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## **Analysis of the Development of Coordination Capacities in 8-10-Year-Old Pupils from Taekwondo WTF at Early Stages**

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### **Abstract**

The research has focused on the importance of coordination capacities in the training of athletes aged 8-10 years at the beginning of training. Using comparative analysis and processing of mathematical and statistical data, the level of development of coordination capacities of pupils from taekwondo WTF was established.

*Keywords: students, coordination capacities, sport training, exercises, testing, taekwondo WTF*

### **Introductions.**

Literally translated, the Korean word, “tae”, means “to kick” or “squash with the foot”; “kwon” implies “a hand or fist to block, punch, strike, or destroy”; “do” denotes an “art” or a “way”. Thus, “tae kwon do”, means “the art of kicking, blocking and punching” [3 p. 8].

Physical preparation is one of the most important factors of training to be considered infallibly in order to upgrade a competition performance to a high standard. The primary purpose of physical preparation is to increase a player’s functional potentiality and to develop his biomotor abilities to a high standard [6 p. 704].

Currently, in the specialty literature there has not been a consensus concerning the definition and components of coordination [1, 5]. Thus, Alexe [1 p. 360] defines it as being “the ability to quickly and accurately select and execute drive actions appropriate to unforeseen situations, with a high efficiency”.

The importance of coordination abilities has gained an increased percentage in the training process, together with extension of early training of youths in different sport branches, constituting a priority object from the first stage of training [4 p. 353].

The coordination is on the basis of each drive task or better to say on each movement of execution. In order to perform a simple or more complicated movement, a lower or higher degree of coordination is required. This represents also „*a form of complex (physical-psychic) expression of performance capacity through which the athlete learns more quickly the technical elements of the respective sport discipline and adapts more quickly in certain situations and moments of the execution of the respective movement*” [7 p. 141].

The performance ability is determined mostly by psychomotor capacities, as a result of the quality of the central nervous system.

In accordance with Carstea [2], the coordination is a complex motor quality that conditions the acquisition and improvement of various motor actions (habits, capacities, technical and tactical procedures, etc.) as well as the improvement of other motor capacities.

In taekwondo WTF the coordination represents the process through which the individual muscle contractions are synchronized by the CNS to produce a normal movement or activity, in conformity with the intended purpose. At the same time, coordination presupposes the optimal solution of the complex situations of fighting offered by the changing conditions depending on the reactions of the opponent.

Mostly, the level of coordination capacities depend on motor memory – the properties of the central nervous system to remember the movements and to show them when is needed. The motor memory of high-class athletes, especially those who are specialized in sporting genres with a high complexity, martial arts and sports games, contains a multitude of motor acts and actions of different complexity [8 p. 300, 9 p. 408, 10 p. 794].

In order to form in athletes practicing taekwondo WTF capacities with varying degrees of complexity, a large number of exercises should be included in the training curriculum that develops the abilities: of balance, of spatial-temporal orientation (distance and time sense) Kinetic and rhythmic differentiation, of process combination and chaining, ability to transform movements, of motor reaction, precision to strike at moving targets as well as to hit the target during his own movement.

**The goal of the research** is to determine the level of development of coordination capacities in 8-10-year-old pupils who practice taekwondo WTF at early stage.

**The object of the research** constitutes the process of development of motor capacities, especially the coordination in 8-10-year-old pupils who practice taekwondo WTF.

**The objectives of the research** are as follows:

1. to study specialty literature referring to currently ways of improvement of motor qualities in 8-10-year-old pupils who practice taekwondo WTF.
2. to determine the level of physical training and of motivation of pupils within the CS „ART SPORT” from the Republic of Moldova for practicing the taekwondo WTF discipline.
3. to elaborate and approve the program’s content focusing on the development of coordination capacities.
4. to argue experimentally the efficacy of the methodology of the development of coordinating qualities in pupils participating in the pedagogical experiment.

**Research methods.** In the course of our study the following range of methods adequately reflecting the matter under consideration were employed: analysis and synthesis of scientific-methodical literature, pedagogical observation, methods of testing, pedagogical experiment, methods of mathematical statistics.

For the experiment’s execution, firstly two groups were chosen (control group and experimental group), with a homogeneous development level of the physical development indices and the development of coordination capacities.

The pedagogical experiment was carried out in section of taekwondo WTF within CS „ART SPORT”, during the period of September 2016 – March 2017.

