of the first year of subjects: Athletics, Judo and Anthropometrics on development of basic-motor skills.

Methods

Sample subjects

The study was conducted on sample of 60 male students of the first year of Faculty of Sport and Physical Education in Sarajevo, age between 20 and 25, in the second semester of the first year of the first cycle. Primary characteristic of sample was positive selection according to following characteristics: motor skills, motor knowledge, cognitive skills, conative characteristics and health condition. This sample

included motor exercising in lessons of realization of practical exercises of regular classes based on plan and program of faculty.

Sample of Variables

In the field of basic-motor skills, 15 tests for measurement of segmental speed, repetitive strength, explosive strength, flexibility and agility, were applied. Measure instruments for assessment of basic-motor skills:

- (i) Segmental body speed:
 1. Foot taping (MTAN), 2. Hand taping (MTAR), 3. Leg taping against the wall (MTAZ)
- (ii) Repetitive strength:
 1. lifting torso on Swedish bench (MDTK), 2. Pull-ups (MZGN) 3. Squads with 30% BW (MCUO)
- (iii) Explosive strength:
 1. standing long jump (MSDM), 2. triple standing long jump (MTRS), 3. five standing long jumps (MTPS)
- (iv) Flexibility:
 1. Deep bend on the bench (MDPK) 2. Split (MSPA) 3. rotation with a bat (MISP)
- (v) Agility:
 1. envelope test (MKOT) 2. steps aside (MKUS) 3. eight with bending (MOSS)

Results

Differences on multivariate level between initial and final measurement of subjects

Table 1 and 2 includes square coefficient of discrimination (Eigenvalue), means of Bartlett's test (Wilks' Lambda), size of Hi square test (Chi-Sqr), degrees of freedom (df), Canonical correlation coefficients (Canonical R) and sign of probability error (Sig). Results of discriminative strength of basic-motor tests are obtained by Wilks' Lambda test (Table 2.) which is .727, which indicates that differences between initial and final measurement in the area of basic-motor skills of students are significant ($p=.003$), because size of Hi square test has means (Chi-Sqr = 34.338).

Table 1. Characteristics of discriminative function

Function	Eigenvalue	% of Variance	Cumulative %	Canonical R
1	.376(a)	100.0	100.0	.523

Table 2. Significance of isolated discriminative function

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.727	34.338	15	.003

Table 3 shows structure of discriminative function of participation of variables of basic-motor skills in forming significant discriminative functions. Centroids of groups, which represent arithmetic means of results of initial and final measurement, are displayed in table 4. In order to establish efficiency of standard model of teaching in students, 15 basic-motor tests were measured. Displayed results (Table 3) indicate that coefficients: lifting torso on Swedish bench (MDTK, $p=.534$), envelope test (MKOT, $p=.195$), five standing long jump (MTPS, $p=.181$), squads with 30% of loading (MCUO, $p=.132$), contribute the discriminative function, while other means are negligible.

Table 3. Factor structure of isolated discriminative function of subjects

	Function
	1
MDTK	.534
MOSS	-.205
MKOT	.195
MSPA	-.182
MTPS	.181
MSDM	-.163
MTAZ	-.148
MCUO	.132
MKUS	.092
MTAR	.073
MZGN	.062
MISP	-.056
MTRS	-.020
MTAN	.019
MDPK	-.006

Results on table 4 show discriminative function of centroids based on all basic-motor measurements which were -.593 and .624. Significance of displayed centroids of measurements, which is tested through significance of discriminative function, indicates that their distance (discrimination) is significant.

Table 4. Centroids of measurement of subjects

	Function
	1
Initial	-.593
Final	.624

It can be assumed that significant changes on the level of basic-motor skills in the final measurement in relation to initial measurement are obtained. Standard program of classes (Athletics, Judo and Anthropometrics) with two lessons a week, with its programmed contents according to plan and the program of faculty, influenced on changes on the level of basic-motor skills in students of control group of subjects.

Obtained results on multivariant level by discriminative analysis of basic-motor skills, in the final measurement in relation to the initial measurement, indicate that there were significant quantity changes of basic-motor skills, under the influence of standard program of regular classes.

Discussion

The intention of this paper was to assess basic-motor skills through selected tests. although more extensive research could add morphological characteristics and control group, as well.

