PEDAGOGICAL CONDITIONS OF COMPETITIVE ACTIVITY EFFECTIVENESS INCREASE IN KUDO

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Annotation. One of dynamically developing kinds of single combats, based on the use of the elements from many martial arts: hand-to-hand combat, judo, karate, English boxing and muay thai and others is Kudo. It is a modern single combat, which is directed to many-sided, harmonious development of a personality. The peculiarity of Kudo is its orientation towards spiritual-moral and volituional upbringing by means of this kind of single combat; self-discipline, self-dependence, orderliness, responsibility and other personal qualities development. Material. The base technique of Kudo provides striking and defensive techniques in their various combinations and it demands the definite level of muscular power, quickness, endurance, quick-wittedness, keenness of wit and other qualities development. The article is about the problem of motional-coordinating training improvement among those, who go in for Kudo (8-10 year old children), which provides balance, dexterity, accuracy and other qualitative sides of motional activity formation, without the development of which it is impossible to master the technique of the striking actions, fulfilled with different parts of the body. Research methods: scientific and scientific-methodical literature analysis and summarizing, testing, conversations, pedagogical experiment, statistical data handling. Results. The article considers pedagogical conditions of motional-coordinating training improvement among young combatants, reveals the methodology of the leading motional co-ordinations formation: accuracy, dexterity, flexibility, mobility, balance and also speed-power qualities. The created evaluation criteria of the level of the studied motional co-ordinations formation helped to estimate their influence on the effectiveness of the training and competitive activity. Conclusion. The results of the pedagogical experiment showed, that the main conditions of competitive activity effectiveness improvement among combatants, who go in for Kudo, is the leading motional co-ordinations revelation, the corresponding development level of which provides the increase of sports results. The created methodology of the base motional co-ordinations formation showed its effectiveness and expediency during sports training of people, who go in for Kudo.

Keywords: Kudo, motional-coordinating training, evaluation criteria, pedagogical experiment.

Introduction. Many scientists studied the problem of sports training system improvement among combatants in its different aspects: the training process organization improvement; the effectiveness of competitive activity management increase; the actions of a sportsman prediction and modeling in stress situation of combat with the opponent and others [2, 7 and others.]. The level of sportsmanship among combatants is estimated according to the number of effective attacking actions [1, 3 and others]. Suck kind of an approach doesn’t provide an objective estimation of the...
combatants’ technical-tactical readiness. In this connection it was offered to reveal the effectiveness of motional actions; a sportsman’s activity on tatami, the level of the skills formation of a technique timely change, depending on the peculiarities of the appearing situation. Some specialists offer to analyze competitive actions of qualified combatants according to the definite qualitative and quantitative indices [3, 7, 8 and others].

An important component of control over the training and competitive activity, as underlines I.S. Kolesnik, 2013, is pedagogical control, which helps to reveal the peculiarities of a technique fulfillment by each combatant, the ways of timely correction of its structural content, the conditions of fulfillment effectiveness increase. According to the theory of activity and the conception of a system approach use, for an objective estimation of the combatants’ competitive actions effectiveness it is reasonable to use structural-essential analysis of the character and opposition, which helps to reveal strong and weak sides of sports training of each sportsman.

The aim of this research work is theoretical importance substantiation of pedagogical conditions revelation, which influence the effectiveness of competitive activity among combatants.

Objectives: 1. To reveal the main pedagogical conditions, which provide dominance over the opponent achievement.

2. To create the methodology of motional-coordinating training improvement among those, who go in for Kudo, taking into account the leading pedagogical conditions and check its effectiveness during the pedagogical experiment.