During research, both groups were trained in the same regime, during the week, four sports training lessons were planned, the duration of the training being 1 hour and 30 min.

After the initial test we have introduced in the program of sportive training of experimental group exercises for development of coordinative capacities in each training lesson, with different percentage depending on theme of lesson.

The training program of experimental group comprised methodical methods of development of this quality, which are used in the first part of lesson respecting: an elevated level of excitability from the subjects; a degree of progressive complexity of the used means; diversity of positions, successions and rhythms in exercises; short duration, execution speed, accuracy and efficiency of the action.

The means used for development of coordination in experimental group were: dynamic fighting games, sports games and games; exercises in unusual conditions, exercises in front of the mirror, exercises with different semi-active or active partners, working at maximum speed, repetitions of techniques on the uneven or non-dominant part, increasing the difficulty of executions through attacks from difficult positions such as: jump, reaching of some small targets.

The results of the registered coordination capacity indicators have been calculated and interpreted the statistical indicators on the dispersion of the values and the homogeneity of the samples, by comparing the averages representing the dynamic of the values in the graphs of the evolution and comparison of the progresses from one test to the other. The analysis and interpretation of actual data was executed for all measurements

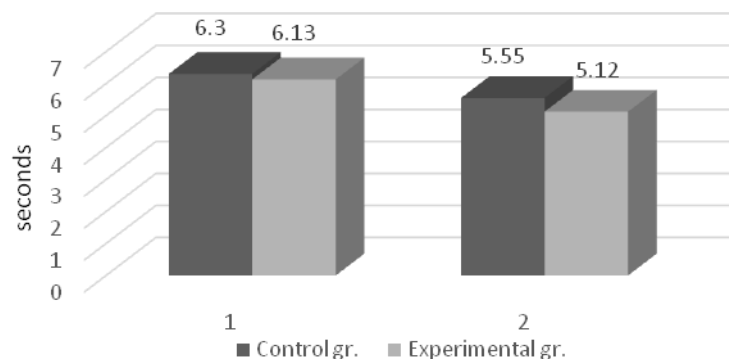
performed in the two tests (initial and final) for both experimental and control groups, the results being presented in Table 1 and Figures 1-5.

**Table 1. Test results of athletes' testing at the initial and final stage of the pedagogical experiment**

No d/o	Test	Testing	The average value				t	P
			Control group	CV %	Experimental group	CV %		
			$\bar{X} \pm m$		$\bar{X} \pm m$			
1	Sprint 30 m (s)	Initial	6.30 ± 0.46	19.4	6.13 ± 0.44	19.0	0.27	> 0.05
		Final	5.55 ± 0.16	7.6	5.12 ± 0.04	2.1	2.62	< 0.05
2	Running 3x10 m (s)	Initial	12.9±0.61	12.5	12.7±0.62	13.0	0.23	> 0.05
		Final	12.1±0.39	8.4	11.0±0.32	7.7	2.20	< 0.05
3	Standing long jump (cm)	Initial	116.2±3.17	7.2	116.5±3.12	7.1	0.07	> 0.05
		Final	122.4±1.45	3.1	127.7±1.40	2.9	2.64	< 0.05
4	Jump rope (nb of rep.)	Initial	33.5±2.26	17.8	32.8±2.39	19.3	0.21	> 0.05
		Final	52.8±3.32	16.6	66.2±2.65	10.6	3.16	< 0.01
5	Static equilibrium (s)	Initial	14.1 ± 1.02	19.2	14.5 ± 1.07	19.6	0.27	> 0.05
		Final	19.2 ± 1.29	17.7	22.7 ± 0.54	6.3	2.51	< 0.05

Differences are significant for  $t \geq 2.15$  with the probability  $P < 0.05$  and for  $t \geq 2.98$  with the probability  $P < 0.01$ , for  $n = 8$

Further we will analyze the results obtained in the 5 evaluation tests making a parallel between the two experimental groups. We will analyze the main statistical indicators presented in the generalizing tables.



Note: 1- initial testing, 2-final testing

**Figure 1. Sprint 30 m**

The speed test registered for the experimental group in initial testing an average of 6.13 sec, with an error of 0.44 sec and CV of 19.0%, which shows a slight superiority toward the control group, which has obtained an average of 6.30 sec, with an average error of 0.46 sec and CV of 19.4%. The almost equal results show that at this age there is a cumulative process of potential speed.

