

## **Physical qualities formation of preschool children at taekwondo classes**

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**Abstract:** Taekwondo was included into the program of the Olympic Games only in 2000. It is necessary to pay special attention to the questions of initial training of the youngest taekwondo practitioners, as native school of training sports reserves is not developed enough. Early involvement of children into sports activity demands thorough physical education means and methods selection. They would take into account not only the peculiarities of a child's development, but also the influence of physical exercises on an organism. **The aim** of the research: to form physical qualities of preschool children at taekwondo classes. **Scientific novelty:** we created the classification of special playing tasks taking into account their orientation for physical qualities development and technical skills formation among young taekwondo practitioners. **Practical significance:** the created methodology of preliminary training, based on special playing tasks use in the group of preschool children at taekwondo classes, helps to increase the effectiveness of physical qualities development and provides steady motivation and interest in taekwondo classes. **Material and Research methods:** scientific and methodical information sources analysis, experience of practical work summarizing, interviews with the coaches, questionnaire survey, pedagogical observations, control tests, pedagogical experiment, method of expert marks, methods of mathematical statistics. **Results.** The methodology of the training lessons is created with special playing tasks use for preschool children at taekwondo classes. **Conclusion.** Special playing tasks for preschool children use at taekwondo classes leads to valid increase of almost all results of physical development and physical readiness.

**Keywords:** taekwondo, sports activity, physical qualities, special playing tasks.

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### **Introduction**

Taekwondo was included into the program of the Olympic Games only in 2000. It is necessary to pay special attention to the questions of initial training of the youngest taekwondo practitioners, as native school of training sports reserves is not developed enough. Early involvement of children into sports activity demands thorough physical education means and methods selection, which would take into account not only the peculiarities of a child's development, but also the influence of physical exercises on an organism.

Physical training of children demands special attention, as during preschool age the base of general working capacity, health, harmonious development, reliable activity of all systems of an organism is formed. Everything that provides further sportsmanship achievement develops during preschool age.

However, the practice of playing tasks use during the training lessons includes only relay-races

organization or independent games of children (during the break or before the lesson).

Sometimes special playing lessons are held, but they include only such games as basketball, football or rugby. In taekwondo educational supplies the question of playing method use during the initial training is either absent, or given in terms of general recommendations. In this connection the methodology of special playing tasks creation for the main objectives of techniques teaching and necessary physical qualities development is urgent enough.

The aim of the research is to form physical qualities of preschool children at taekwondo classes.

Object of the research – the training process for preschool children, who attend taekwondo classes.

The subject of the research is the methodology of the training classes with the use of special playing tasks for preschool children at taekwondo classes.

Theoretical significance of the research is in the fact that we analyzed playing method of training and

created the classification of special playing tasks, taking into account their orientation to physical qualities development and young taekwondo practitioners' technical skills formation. We defined two main groups: general preparatory playing tasks, directed toward physical qualities development and special-preparatory playing tasks, directed toward technical skills of taekwondo teaching and development.

Practical significance of the research is in the fact that the created methodology of preliminary training, based on special playing tasks use in the groups of preschool children at taekwondo classes, helps to increase the effectiveness of physical qualities development, increases the speed of technical skills formation and provides a steady motivation and interest in taekwondo classes. The results of the research can be used during program-normative documents creation for sports schools for children, sports clubs at place of residence, further education establishments of different profile.

In order to solve the set problems we used the following research methods: scientific and methodical information sources analysis, experience of practical work summarizing, interviews with the coaches, questionnaire survey, pedagogical

observations, control tests, pedagogical experiment, method of expert marks, methods of mathematical statistics.

Pedagogical experiment was carried out on the basis of limited liability company "Kempo" Naberezhnye Chelny Taekwondo school, Naberezhnye Chelny, Russia. The experiment revealed the influence of playing tasks on the level of physical qualities development and technical readiness of young taekwondo practitioners at the stage of preliminary training. The experimental group included 6-7 year-old taekwondo practitioners (16 people). In this group apart from usual tasks we included playing tasks with the orientation to the technique teaching and physical qualities development, which took 50 % of general time of the lessons. Control group included 16 people, the lessons were held according to generally adopted methodology.