Discriminative analysis determined quantity changes on multivariant level. Results of discriminative strength of basic-motor tests are obtained by Wilks' Lambda test (Table 2.) which were .727. which indicates that differences between initial and final measurement in the area of basic-motor skills of students are significant (P-Level=.003). because the size of Hi square test has means (Chi-Sqr = 34.338).

After the end of the classes in the area of basic-motor skills a significant change in sample subjects have occurred. Results of discriminative strength of basic-motor tests are obtained by Wilks' Lambda test (Table 2.) which was $p=.727$. which indicates that differences between initial and final measurements in the area of basic-motor skills of students are significant ($p=.003$). because the size of Hi square test has means (Chi-Sqr = 34.338).

On univariant level differences determined by T-test for dependent samples. where obtained means are statistically significant in variables of seven tests of basic-motor skills ($p=.000$ MDTK), ($p=.011$ MZGN), ($p=.002$ MCUO), ($p=.018$ MTPS), ($p=.015$ MSPA), ($p=.007$ MKOT) and ($p=.004$ MOSS) in the final measurement in relation to the initial measurement. The biggest differences are determined in tests that were measuring repetitive strength in strength (MDTK), ($p=.011$ MZGN), ($p=.002$ MCUO) which can be explained by extensive preparations for passing standards of subject Anthropometrics. Endurance in strength has the most important influence on initial stages of sport preparations when "fundament of force", is built. Therefore, efficient work on increase of maximal explosive force can be performed. (Željaskov 2004). Two tests of agility show differences determined by T-test ($p=.007$ MKOT) Envelope test and (.004 MOSS) Eight with bending. Program of classes of subject Judo includes elements of shifting directions due to disturbed balance. throwing and moving in combats. which could influence changes in tests that evaluate psycho-motor agility. Differences determined in test ($p=.018$ MTPS) five long standing jump ($p=.015$ MSPA) split. where standard program.

with its complex content of lessons. caused statistically significant differences on univariant level of mentioned tests. Quantity and quality changes of structure and function of human body under the influence of system long-term action of stimuli represent adaptation (Jurko et. al., 2015; Bompa, 2001 & 2006).

Since students, in this semester, were preparing practical exam of tests of running at 1500m, and other motor testing, as well, classes of this subjects and classes of Judo and Athletics probably lead to changes in motor area Condition preparation is a complex and overall process of application of different programs for development and maintenance of functional and motor skills and morphological features of athletes (Milanović, 2007; Milanović & Jukić, 2003).

Conclusion

The changes occurred as effect of teaching content on the practical part of the teaching of students of the Faculty of Sport and Physical Education point us towards the application of similar content within the framework of physical education teaching with a non-motorically selected sample of other students, as well as other populations that require a higher level of muscular endurance and coordination. The changes caused by the Judo, Athletics and Anthropometrics in the examined sample would most likely be at higher levels if the goal of the classes was to raise the level of motor skills, and not to learn technique, educational requirements, etc. The capacity of the teaching content can be significantly increased by increasing the intensity and volume of the training content after the phases of learning new movements have been completed as a prerequisite for the intensification of the teaching content.

References

- Babin. J.. Katić. R.. Ropac. D. i Bonacin. D. (2001). Effect of specially programmed physical and health education on motor fitness of seven-year-old school children. *Collegium antropologicum* 25 (1)
- Bompa. T. (2001). *Periodization: Theory and methodology of Training*. Illinois
- Bompa. T. (2006). *Theory and methodology of training*. Zagreb: National and university library
- Findak. V. (1998). *Methodic organizational forms of work* (43-76). Zagreb: "Mentorex" d.o.o.
- Hadžikadunić, M. (1998). *Influence of programmed exercising on certain antropometric characteristics of motor and functional skills*. Sarajevo: Faculty of Physical Education
- Jurko. D.. Čular. D.. Badrić. M.. Sporiš. G. (2015). *Basics of Kinesiology*; University of Split. Gopal Zagreb.

- Milanović. D. (2007). Theory of Training. Zagreb: Faculty of Kinesiology in Zagreb
- Milanović. D. Jukić I. (2003). Condition preparation of athletes. Faculty of Kinesiology in Zagreb. Zagreb Sport Federation 2003. (10-19)
- Šebić-Zuhrić. L. (2008). Transformational processes of basic-motor skills and style movement structures in rhythmic gymnastics under the influence of proprioceptive training. Doctoral thesis. Sarajevo: Faculty of Sport and Physical education.
- Željaskov. C. (2004). Condition training of top-level individuals/theories. methods and practices. Sport academy, Belgrade. 107

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