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RAPID EDUCATING OF TECHNIQUE IN PHYSICAL CULTURE AND SPORTS

У статті викладені основні положення дидактичної системи фізичної культури і спорту, пов'язані з побудовою рухового акту. Використовуючи пропоновану методику оптимізації навчання за прямокутними матрицями, вдається уменшити час початкового навчання техніки виконання кидків у єдиноборствах в 2,38 разів. Розкривається механізм і структура дидактичної системи навчання у фізичної культури і спорту за прямокутними матрицями.

Ключові слова: *дидактична система, фізична культура, спорт, теорія навчання, оптимальний, прямокутна матриця, знання, уміння, навик.*

Арзютов Г.Н., Лахно Д.Н., Рябчун Л.Я., Коптев К.Г., Кузнецов А.Е. Быстрое обучение технике в физической культуре и спорте. *В статье изложены основные положения дидактической системы физической культуры и спорта, связанные с построением теории оптимального обучения в физической культуре и спорте по прямоугольным матрицам. Используя предложенную методику оптимизации обучения по прямоугольным матрицам, удаётся уменьшить время начального обучения технике выполнения бросков в единоборствах в 2,38 раз при 10 циклах повторений матриц. Раскрывается механизм и структура дидактичной системы обучения в физической культуре и спорте по прямоугольным матрицам.*

Ключевые слова: *дидактическая система, физическая культура, спорт, теория обучения, оптимальный, прямоугольная матрица, знания, умения, навык.*

Arziutov G.N., Lakhno D.N., Riabchun L.Y., Koptiev K.G., Kuznetsov A.E. Rapid educating of technique in physical culture and sports.*The article outlines the basic provisions of the didactic system of physical culture and sports associated with the construction of the theory optimal education in physical culture and sport using rectangular matrix. Two sides (the deep of education and the education by using main points of movement) are in this didactic system of physical culture and sports. The deep of education includes the level (or deep) of education. It is means that educations of technique on the level of knowledge equal the mastering of space, education of technique on the level of skill equal the mastering of space and time, education of technique on the level of experience equal the mastering of space, time and force. The methodic of education includes two parts: oriental and executive parts. The oriental part basis on building of oriental foundation of movement (OFM), trace of movement - basic support points (BSP) are the marks of building trace of movement. Phases of executive movements, disposal of in movement (angles), disposal of opponent body's parts and etc. are the basic support points (BSP).*

The executive part as usually includes realization of technique" to refusal", executor do this technique to full fatigue (in single combats it is 500 executions of technique). In case of executive the combination of two technique: 500 (1 technique) + 500 (2 technique) + 500 (combination of technique) = 1500 technique. Executer does 10 series of 50 techniques. We have the next figures with using of rectangular matrix in our case: 21 x 10 (1 technique) +21x10 (2 techniques) + 21x10 (combination) = 630 techniques. Executer does 10 series of 21 techniques.

Using the proposed theory of optimal education by rectangular matrix it is possible to reduce the time of beginning education of technique in single combat in 2, 38 (80% of level of skill equal the mastering of space and time). There is the structure of optimal education model in physical culture and sport using rectangular matrix.

Key words: *didactic system, physical culture, sports, theory, education, optimal, rectangular matrix, knowledge, skill, experience.*

Actuality. A relevant problem of our days - optimization of technique's teaching of students in the process of training to the single combat in establishments of high education. However, today in practice of training and preparation of sportsmen in establishments of high education the unity of opinions of specialists on planning of the educational-training process on the different stages of preparation of students - sportsmen is absent. It is related in its turn to the amount of reiterations of technique on the training lesson, in the training week, month, quarter, half-year, school year.

Everything the above enumerated creates the problem of qualitative optimization of educational-training process for studies of technique by the students.

Despite obvious actuality of the represented problem, specialists to this day, unfortunately, did not find the optimal methods of its decision.

The target of research consists in the theoretic-scientific substantiation, development and experimental verification of authorial methodology of forming of skill and experience on the initial stage of teaching to the single combats of students, which study in.