The content of technical training of combatants in Kudo form the following base elements: striking technique with hands, legs and a butt in all parts of the body. At the same time, special analysis demands throwing technique in the stand and in the pit taking into account the activity of a sportsman; the striking technique, used in the attack while moving forward; diversity of the techniques; the state of a combatant in the end of the combat. Scientific and scientific-methodical literature analysis concerning the problem of the research work, showed that many specialists in single combats, including martial arts, in particular Kudo, admit dominating development of motional-coordinating qualities in a sportsman’s technical-tactical readiness indices improvement [3, 4, 5 and others]. In such a difficult-coordinated, highly dynamic kind of martial arts, as Kudo, motional-coordinating qualities are in a strict interaction and interconditionality. Striking technique mastering in a stand, different throws fulfillment, the used techniques of combat in a pit demand high indices of muscular power, movements quickness, dexterity, accuracy, mobility and flexibility. However, the leading place in motional-coordinating training belongs to body steadiness, which is the main condition of techniques effective.

As L.D. Nazarenko (2001) mentions, in single combats an optimal work of the functional systems of an organism is provided by necessary body steadiness. One of the peculiarities of the attacking and defensive actions fulfillment in Kudo is a high level of orientation achievement in spatio-power and spatio-temporal parameters of the opponent’s motor acts, the ability formation to make decisions quickly during the combat and it demands corresponding indices of balance, conditioned by the activity of vestibular, visual and other analyzers. In Kudo the effectiveness of the techniques is mainly conditioned by the quickness of reaction to the opponent’s actions and the indices of muscular power. The formation level of the skills of the kind of technique prediction, its spatio-temporal and spatio-power parameters, rational distribution and their timely redistribution during the combat leads to the necessity to consider speed of movements and muscular power on a par with dexterity, accuracy, mobility and flexibility.

Dexterity synchronizes motional and vegetative functions, its physiological mechanism is conditioned by the corresponding parts of brain cortex, which
function according to the principle of conditional activity. Dexterity is demonstrated during the techniques with a high level of coordinating complexity, accuracy and time of realization of the set aim fulfillment.

**Accuracy** as one of the leading motional-coordinating qualities provides correspondence between a motor act and its spatio-temporal and spatio-power characteristics in the definite conditions of its fulfillment. Insufficient accuracy of a technique fulfillment is conditioned by irradiation of nervous processes in cerebral cortex, which involves excessive motional units into work and also by low indices of differentiating inhibition development. Accuracy of movements formation is a long-term process, as the corresponding physiological transformations in cerebral cortex demand time. High indices of accuracy of motor acts fulfillment are provided by intramuscular and intermuscular coordination [4].

**Mobility**, as a motonal-coordinating quality, determines the quickness of techniques fulfillment, speed of their change and reaction to the appearing situation. Mobility is demonstrated in movements of rotational character, turns, circles. The main structural components of mobility, as the research works of L.D. Nazarenko(2001) showed, are the following:

- the degree of sensibility and lability of muscles under the influence of motoneurons impulsion during striking and throwing actions of combatants fulfillment and during the combat in the pit;
- the quickness of mastering new information;
- the degree of interaction of sensory systems;
- the speed of functional systems involvement into work.

**Flexibility** in Kudo provides optimal amplitude of motional actions and economic character of movements increase, that makes it the leading motional-coordinating quality. One of the most difficult problems in the theory and methodology of sports training among combatants is the problem of sequence of the studied motional-coordinating qualities formation, which are closely connected. At the same time, it is necessary to take into account their demonstration depending on the level of muscular power, quickness and endurance development. In this connection special importance gains biomechanical analysis of structural complexity of technical actions, which form the content of Kudo, according to the results of which it is possible to distribute combatants’ actions according to their constantly increasing difficulty. It helps to create an individual program of sports training for each sportsman, which provides balance, dexterity, accuracy, mobility and flexibility formation during the techniques of striking technique, throws and other motional actions mastering.

