

TRANSFORMATION OF BASIC AND SPECIFIC MOTOR STATUS OF ELITE JUDO PLAYERS UNDER THE INFLUENCE OF INNOVATED TRAINING MODEL

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Original scientific paper

Abstract

According to the rules of long term planning and program the relation of certain sport preparation programs is changing in some phases. In the first phase the biggest contribution make general and basic preparations. In the phase when judo player is approaching maximum sport results specific-situational preparation is taking part. Hours of training are increasing and reach values which prove that judo players should spend approximately four hours and longer training in order to achieve top results. Considering this extension we can conclude that increasing the total amount of training in later phases of sports improvement is realized based on increasing of specific-situational training and number of competitions. Certainly, all this has to be followed by discipline in a life of a sportsman. Modern sports preparation technology faces bigger challenges through years. Judo development, changes in fighting rules, requirements and expectations of public result with constant modifications and innovations in sport preparation program creation. Trainers and scientist make an effort to discover new methods, training programs that will shorten the road to achievement of the top sport results.

Key words: judo, elite players, training, innovative model, technique, motor dimensions

Introduction

Judo characterizes variety and a lot of technical elements, tactics of whole body and extremity movement in different directions with variable intensity and tempo. During judo fight dynamic situations are constantly changing along with different moves changes, intervention and position of both fighters. This requires good dynamic stereotype activities and throw and good ability to effectively carry out the reorganization of the dynamic stereotype in other words continually creating new offensive, defensive and counter defense activities during the fight (Rađo & Co, 2001). Technical preparation of judo players is a process of motor habits formation; throwing, holding procedures, Arm Bars, chokes, defense, and their combinations that are used in combat sports. During training the beginners, judo players learn specific elements of technique, while in the further course of training technique's perfected to a point when it can be used in combat sports. During this period of education basic technique significantly increases. Along with this motor skills are developing in terms of specific training of coordination skills performance. Specific physical training influences the development of motor characteristics necessary to perform specific movements in judo. When choosing the appropriate specific exercises for judo and direct them towards training of any motor characteristics, it is necessary to previously study the structure of certain judo methods and activities of individual groups of muscles involved in performing techniques. According to this, we realize which muscles are mostly involved during performing of particular technique, which gives us a starting point for the selection of a certain specific exercises complex that will have the most effective impact.

In addition to the development of certain muscle groups, specific means of preparation will influence the development of motor characteristics, which we discover that, at the moment, cause the development of certain qualities specific for judo. The aim of the research would be to determine the effects of different methods on general and specific motor of judo players.

Methods

Sample of respondents

The sample comprised 179 male judo players aged 17 to 27 years who have at least master title in judo and day as follows: Experimental group – 61 respondent and Control group – 118 respondents from Croatia, SCG and Slovenia.

Sample of variables

For assessment of fundamental motor skills in judo players (dynamic strength, explosive strength, coordination and speed) 12 tests were applied. For coordination: (1) Climbing and alighting on the bench and Swedish ladders (MBKPIS); (2) Side steps (MAGKUS); (3) figure eight with bending (MAGOSS). Following tests were applied to assess repetitive strength: (4) Pull ups on high bars in backward grip (MRAZGP); (5) Sit-ups in 30 sec (MBDT30); (6) side movements of a torso in a lying position (MRSZTL). Following tests were applied to assess explosive strength: (7) throwing medicine ball from lying on one's back (MFEBML); (8) Standing long jump (MFESDM); (9) Sargent test (MFESVM). Following tests were applied to assess movement frequency: (10) Hand tapping (MBFTAP); (11) Circulating with hand (MBFKRR); (12) Foot tapping (MBFTAN).