The following tasks are to be solved for the achievement of the given target:

1) to carry out the analysis of scientifically-methodical literature on questions of formation of the skills and experience in the process of initial teaching to the single combats of students;

2) to define the criteria of estimation of depth of mastering of the skills and experience at the teaching of technique in establishments of high education;

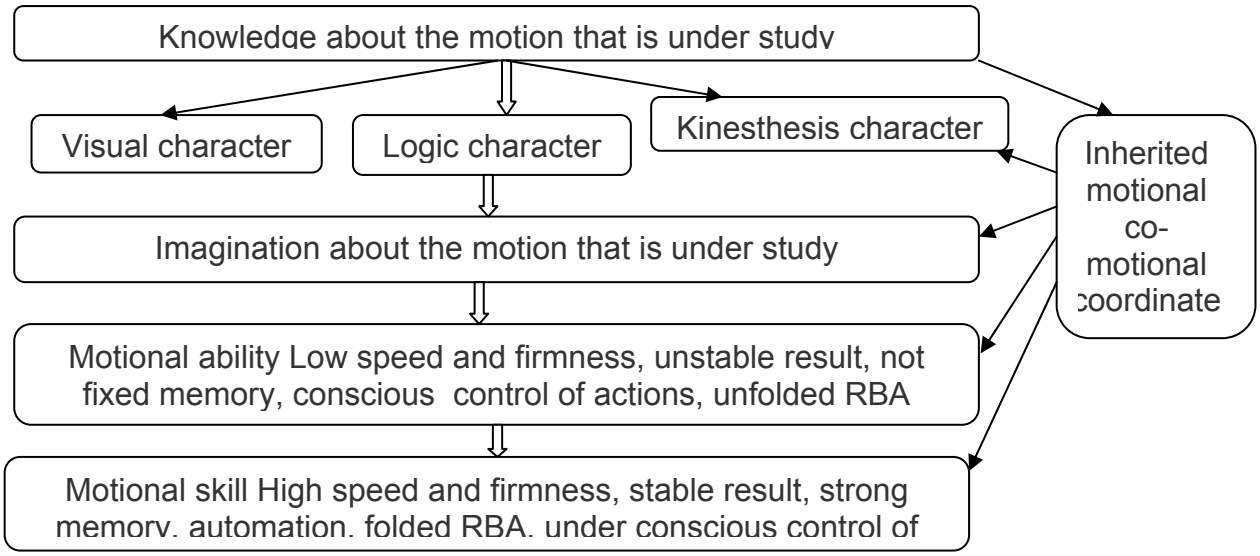
3) to investigate the character of connections in the model of student's teaching the skills in establishments of high education;

4) to work out and experimentally check efficiency of authorial methodology of formation of motive abilities and skills of students on the stage of initial studies the single combats.

The object of research is an educational-training process in the single combats of students, which study in establishments of high education.

The subject of research contains forms, facilities and methods of formation of the motive abilities and skills of students, which study in establishments of high education on the basis of the use of authorial methodology of teaching.

As a result of examining of forming of motive ability at feet and hands locomotion through the prism of theory of activity, mastering of knowledge, forming of actions and concepts of P. I. Galperin and taking into account the inherited propensity to certain motions, it is possible to assume in theory, that the process of forming of motive skill will be speeded-up. The processes of forming of RBA will not have obstacles which are related to chopping off of the superfluous motive co-ordinations it happens on the basis of already existing (though subconscious) motive automatism. The reference part will be formed more quickly and it will better comport with the executive part of action. On condition of efficiency executive, the control-adjustment part will become unnecessary or partly expressed only on condition of efficiency of executive part. hus, according to the theory of activity, the mastering of knowledge, forming of actions and concepts of P. I. Galperin, the process of automation of motive action appears as follows: RBA and control-adjustment part of action "fold". The executive part remains subject and external unfolded. And, to our opinion, this process will flow the quicker, than the better expressed hereditary conditioned motive automatism is (pic. 1).