We created the methodology of motional-coordinating training development in Kudo, which includes the complex of means and methods of balance, dexterity, accuracy, mobility and flexibility formation. In order to increase body steadiness of those, who go in for Kudo, rotation loads of high intensity were used, which provide the skills of techniques fulfillment formation; the throws formation, which demand corresponding indices of balance formation level. In the preparatory part of the training combatants fulfilled different jumps and hops in combination with gradually complicating turns and one and the other way rotations with their tempo parameters change. During the main part of the training lesson attention was paid to roll-overs and rolls with movement direction change fulfillment. The most difficult kind of balance in Kudo is body steadiness during the opponent’s confrontation overcoming in changing conditions of the competitive activity. In order to increase the index of this specific for single combats kind of body steadiness during the training lessons sportsmen fulfilled special exercises at the increased slanting line, restricted support with the direction of movements change, the opponent’s actions prediction. Motional tasks of this character provide the skills of muscular efforts rational distribution and timely redistribution
formation, attention focusing on the opponent’s actions. At the training lessons non-specific and specific kinds of rotation movements were used (12-15% from the general load) with speed of their fulfillment change, from slow to quick, with the tempo variation in each exercise.

In order to develop combatants’ dexterity motional actions, which provide superfine differentiations formation, intermuscular coordination improvement, skills of extrapolation of motional actions formation, were used. To achieve this, new variants of the mastered techniques, preparatory and stimulating exercises in unusual conditions were used: in combination with other motor acts, in terms of considerable space of fulfillment restriction, with the eyes closed and others. The accuracy of technical actions fulfillment, which form the content of Kudo, was formed with the help of spatio-temporal and spatio-power parameters of the techniques comparison with their model fulfillment by a highly-qualified sportsman. In this case figurative comparison, clear directions and commands; evaluation criteria of the accuracy degree of motional tasks fulfillment were widely used.

In Kudo striking and throwing actions are fulfilled with all parts of the body and it conditions the necessity to improve the indices of body mobility in all its parts, starting from ankles to radiocarpal joints and also in cervical spine and lumbar part. In order to solve this problem different jumps and hops with rotatory movements of the upper extremities, head; inclinations with the turns of different amplitude and gradual speed of movements increase and other exercises were used. The effectiveness of techniques in Kudo is mainly conditioned by the optimal amplitude of motional actions, which demands good knowledge of the technique of the used techniques. During the training lessons combatants were explained the importance of flexibility for efficiency of movements increase, their rational technique formation. At the training lessons sportsmen were offered motional tasks, which help to form the skills of the optimal amplitude of each technique fulfillment, taking into account height, length of the upper and lower extremities and other peculiarities. In Kudo it is important to use the optimal amplitude of movements in preparatory and supplying exercises, preliminary swing and etc., as it influences the quality of the main element of the technique fulfillment. Combatants tried different variants of the amplitude of movements and by practical consideration defined more rational for them. Evaluation criteria of the formation level of the considered motional-coordinating qualities helped sportsmen to estimate their influence on the effectiveness of competitive activity.

Research results and their discussion. In order to check the effectiveness of the offered methodology a pedagogical experiment was held. 28 boys-combatants (8-10 year-old) took part in the experiment. Before the beginning of the pedagogical experiment the test was held in order to reveal the initial indices of motional-coordinating and technical readiness among young sportsmen. In order to define the level of motional-coordinating training the following indices were used:
- push-ups on fists; legs position: crossed (quantity);
- from dorsal position lengthwise – simultaneous legs and spine lifting (quantity).

The level of speed-power qualities development is determined according to the number of squats with further outleap counting. Body steadiness was revealed during the direct blow fulfillment from behind with the standing leg (balls of feet) in turn with the right and the left leg; the degree of dexterity formation was revealed with the help of the following test: moving a blow with the straight left hand to the head (sack dummy) – body blow with the right – side blow to the head with the left hand –a blow right to the head; the level of mobility formation was revealed according to the following test: side blow with the right leg, rising foot to the head- 360-degree overhead blow with the foot of the left leg. The same tests helped to estimate technical readiness of combatants. Motional tasks fulfillment was estimated by
the group of experts (5 qualifies specialists in Kudo). In order to get objective results about the level of sportsmen’s motional-coordinating and technical readiness development we created evaluation criteria of muscular power of the upper extremities and abdomen and also speed-power qualities. Correct body position during push-ups on fists was estimated: body straight, till touching the floor, hands shoulder-width apart.