In order to increase the training effect of playing tasks, the level of mastering the studied material and training load influence optimization on the organism of children we defined the most reasonable place for each type of tasks during the training lesson (table 1).

Table 1

The ratio of playing tasks of different orientation at the training lessons in the experimental group

(PT)	
Playing tasks for physical qualities development	Playing tasks for technical skills formation and improvement
PT for strength-oriented development	PT, which provide technical elements mastering
PT for dexterity development	
PT for flexibility development	
PT for endurance development	
PT for quickness development	PT, which provide technical elements practicing

In our experiment the ratio of playing tasks and the orientation to movements teaching and physical qualities development was 35 to 65%. In the offered methodology the lessons were organized using playing tasks, which took 50% of the main part of the lesson time.

Playing tasks were held during each part of the lesson alternating with "non-playing" tasks, as strictly regulated exercises combination with playing tasks helps to preserve steady interest in exercises fulfillment during the whole lesson.

The structural element of the playing task is the playing objective, which is realized by children in playing activity. Different combinations of

the elements of playing tasks define the possible structure of the game, its target function. Depending on the target function the structure of the game can vary.

It is necessary to remember, that in case of the task change one and the same exercises influence the development of different qualities. For example, if we give the task "who is better in "nerechkhagi" strike fulfillment?", the technique of this strike will develop; if we set the aim to make this strike as quickly as possible, then speed oriented abilities will be developed, if we ask to fulfill the strikes within 2 minutes, endurance is improved.

Table 2

Games with preferential orientation to the definite physical quality development

PT	Title	Recommendations
Playing tasks, directed toward technical skills of taekwondo teaching	"Get the point for the team", "Step forward", "Lost during the way", "Double control", "forbidding gesture", "A trick"	- pay attention to the details of special-preparatory playing tasks fulfillment, it should be registered in a clear form, playing tasks include educational objectives setting and their realization in a competitive form
Playing tasks, directed toward strength-oriented qualities development	"In squatting position", "Ceremonial parade", "Write", "Steel press", "Freeze-frame"	The objects (belt, stuffed balls, ropes and etc.) or work in pairs is used. Big muscle groups strengthening – spine, abdomen, neck, shoulder-girdle and hands, lower extremities; exercises for strength improvement and power together with other qualities; jumping tasks and stall bars, sloped bench climbing, mixed hangs, supports.
Playing tasks, directed toward quickness development	"Quick strike", "Count", "Speed", "Shoulder – Knee", "whipping", "Leading"	Give playing tasks with the set "Who is quicker!?". Response to the signal and quickness of muscular contractions, the amount of "quickly" fulfilled movements, speed of body movement or its parts movement in space; specified signals use (sound, visual, tactile), quick local movements and short-term movements use.
Playing tasks, directed toward dexterity development	"Fishing", "Don't drop", "Balance", "Relay-race with "sac" transfer", "Grasshopper", "Over the abyss", "Heron"	Plying tasks, directed toward quickness and accuracy of fulfillment, toward balance keeping and coordination provide dexterity development. Exercises, the content of which has novelty element, or special tasks, which demand the ability to analyze own actions, orient oneself in space, in time and the degree of muscle tensions.
Playing tasks, directed toward endurance development	"Stand to the point as quickly as possible", "Pronounced number", "Run away quicker", "Keep pace with the counting", "Merry chain", "Quick and attentive", "Tail"	The technique, existing in the practice of teaching: - the amount of the players in a team decrease in terms of preserving the size of the used for the task area; - the techniques and rules of the playing task complication in terms of fixed amount of the players; - time of the playing task fulfillment increase. Endurance development will be provided by such playing activity, when heart rate is 130 beats/min. Playing tasks with an active struggle of the partners help to develop will power qualities, sense of purpose, sports passion, persistence.
Playing tasks, directed toward flexibility development	"Bridge", "Touch the " paw " by the leg", "Raise your leg over the " paw ", "Sticking to the wall", "Caterpillar", "Help your legs"	Select the games for the purposeful, often local influence on the separate joints, ligaments, muscle groups. Such plying tasks should provide conditions for the amplitude of movements increase, additional muscles and ligaments stretching. Active flexibility depends on the power of muscles, that is why it is reasonable to include own weight overcoming playing tasks into the lessons .