Pic.1. Algorithm of forming of motive ability and its parameters

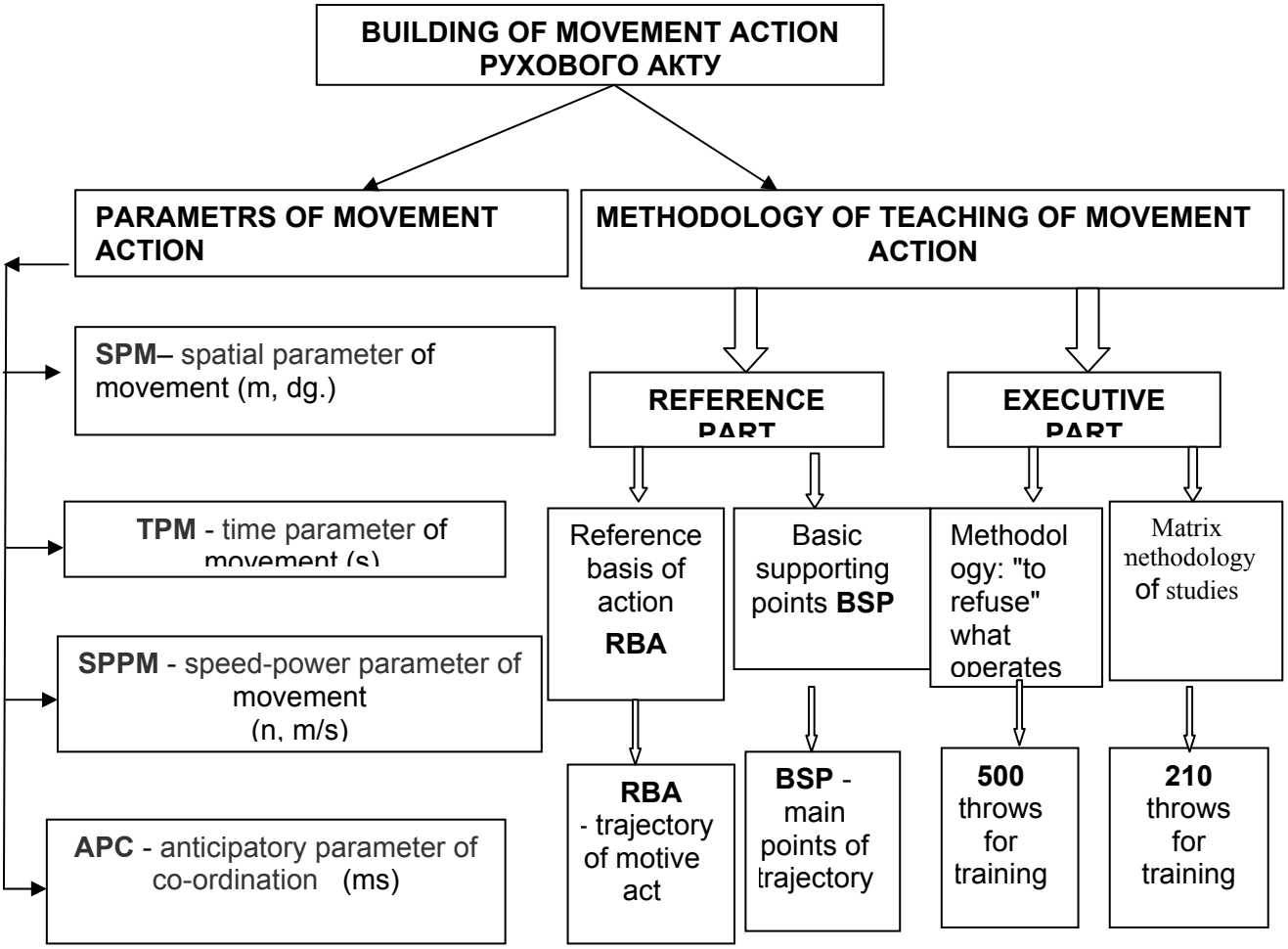
Thus, one of important factors of process of automation of motions, in other words it is the forming of abilities and skills, is the propensity to that or other type of activity.

In our case it is very important, at studies to the difficult co–ordinated types of single combats (for example, judo), that an overhead humeral belt carried out the role of extinguishing (buffer) of speed-power action of opponent, while feet executed various counter-attacking actions (hacking, hooks and such other).

The authorial methodology of forming of motive abilities allows mastering a technique from single combats on the initial stage of training of students with the minimum expense of time. The use of authorial methodology during 3 months allows to use it in the educational-training duels. The generally accepted norm is 6 months after the beginning of training.

The use of pedagogical model of teaching does not expose all essence of educational process. At mastering of ability of sport style of wrestling, and afterwards fighter skill we applied next facilities: • are imitation, in general lines developing and special physical exercises, such, that assist to general physical development, education of necessary for successful studies to the sport duels of qualities of co-ordination of motions, force of muscles and mobility in joints, and also assist more rapid and successful mastering of technique of sport duels in the unusual terms of competitions; • are preparatory exercises that help to adapt oneself in sport duels and prepare to the mastering of work of feet technique; • are the special exercises that assist the correct raising of breathing, for the improvement of function of the external breathing, exercise on mastering of technique of time structure in sport duel.

Construction of motive act and it concept vehicle includes: the parameters of motive act and methodology of studies (pic.2).



Pic.2. The model of construction of motive act in physical culture and sport

Every element of technique of sport duels was studied on methodology of matrix initial studies in the next order. Both sides of model (depth and methodology of studies for to the basic supporting points) fold the didactics system of physical culture and sport. The depth of studies includes the level of mastering of technique (knowledge, ability, skills). Methodology of studies includes two constituents: reference and executive parts. Reference part is based on the construction of reference basis of action (RBA) -

trajectories of motion and basic supporting points (BSP) are the markers of trajectory of motion that is built. The phases of motion can come forward in quality of basic supporting points, that position of biolinks of body is executed at implementation of motion, corners (hail), positions of body of opponent, efforts that is needed (kg, н) and etc.