**Evaluation criteria:**
- 5 points – elbows are clasped to body, freedom and easiness of exercises fulfillment, stare ahead, 10 push-ups;
- 4 points – elbows are slightly moved apart, 9 push-ups;
- 3 points – slight arching in loin, 8 push-ups;
- 2 points – fists are wider than shoulders, elbows are moved apart, 7 push-ups;
- 1 point – great arching in shoulders, no easiness of movements, 6 push-ups.

During the exercises fulfillment for power of abdomen muscles increase simultaneous back and legs lifting (counting) was estimated.

**Evaluation criteria:**
- 5 points – hands along the body, the upper part of the body is straight during the lift, legs together, 10 times;
- 4 points – during back lifting blades are moved apart, tempo corresponds with counting, 9 times;
- 3 points – considerable muscular tension, shoulders are slightly brought forward, 8 times;
- 2 points – sagged back, movements are fulfilled with a jerk, no counting, 7 times;
- 1 point – hands are moved apart, strong muscular tension, legs are half bent, movements tempo doesn’t correspond with counting, 6 times.

During the level of speed-power qualities fulfillment the following parameters were estimated: accurate fulfillment of the initial position, squatting till the necessary angle, speed and height of outleap.

**Evaluation criteria:**
- 5 points – back straight, squatting till 90°, quick, easy outleap – 10 times;
- 4 points – head-down position, straight body position, timely outleap, 9 times;
- 3 points – feet position is wider than shoulders length, slight body inclination during squatting, outleap, 8 times;
- 2 points – considerable inclination of the back forward, irregular rhythm of movements, squatting lower than 90°, 7 times;
- 1 point – head-down position, great back inclination, low squatting, not high outleap in terms of great muscular tension, 6 times.

During the degree of balance level revelation body position during a straight strike with back standing leg and with feet pads was estimated.

**Evaluation criteria:**
- 5 points – high body steadiness, control preservation over the situation;
- 4 points – sufficient body steadiness, which helps to fulfill a motional task technically correct;
- 3 points – insignificant lack of balance during leg change;
- 2 points – insufficient balance for a successful attacking technique;
- 1 point – the separate elements of the technique fulfillment because of insufficient body steadiness.

The degree of dexterity development was estimated during the technique fulfillment of the striking actions elements unity and effectiveness, movements correspondence, rational tempo and the rhythm of motor acts.

**Evaluation criteria:**
- 5 points – an optimal speed of motional actions, timely redistribution of muscular efforts, freedom and easiness of movements;
- 4 points – high level of unity of movements with a gradual speed increase, insufficiently strong blow from below with the right hand to the head;
- 3 points – insufficient speed of motional actions;
2 points – not formed individual motional rhythm;
1 point – non-conformity of the tempo and rhythm of movements with the difficulty of elements of the striking techniques.

The accuracy of motional actions estimation was realized according to the following criteria: the degree of correspondence of the attaching technique organization quality with the motional task.

Evaluation criteria:
5 points – successful destruction of the set zone;
4 points – a striking action fulfillment maximum close to the set landmarks;
3 points – side strike fulfillment close to the set zone;
2 points – the technique fulfillment with spatio-temporal and spatio-power parameters violation;
1 point – missing the target zone.

The level of mobility development was determined according to the following criteria: unity of the blow fulfillment with 360 degree turn during an optimal tempo and rhythm of motional actions preservation.

Evaluation criteria:
5 points – a high level of accuracy of a rotational motion in terms of timely redistribution of muscular efforts, body steadiness, motor acts unity;
4 points – insufficiently clear 360 degree turn;
3 points – movements slowing-down before a turn fulfillment;
2 points – considerable speed decrease, which doesn’t provide necessary effectiveness of the striking actions;
1 point – only the separate elements of the series of the attacking techniques fulfillment.