For specific motor skills estimation in judo we applied battery of tests designed by Janos Kopas (2005). For specific repetitive strength estimation: (13) Jumping over and pulling through (SPPR10); (14) Uchi komi – Tai otoshi (SUKT10); (15) Jumping on supporting leg (SPSNO8). For specific coordination movement estimation: (16) Ko uchi makikomi (SKUMK5); (17) Ground floor circle (SPAKRU); (18) Uchimata with somersault forward (SUMKO5). For specific explosive strength estimation: (19) Single leg jumping five times (SPESJN); (20) Agility on the ground (SOKRNT). For specific speed (frequency) of movement: (21) Ipon seoi nage (SISN10); (22) Fall forward over the opponent (SPAN10). In addition to these tests, we decided to apply following tests since in earlier study we did not obtaine satisfactory psychometric properties and for these reasons tests are performed with correction of test tasks: (23) Movement on the back feet forward (SKLN10); (24) Bridging (SMOST5); (25) Sumi-gaeshi to kesa-gatame (SSGKG); (26) Knee throw (SBAKO5); (27) Moving on the stomach with hand withdrawal (SKSPR5); (28) Movement on the back with head forward (SLGN10).

Experimental design

Experiment was realized within three months. In the beginning of technical training, in introductory section, we performed a battery of specific mobility exercises that stimulate movements that occur in the execution of some judo techniques (15 to 20 minutes long exercises).

Results and discussion

Table 1: Differences between groups in space of Basic motor dimensions

Variables	Group	Mean	F test	Significance	
MBKPIS	Exp.	202,28	4,44	,04	
	Cont.	209,05			
MAGKUS	Exp.	89,15	117,42	,00	
	Cont.	94,98			
MAGOSS	Exp.	171,78	44,45	,00	
	Cont.	175,77			
MRAZGV	Exp.	13,65	165,63	,00	
	Cont.	10,55			
MBDT30	Exp.	32,22	59,25	,00	
	Cont.	30,04			
MRSZTL	Exp.	61,22	134,91	,00	
	Cont.	52,84			
MFEBML	Exp.	1.064,15	130,56	,00	
	Cont.	985,45			
MFESDM	Exp.	243,63	110,10	,00	
	Cont.	233,51			
MFESVM	Exp.	48,78	4,58	,03	
	Cont.	47,78			
MBFTAP	Exp.	39,38	17,33	,00	
	Cont.	38,20			
MBFKRR	Exp.	39,27	,21	,65	
	Cont.	38,07			
MBFTAN	Exp.	22,72	2,67	,10	
	Cont.	21,99			
Wilks $\lambda = 0,81$		F = 3,20	df1=12	df2=166	p = 0,00

Specific motor exercise complex (30 exercises) was created by PhD Izet Rađo and author of PhD thesis Branislav Crnogorac, based on many years of training and a great professional experience. During the physical training plyometric training was applied contained of 15 plyometric exercises, which were considered to have a positive transfer on the development of motor skills dominant in judo.

Also, after judo training we applied training on a specially designed training devices (horizontal bars "rukohod", high bars with kimono attached and the rope from kimono lapel) which were considered to improve specific motor skills specific for judo. Experimental group implemented this program for three months and control group followed standard curriculum that is implemented in the clubs.

Statistic procedures

Multivariate analysis of covariance tested differences between the experimental and control group at the final measurement with the neutralizing effect of possible differences in the level of general and specific motor abilities of subjects in the two groups at the beginning of treatment. Within this analysis we calculated Wilk's λ coefficients and their value tested with appropriate F test which verified the significance of differences at the level of the whole system of the analyzed variables. Significant values were the values of F test that fulfilled the level of significance $p=0,01$.

Table 2: Differences between groups in space of Specific motor dimensions

Variable	Group	Mean	F-test	p	
SKLN10	Exp.	106,51	142,314	,00	
	Cont.	119,65			
SPPR10	Exp.	268,81	109,162	,00	
	Cont.	285,90			
SOKRNT	Exp.	40,44	100,936	,00	
	Cont.	43,39			
SMOST5	Exp.	79,68	99,559	,00	
	Cont.	87,44			
SPAN10	Exp.	181,59	21,032	,00	
	Cont.	190,90			
SSGKG5	Exp.	135,22	95,602	,00	
	Cont.	140,01			
SPAKRU	Exp.	42,56	101,073	,00	
	Cont.	45,16			
SBAKO5	Exp.	60,96	54,488	,00	
	Cont.	63,55			
SKSPR5	Exp.	68,39	109,614	,00	
	Cont.	76,67			
SLGN10	Exp.	70,70	47,533	,00	
	Cont.	76,63			
SPSNO8	Exp.	29,14	218,212	,00	
	Cont.	33,91			
SPESJN	Ekep.	1.162,08	252,832	,00	
	Kont.	1.101,48			
SKUMK5	Exp.	85,16	31,097	,00	
	Cont.	88,89			
SISN10	Exp.	96,64	93,705	,00	
	Kont.	101,73			
SUKT10	Ekep.	159,34	36,407	,00	
	Cont.	170,17			
SUMKO5	Exp.	104,55	,203	,65	
	Cont.	105,10			
Wilks $\lambda = 0,63$		F = 6,02	df1=16	df2=162	p = 0,00