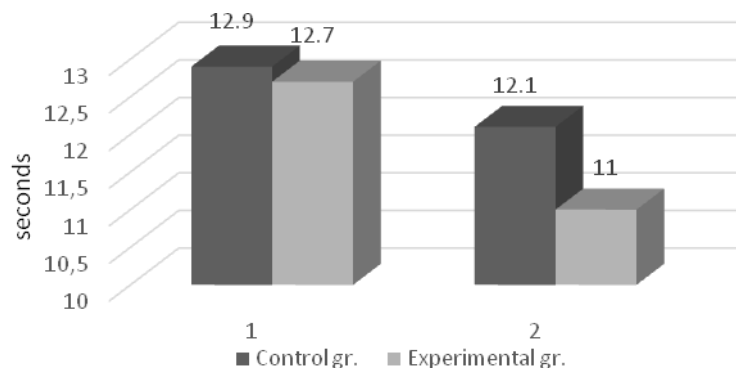
In final testing, the average values for the experimental group are 5.12 sec, the error being equal to 0.04 sec and CV of 2.1%, in comparison with the average for the control group (5.55 sec), with an average error of 0.16 sec and CV of 7.6%.

Therefore, the final result of the experimental group has a slow growth of the travel speed equal to 0.43 sec compared with the control group.

Differences of the averages for the experimental group and the control group at initial testing indicate a value "t" criteria of 0,27, at  $P > 0,05$ , the results being insignificant, while at final testing  $t = 2,26$ , at  $P < 0,05$ , the differences signifying a slight increase of travel speed.

At initial testing has been stated that the values of arithmetic average values registered by subjects of experimental group are of 12,7 sec, with an error of average of 0,62 sec and CV 13,0%, and at control group the result is of 12,9 sec, the error constituting a value of 0,61 sec with CV 12,5%.

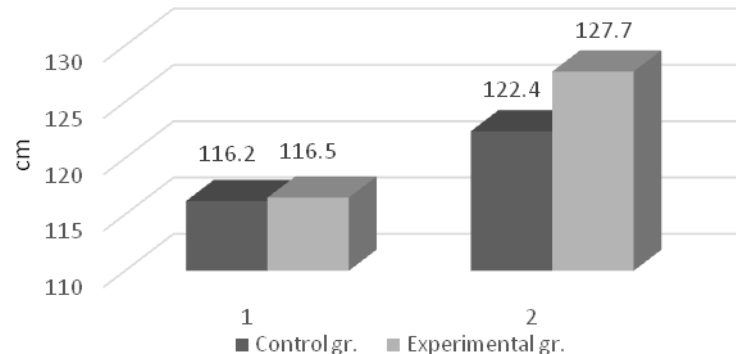
The final testing indicates the average values at subjects from experimental group in size of 11,0 sec with an average error of 0,32 sec and CV of 7,7%, which shows a relative progress, with a difference of 1,70 sec, while the average value to those from control group is of 12,10 sec, with average value of 0,39 sec and CV of 8,4%, the difference of 0,80 sec. Thus, the experimental group has obtained a better result with 1,10 sec, from the statistical point of view, being determined by the specificity and mode of execution in the given age range.



Note: 1- initial testing, 2-final testing

Figure 2. Running 3x10 m

The differences of average between experimental and control group at initial testing highlight a value of „t” criteria of 0.23, at  $P > 0.05$ , the result being insignificant, while at final testing „t”, has a value of 2.20, at  $P < 0.05$ , the result indicating an increase of coordinative capacity at pupils from experimental group.



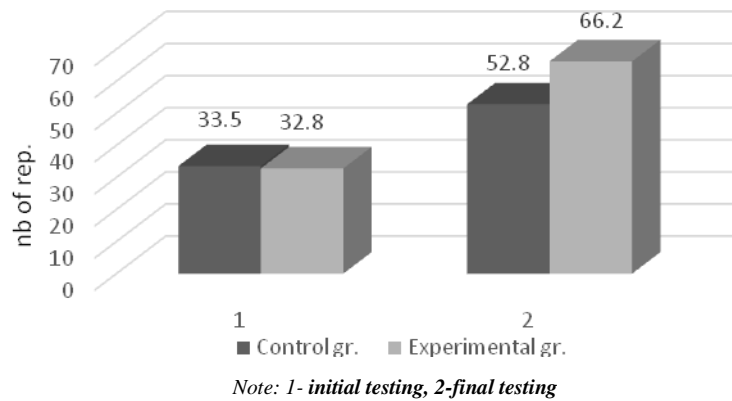
Note: 1- initial testing, 2-final testing