The level of flexibility development was determined according to the quality of forward and cross split fulfillment.

Evaluation criteria:
5 points – technically correct fulfillment of the splits;
4 points – legs are slightly bent, distance to the floor from 10 to 15 cm;
3 points – considerable legs bending, distance to the floor from 15 to 20 cm;
2 points – distance to the floor from 20 to 30 cm;
1 point – distance to the support 30 cm and more.

The training lessons in the CG were held in accordance with the program of sports training among young kudoists (2013). In the EG created by us methodology of motional-coordinating training improvement among those, who go in for Kudo, was used. Before the pedagogical experiment the test was held in order to reveal physical and technical readiness of sportsmen from the CG and the EG. After the end of the pedagogical experiment one more test was held using the same tests and evaluation criteria.

The research results analysis showed that during the pedagogical experiment under the influence of systematic training load the results increased in both groups, the CG and the EG; however, the sportsmen form the EG had more considerable indices increase. In the CG with the initial results in arm-pumping exercises in prone position on fists 5,3±0,24 times, to the end of the pedagogical experiment the indices improved till 16,04±0,44 times, (p<0,05); in the EG with the initial results 5,1±0,30 times, to the end of the pedagogical experiment the results increased till 27,6±0,52 times, (p<0,05).

During the exercise fulfillment for abdomen muscles strengthening in the CG with the initial results 7,4±0,41 times, to the end of the pedagogical experiment the results improved till 18,0±0,50 times (p<0,05); in the EG with the initial results 6,6±0,39 times, to the end of the pedagogical experiment the results increased till 27,8±0,42 times (p<0,05).

More considerable indices increase of the muscles power of the upper extremities and abdomen among the combatants from the EG is connected with the use of the methodology of motional-coordinating training development of those, who go in for Kudo, where the main method was game method, which provided emotional coloring of the lessons increase. Moreover, competitive moments were used, which help
to control the tempo of power indices increase. Sportsmen were explained the importance of hands muscles development for strong, accurate striking techniques fulfillment. In this connection, the combatants from the EG tried to increase the dosage of the corresponding motional tasks fulfillment during free time.

Comparative analysis of squattings fulfillment with further outleaps also helped to reveal the advantage of sportsmen from the EG according to speed-power qualities development. In the CG with the initial results 10,6±0,35 times, to the end of the pedagogical experiment the indices improved till 16,7±0,52 times (p<0,05); in the EG with the initial data 9,5±0,41 times, to the end of the pedagogical experiment the results increased till 22,4±0,48 times (p<0,05). More considerable increase of speed-power qualities among the combatants from the EG is connected with better coordination of motional actions. Squatting till 90 degrees with further outleap fulfillment demands quick redistribution of muscular efforts for the exercises of other orientation and character fulfillment and it needs special coordinating training.

The series of striking actions fulfillment, which demands correspondence of motor acts, is connected with dexterity development. In the CG with the initial results of the studied index 2,7±0,19 points, to the end of the pedagogical experiment this parameter increased till 3,1±0,24 points (p>0,05); in the EG with the initial results 2,6±0,15 points, to the end of the pedagogical experiment the results were 3,5±0,35 points (p<0,05). It is explained by great attention to correspondence improvement of motional actions, fulfilled without pauses, with gradual increase of speed of movement, the skills of rational distribution and timely redistribution of muscular efforts; individual motional rhythm mastering. All this things conditioned more considerable dexterity increase.

In Kudo great importance has an accurate striking action fulfillment, which provides its effectiveness. In the CG the initial results of the degree estimation of the leg striking action accuracy into the set zone of sack dummy-2,3±0,17 points, to the end of the pedagogical experiment indices increased till 2,6±0,28 points (p>0,05); in the EG with the initial results 2,4±0,15 points, to the end of the pedagogical experiment the results improved till 3,2±0,32 points (p<0,05). It is conditioned by high demands placed upon the accuracy of movements formation, which provide competitive activity effectiveness. The combatants from the EG were offered gradually complicating motional tasks, which demand high level of correspondence of spatio-temporal and spatio-power parameters of motional actions with the set model and great attention concentration, an objective perception of the form and content of a motor act, special training.