In table 1 we presented results of multivariate analysis of covariance, which were tested for differences in the general area of motor between two groups the experimental and control co variations of results from the first measurement, or by neutralizing the existing differences in the initial measurement. It is obvious that on the level of entire variable analysis system it showed there is statistically significant difference between analyzed groups at the level of conclusion $p = 0,01$ as indicated by high values of Wilks λ coefficient (0.81) and F test (3.20). Out of 12 analyzed variables only two did not present statistically significant differences (MBFKRR and MBFTAN), while the variables and MBKPIS MFESVM noted differences at the level of the conclusion of $p = 0.05$. In all cases these differences are still in favor of the experimental group. Multivariate analysis of covariance, which tested the differences in the area of specific motor skills between the experimental and control groups at the final measurement (Table 2), revealed that there are significant differences between groups analyzed at the level of the conclusion of $p = 0.01$, as indicated by high value of F test (6.02) and Wilks λ coefficient (0.63).

In all 16 analyzed variables, except variable SUMKO5, statistically significant differences are present at the level of the conclusion of $p = 0$. In all cases these differences are still in favor of the experimental group.

It is important to confirm that the use of innovated model of training did not only affect the specific motor status of judo players but also the general motor status. Basic motor skills include capabilities unspecific for certain sport activity but have impact on specialization process while transforming into specific capabilities, but only if they are in certain correlations (Malacko & Rađo, 2004).

In other words treated specific motor skills through transformation process can affect motor skills under the same conditions. High efficiency and effectiveness in achieving sports results cannot be achieved on the behalf of extensiveness (amount and time) but with increasing intensity (power and optimization) of training, which requires future faster selectivity in appliance of the most efficient training instruments, methods and (Malacko & Rađo, 2004).

According to difference analysis in final measuring between experimental and control group we can conclude that appliance of innovative model in judo practitioners training showed better results regarding positive transformation of basic and specific motor skills of players comparing to standard model appliance. Specific motor exercises should be included in training since the beginning because of positive impact on better motor studying in later judo player's preparations which was confirmed in earlier research. (Drid, 2005; Bratić et al., 2006). This research confirmed this statement. New specific motor skills should be studied in three phases: 1) learn exercise regardless performance speed, 2) increase performance speed while keeping correct movement structure and 3) change a part of movement structure or conditions it's being performed by.

Training instruments should be included into training process only when active and passive part of movement apparatus becomes strong enough. This can be achieved with development of general strength, speed, coordination, flexibility and other motor skills. One of the basic principles of sports training in judo is the principle of individualization. Individualization is imposing itself as one of the major requirements of modern training.

This refers to the fact that trainers should approach each judo player individually according to his skills, potential, learning characteristics and sport specificity regardless sport results level (Bompa, 1999). Individualization should be observed as an instrument that can be easily assessed and followed by judo player. All types of individual judo player's training are based on information obtained from precise diagnostic procedures.

State diagnosis is being conducted in order to define the level of judo player's anthropological dimensions. Health conditions, motor and functional skills, morphological characteristics and psychosociological dimensions are being estimated with general and specific procedures and tests (Milanović, 1997; Beachle i Earle, 2000; Cook, 2000). Information obtained is considered in creation of training curriculum. For that reason it is essential to create as much specific motor skills assessment tests for judo players as possible.