The coach should be able to change the direction of the playing tasks owing to the aim setting. The main aim of the playing tasks for endurance development is the following exercises fulfillment: "who will do more...?", "who will ... farther?", "who can ...longer?" and etc. These playing tasks are connected with a long-term, but not too intensive work.

Playing tasks can be used not only during the main part of the lesson. The introductory part with the playing tasks use becomes renewed and interesting.

Using outdoor games during warming-up it is

necessary to remember that physical and emotional states of the athletes before training are different and depend on previous training lessons and other activity, which they took part in. In the state of low working capacity a child starts warming-up without any enthusiasm and very often fulfills the exercises with low intensity. In the state of the increased working capacity a child fulfills the exercises with high intensity. Playing tasks inclusion into warming-up increases its intensity, which is necessary for organism orientation toward further loads and injuries prevention.

Strict demands are claimed on the playing tasks,

which are used during the main and the final parts of the lesson. With their help a coach can realize the aims not only of the present training, but also the aims of the whole cycle of educational-training lessons. That is why the volume, sequence and the dose of the planned playing tasks should be defined every time taking into account the necessity to master not only the technique of the presented task, but also the following tasks.

A coach should know which quality or a motor skill is reasonable to develop in different parts of the lesson, what kind of warming-up should be before the planned playing task fulfillment.

The methodology of the playing tasks use at the initial stage of training has its peculiarities, taking into account different dosage of exercises, their technical difficulty and etc. It is important to select the exercises correctly for motor (physical) qualities development, as the movements transformation prevents conditioned-reflex connections standardization, which is accompanied by barriers in strength, speed and endurance increase [30, 35] and provides harmonious development, the definite traits of character improvement.

In the offered methodology in terms of the developing education playing tasks were held during each part of the lesson, as the combination of usual exercises and playing tasks helps to keep steady interest of children in the exercises fulfillment during the whole lesson and preserves necessary emotional level.

The percentage of playing tasks with the orientation toward motor qualities development and technical actions teaching at the initial stage is 60-70% to 30-40%.

The load during the lesson can decrease owing to often use of technique playing tasks and increase owing to the use of playing tasks for quickness and endurance development.

In order to make playing tasks more useful

and increase the effectiveness of the lessons it is necessary to define the most reasonable place of each type of tasks during the lesson.

As speed stimulants are the most effective in case of optimal level of nervous system sensibility, than playing tasks, which provide speed qualities development, should be held at the beginning of the lesson before children are tired [25, 5].

The games, directed toward dexterity development, become not effective enough in terms of the developing tiredness. These exercises demand great accuracy of muscle feelings. That is why in case of playing tasks repetition it is necessary to have breaks for rest. It is necessary to organize playing tasks, when children are not very tired after the previous load.

Before the games for flexibility development it is necessary to organize the corresponding warming-up in order to avoid tension of ligaments and torn muscles. It is necessary to organize the playing tasks of this orientation several times during the training.

Playing tasks oriented toward endurance development are connected with a long-term work of moderate intensity. The duration of the load should have the limits of time interval, during which aerobic system of energy supply manages to achieve maximal intensification, creating the conditions for more effective oxygen supply. At the same time complete activation of aerobic systems of energy supply is achieved within 2-3 minutes of the load.