The quality of techniques fulfillment in Kudo is mainly conditioned by the degree ofmobility formation, which leads to an effective fulfillment of motional actions of rotatory character, turns, unexpected direction change of motor acts. In the CG the initial results of the leg striking action fulfillment with 360 degree turn were 2,1±0,17 points, to the end of the pedagogical experiment the indices improved till 2,7±0,22 points, (p<0,05); in the EG with the initial results 2,0±0,14 points, to the end of the pedagogical experiment the results increased till 3,0±0,30 points (p<0,05), which is connected with systematic motional tasks fulfillment by the combatants from the EG, which provide united fulfillment of different striking actions in combination with the turns, rotations, with direction and speed of movements change.

The peculiarity of Kudo is motional actions fulfillment, which demand an optimal level of flexibility development, providing the optimal amplitude of movements while attacking and defensive techniques fulfillment. In the CG with the initial results of forward and cross split fulfillment 2,1±0,17 points, to the end of the pedagogical experiment the results increased and were 3,0±0,23 points (p<0,05); in the EG with the initial results 2,0±0,12 points, to the end of the pedagogical experiment the results improved till 3,6±0,29 points (p<0,05). More
considerable results increase among the sportsmen from the EG is connected with different exercises (directed at flexibility development) inclusion into the content of the training lessons.

**Conclusion.** Thus, the results of the pedagogical experiment showed that the level of motional-coordinating training increase among the combatants is an important condition for their competitive activity effectiveness increase. A purposeful work, concerning dexterity, accuracy, flexibility, mobility development, provides the skills formation of body steadiness preservation, correspondence of movements increase, their freedom and easiness improvement, which leads to technical readiness indices increase. The results of the pedagogical experiment showed, that the main conditions of competitive activity effectiveness improvement among combatants, who go in for Kudo, is the leading motional coordinations revelation, the corresponding development level of which provides the increase of sports results. This age period of children involvement into Kudo is the most favorable for coordinating qualities development as the base for technical readiness. Moreover, a purposeful balance, dexterity, flexibility and other motional coordinations formation demands different means and methods use, which is an important precondition for pedagogical interest formation in this kind of martial arts.

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PHYSICAL CULTURE AND ECOLOGY INTEGRATION AS THE CONDITION FOR THE LEVEL OF PHYSICAL READINESS INCREASE AND ECOCLOGICAL WORLD VIEW FORMATION AMONG SENIOR PUPILS

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Annotation. Irrational use of natural resources and consumer's attitude to environment are the main reasons, which prevent steady social and economic development of the country. The existing problem solution is in integral state system of ecological education creation, which is mentioned in several important laws of the Russian Federation, the Decrees of the Russian Federation President and other documents. Material. The results of scientific research works of the specialists in ecology prove, that ecological world view, nature protecting attitude to environment formation can be successfully realized only in case of interaction with the world. This article offers a new approach to ecological education and senior pupils’ upbringing organization by means of the following subjects integration: physical culture and ecology. Research methods: scientific and scientific-methodical literature analysis, pedagogical experience of the specialists- ecologists summarizing, pedagogical experiment, testing, business games, methods of mathematical statistics. Results. Physical culture and ecology integration is possible owing to excursions, touristic trips and expeditions of ecological orientation organization and realization. Physical culture teacher determines the volume and the character of muscular load, the ways of its regulation, functional and psycho-emotional state control. Ecology teacher creates the themes of the lessons forms; gets pupils acquainted with the peculiarities of the region flora and fauna; the state of environment, parameters of environment: water, air, food and other parameters, which influence spiritual-moral and physical health of a person; reveals the reasons of environment critical state by the example of industrial enterprises activity, which empty waste into water and fertile lands. Excursions, trips, expeditions use increases the volume of motional activity, provides health improvement, the level of