Executive part of methodology of studies as usual plugs implementation of technique of reception "in a refuse", a performer executes a technique to the complete tiredness (in single combats it is approximately 500 executed receptions). At implementation of combination from two receptions: 500 (1 reception) + 500 (2 reception) + 500 (combination of receptions) = 1500 receptions. A performer executes 10 серий for 50 throws in series. Construction of motive act and a concept vehicle includes the parameters of motive act and methodology of studies and has a next kind. Every element of technique of sport duels was studied on methodology of matrix initial studies in the next order.

Both sides of model (depth and methodology of studies for to the basic supporting points) fold the didactics system of physical culture and sport. The depth of studies includes the level of mastering of technique (knowledge, ability, skills). These pedagogical models of technique of sport duels are characterized certain biomechanics reference-points, due to that conformities to law of cooperation of body of fighter of his working links with resistance of opponent, correlation of motive and brake forces, source and ways of conservation of mechanical energy of throw open up in the system of motions. It marks that studies to the technique at the level of «knowledge" mark to the studies to spatial presentation of motive act, studies to the technique at the level of "ability" marks to the studies to the spatial and sentinel parameters of motive act, studies to the technique at level "skill" marks to the studies spatial, sentinel and speed-power to the parameters of motive act (pic.3).

№	Depth of mastering of motions		Parameter of motion		Number of reiterations (number of trainings)		Successful implementation of motion
1	Knowledge	⇨	SPM		to 300 reiterations		5%
2	Ability	⇨	SPM+TRPM		to 1000-1200 reiterations (25-30 trainings)		40%
3	Skill	⇨	SPM+TRPM+ SPPM		to 5000-6000 reiterations(100-120 trainings)		95%
4	Crown implementation of technique	⇨	SPM+TPM+ SPPM+APC		to 120 000 reiterations (training during 10 years)		98%

Pic.3. Model of connection of Depth of mastering of motions with Parameter of motion, Number of reiterations (number of trainings) and Successful implementation of motion

The analysis of data of the special scientifically - methodical literature, questioning, pedagogical methods, methods of mathematical statistics. The researches were conducted with the sportsmen of 17-19 years-old on training in belt wrestling on the base of child-youth sporting school "Spartac" and on the base of sporting club from judo "Ukrainian Kodokan" of Kyiv. In the experimental research took part 40 students, 20 boys who were occupied in the control group and 20 in the experimental groups. The control group through the whole time of the realization of the experiment was occupied on the program of establishments of high education in belt wrestling. This group captured the program of 1-st year study “Theory and methodology of sport wrestling”, that includes the study of the 3 technical actions in belt wrestling during the school semester by an ordinary method: 150-200 reiterations of actions for a 1 training lesson. The experimental group mastered the same program with the use of rectangular matrices of studies to the technique of belt wrestling.

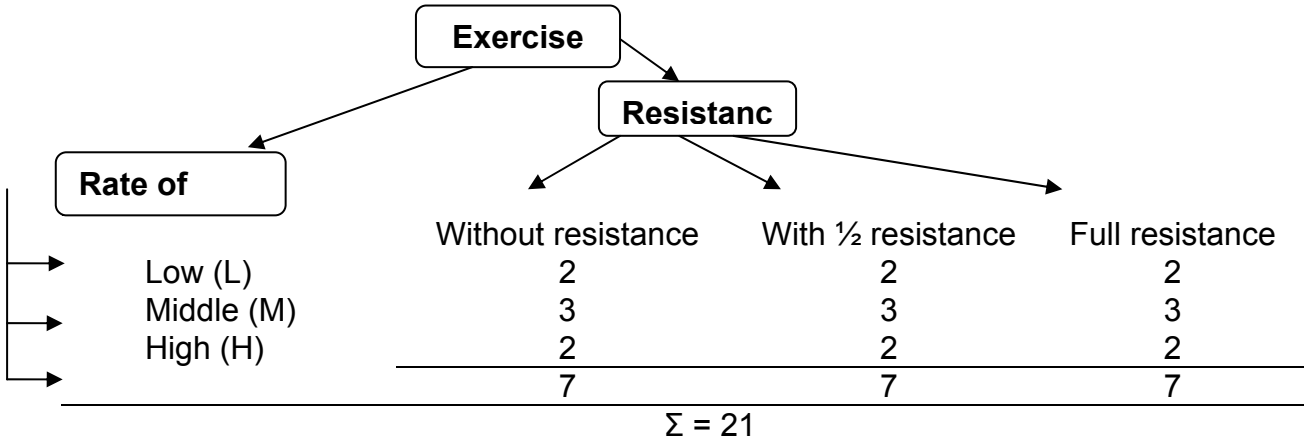
For checking of homogeneity of division of students into control and experimental