The exercises, directed toward strength qualities development, should be short, the amount of repetitions – from 4-6 to 8-10.

Taking into account the recommendations, which are presented in a special literature, we present below optimal parameters of playing tasks fulfillment for motor skills mastering and the technique teaching, for quickness and endurance development and also the percentage of load volumes, directed toward motor qualities development (table 3,4.).

Table 3

The parameters of the training load in playing tasks of different orientation

Orientation of the playing tasks	Time of fulfillment	Amount of repetitions	Pauses of rest between the repetitions
Toward motor skills mastering and technique teaching	1-3 min	1-6 times	20-60 s
Toward endurance development	2-3 min	1-2 times	40-60 s
Toward quickness development	5-30 s	2-6 times	30-60 s

Table 4

The ratio of the load volumes, directed toward motor skills development (in %)

Speed-strength oriented	Motor qualities			
	Quickness	Endurance	Flexibility	Dexterity
15	10	45	15	15

The results, presented in table 5, prove that during the pedagogical experiment the level of physical development and physical fitness among the respondents of both groups increased significantly

in comparison with the initial level. It is connected with physiological growth of children of the studied age group and constant trainings.

Table 5

Indicators young taekwondo athletes physical fitness of at the end of the experiment

	Control exercises	Group	Results	P	%
1.	Step-Test	E	92,2±2,1	<0,01	17,2
		C	81,6±3,3		5,4
2.	30m running, s	E	5,74±0,5	>0,05	5,8
		C	6,03±0,17		1,79
3.	Shuttle run (3x10), s	E	8,9±0,12	<0,01	11
		C	9,6±0,19		4,95
4.	Standing jump, m	E	165,2±5,5	<0,05	13,9
		C	140,2±6,1		5,8
5.	Stuffed ball throwing (2 kg), m	E	241,3±9,8	>0,05	4,8
		C	236,4±10,6		7,95
6.	6-minutes running, m	E	1155±32,8	<0,05	48,5
		C			
7.	Flexibility: lean forward from sitting position, cm	C	975±22,22,1	<0,001	24,75
		E	13,7±0,56		87,7
8.	Body lifting within 30 sec., quantity	C	9,4±0,92	<0,05	36,2
		E	21,7±1,1		19,2
9.	Orthostatic test, s	C	19,1±0,65	<0,05	7,9
		E	85±5,0		97,7

Comparative analysis of a relative testing results increase, in percentage of the initial level, showed the advantage of the experimental group over the control group according to several indices.

Physical development indices increase (Step-Test) was validly higher in the experimental group ( $P<0,01$ ). It can be the fact of a positive effect from the playing tasks for the functional state and physical working capacity increase.

The best average results in shuttle run (3x10) ( $P<0,01$ ) and flexibility indices ( $P<0,001$ ), were also in the experimental group.

The indices increase in 30 meters running and stuffed ball throwing in the experimental group had the advantage over the indices of the control group, but were statistically invalid ( $P> 0,05$ ).

The indices increase in other tests in the experimental group were validly higher, than in the control group, which proves the advantage of special playing tasks use during the lessons with young taekwondo practitioners.

Thus, the program of the lessons with the playing tasks inclusion turned out to be more effective according to the degree of physical readiness indices increase among young taekwondo practitioners.

The positive role of the lessons with the playing tasks use for young taekwondo practitioners' interest

formation, is proved by the amount of children, who continued training after the holidays.

From the experimental group 87,5% of athletes continued training, from the control group – 43,8%.

All mentioned above proves the effectiveness of the created methodology of the playing tasks use at the lessons of the initial stage of training among young taekwondo practitioners.

The pedagogical experiment showed that special playing tasks use in the groups of initial training among young taekwondo practitioners leads to valid increase of almost all physical development and physical fitness results. According to the results of testing the indices of physical working capacity, explosive force, speed endurance, general endurance, coordination and flexibility development in the experimental group turned out to be higher, than in the control group.

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