Conclusion

According to the rules of long term planning and program the relation of certain sport preparation programs is changing in some phases. In the first phase the biggest contribution make general and basic preparations. In the phase when judo player is approaching maximum sport results specific-situational preparation is taking part. Hours of training are increasing and reach values which prove that judo players should spend approximately four hours and longer training in order to achieve top results. Considering this extension we can conclude that increasing the total amount of training in later phases of sports improvement is realized based on increasing of specific-situational training and number of competitions. Certainly, all this has to be followed by discipline in a life of a sportsman. Modern sports preparation technology faces bigger challenges through years. Judo development, changes in fighting rules, requirements and expectations of public result with constant modifications and innovations in sport preparation program creation. Trainers and scientist make an effort to discover new methods, training programs that will shorten the road to achievement of the top sport results.

Literature

- Beachle, T.R., & Earle, R.W. (2000). *Essentials of Strength Training and Conditioning*. Champaign, Ill: Human Kinetics.
- Bompa, T.O. (1999). *Periodization. Theory and Methodology of Training*. Champaign, Ill: Human Kinetics.
- Bratić, M., Drid, P., Nurkić, M., & Obadov, S. (2006). The Effects of Specific Preliminary Exercises on the Quality of Knowledge and Execution Success of Judo Techniques. *Facta Universitatis*, 4(2), 125-135.
- Cook, G. (2000). *Baselines Sports - Fitness Testing*. In: High - Performance Sports Conditioning. Champaign, Il: Human Kinetics.
- Drid, P. (2005). *Utjecaj specifičnih motoričkih vježbi na efikasnost motoričkog učenja judo tehnike*. [Impact of specific motor exercise on efficiency of motor studying of judo techniques. In Serbian.]. /Dissertation/. Novi Sad: Fakultet fizičke kulture.
- Malacko, J., & Rađo, I. (2004). *Tehnologija sporta i sportskog treninga*. [Techology of sport and sports training. In Bosnian.]. Sarajevo: Fakultet sporta i tjelesnog odgoja.
- Milanović, D. (Ed.) (1997). *Priručnik za sportske trenere*. [Sport trainers manual. In Croatian.]. Zagreb: Fakultet za fizičku kulturu.
- Rađo, I., Kajmović, H., & Kapo, S. (2001). *Judo*. [Judo. In Bosnian.]. Sarajevo: Fakultet fizičke kulture.

TRANSFORMACIJA BAZIČNOG I SPECIFIČNOG MOTORIČKOG STATUSA VRHUNSKIH DŽUDISTA POD UTICAJEM INOVIRANOG MODELA TRENIRANJA

Sažetak

U skladu sa zakonitostima dugoročnog planiranja i programiranja mijenja se odnos pojedinih programa sportske pripreme u pojedinim etapama. U prvim etapama najveći je udio programa opće i bazične pripreme. U funkciji približavanja etapi u kojoj džudist postiže maksimalna sportska dostignuća povećava se udio programa specifično-situacijske pripreme. Broj sati trenažnog rada stalno se povećava i postiže vrijednosti koje znače da džudist radi postizanja vrhunskih sportskih rezultata mora prosječno dnevno trenirati i više od četiri sata. Imajući na umu ovo povećanje, možemo zaključiti da se povećavanje ukupne količine trenažnog rada u kasnijim etapama sportskog usavršavanja ostvaruje na temelju znatnijeg prirasta specifično-situacijskih sadržaja trenažnog rada i broja takmičenja. Naravno sve ovo mora pratiti i sportski režim života sportiste. Tehnologija savremene sportske pripreme iz godine u godinu nailazi na sve veće izazove. Razvoj džuda, promjene u pravilima borbe, zahtjevi i očekivanja sportske javnosti, uvjetuju stalne modifikacije i inovacije u kreiranju programa sportske pripreme. Treneri i naučnici ulažu velike napore radi iznalaženja novih metoda, trenažnih programa koji će džudistima skratiti put do ostvarenja najvećih sportskih dostignuća.

Ključne riječi: judo, elitni sportaši, trening, inovativni model, tehnika, motoričke dimenzije

Received: February 17, 2010.

Accepted: April 14, 2010.

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