groups before the beginning of experiment all students passed 5 tests (10 throws the "O soto otoshi", shuttle at run in 4х9м., jumps in length from the place, 10 jumping out on a bench in high 0,7м., undercutting on the beam). It appeared that in result of all above mentioned tests after the statistical consideration of results of establishing experiment the statistically reliable differences between control and experimental groups are not identified (P≥ 0,05). It is seen on the table that the difference in the statistically certain meaningful data between the control groups and experimental groups is not detected $t < t_{st}$ (t_{st} =2, p=0,95; t_{st} =2,7, p=0,99; t_{st} =3,6, p =0,099; (v =n_1+n_2 - 2 =38) (P≥ 0,05).

The duration of basic forming pedagogical experiment is 3 months. 32 training lessons had been conducted for 3 months (22 hours in each).

The control group conducted a training process on the program of establishments of high education in belt wrestling in the experiment. The training in

the experimental group on the capture of the program of the white belt was conducted after the authorial methodology of studies with the use of rectangular matrices of studies (G.N. Arziutov, Lakhno D.N., Riabchun L.Y., Koptiev K.G., Kuznetsov A.E., 2013). The trainings with the use of rectangular matrices were conducted on the principle of triad "knowledge-ability-skill" that set the dosage of the rate of motion and resistance to the opponent (Pic. 4).



Pic. 4. The mastering of the "crown" technique in single combats after the authorial methodology

The third series (with the full resistance of the partner by hands and feet) are executed like - 2, 3, 2 reiterations on the different rates of the implementation of motion. This block (without movements of Uke and Tory) in statics (in place) is executed several times until sure and clear realization of action appears. In other words this moment comes between the levels of "knowledge" and "ability", it happens after the 500 reiterations. The question is about the average coordinating abilities (CA) of the person.

In our case at studies to the technique with the use of rectangular matrix we have next numbers: 21 x 10 (1 reception) + 21x10 (2-nd reception) + 21x10 (combination) = 630 receptions. A performer executes 10 series for 21 throws in series (pic.5).

OLD TECHNOLOGY OF TEACHING

"O Soto Otoshi - Back footboard **"**	**+**	**"Chair -** Tani otoshi**"**	**=**	**Combination of throws: Tani otoshi after O Soto Otoshi**
500 throws		500 throws		500 throws
∑= 1500 throws				

NEW TECHNOLOGY OF TEACHING

"O Soto Otoshi - Back footboard **"**		**"Chair -** Tani otoshi**"**		**Combination of throws: Tani otoshi after O Soto Otoshi**
21 throws		21 throws		21 throws

∑= 63 throws x 10 series = 630 throws

Pic.5. Volume of implementation of receptions

CONCLUSION. At the use of an offer methodology of optimal studies for it is succeeded to decrease time of previous studies rectangular matrices in single combats in 2, 38(80% from the level of studies - ability).

DIRECTION of FURTHER RESEARCHES is an accumulation of new knowledge about the components of didactics.

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ЕКСПЕРИМЕНТАЛЬНА ПЕРЕВІРКА ВПЛИВУ ДИФЕРЕНЦІАЦІЇ РОЗВИВАЛЬНО-ОЗДОРОВЧИХ ЗАНЯТЬ З ФІЗИЧНОЇ КУЛЬТУРИ УЧНІВ ОСНОВНОЇ ШКОЛИ

Фізичний розвиток дітей і підлітків в нашій країні ще не так давно вивчалося з позицій аналізу віково-статевих закономірностей. Накопичений великий матеріал по віковій динаміці середніх показників морфологічних і функціональних ознак, а на їх основі розроблялися методики фізичного виховання, що відповідають віковим можливостям і соціальним запитам. В ході цих досліджень було виявлено, що діти одного хронологічного віку не представляють однорідну групу: в межах одного віку має місце значний відсоток дітей, що відрізняються по темпах фізичного розвитку, рівні біологічної зрілості і рівні прояву рухових можливостей. Саме тому методика фізичного виховання, розроблена з урахуванням лише вікових особливостей "середнього" школяра, виявилася не досить об'єктивною і малоефективною. У зв'язку з цим, була запропонована ідея диференційованого фізичного виховання, тобто методика, що враховує як загальні, так і індивідуальні можливості схожих по морфофункциональному розвитку груп. Особливо це стосується диференціації методів дозування фізичних навантажень.