Figure 3. Standing long jump

At this testing the average values indicate an increase from a testing to another for both groups. Thus, at initial testing for experimental group, the average value is of 116.5 cm, with an error of average of 3.12 cm and CV 7.1%, and to control group the average value is of 116.2 cm, with an error of 3.17 cm and CV 7.2%, the difference being of 0.30 cm.

The final testing of subjects from experimental group registered a value of 127,7 cm, namely with an increase of 11,20 cm. The control group obtains an average of 122.4 cm, thus registering an increase of 6.20 cm. At this testing we observe at final testing a difference between groups of 5.3 cm. The average error at experimental group is of 1.40 cm with CV de 2.9% and the average value at control group is of 1.45 cm with CV of 3.1%.

Comparing the averages obtained by experimental and control group at initial testing we find the values of „t” equal with 0,07, at the significance of  $P > 0.05$ , thus the results being insignificant, while at final testing the value of calculated „t” is of 2.64, at  $P < 0.05$ , so the increase of results is significant from the statistical point of view.

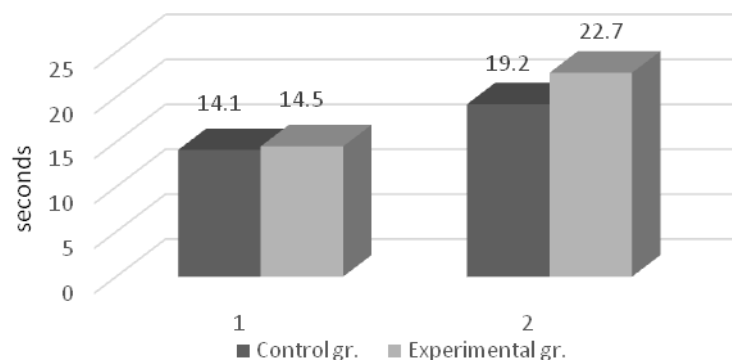


Note: 1- initial testing, 2-final testing  
**Figure 4. Jump rope**

Within the initial testing the arithmetical average at experimental group is of 32.8 executions with an average error of 2.39 repetitions and CV equal with 19.3%, and at control group is of 33.5 executions with an average error of 2.26 repetitions and CV of 17.8%.

The final testing registering increases for subjects from experimental group in value of 33,4 executions ( $\bar{X}$ =66.2 repetitions), the average error being of 2.65 and CV of 10.6%, and the average value of control group increases with 19.3 executions ( $\bar{X}$ =52.8 repetitions), the average error being of 3.32 with CV of 16.6%.

The differences of averages from experimental group and control group at initial testing register the value of „t” in size of 0.21, at P>0.05, but at final testing the calculated „t” of averages differences indicate a value of 3.16, at P<0.01. It follows that the recorded values are significant due to the organization of an instructive improvement process.



Note: 1- initial testing, 2-final testing  
**Figure 5. Static equilibrium**

The initial average values at experimental and control group are respectively equal with 14.4 sec ( $\pm 1.07$ ), with CV 19.6% – experimental group and 14.1 sec ( $\pm 1.02$ ), cu CV 19.2% –control group. The difference between investigated groups is of 0.40 sec, in favor of the experimental group.

The arithmetic value of experimental group obtained at final testing is of 22.7sec, with an average error of 0.54 and CV 6.3%, while the average of control group indicates a value of 19.2 sec, the error being of 1.29 and CV 17.7%. We state that at experimental group the values are bigger than at control group with 3.5 sec. The analysis of homogeneity and dispersion indicators of individual values indicates a large scattering for those two groups. CV indicates poor homogeneity for this test, because the results are influenced by individual values of the subjects.

The differences of averages between the experimental and control group at initial testing indicate the value of „t” of 0.27, at P>0.05, the obtained results are insignificant, but at final testing the calculated „t” has a value of 2.51, at P<0.05, the results being significant.

The values registered by the subjects investigated in the results of application of initial and final testing for those 5 tests of general motricity are presented in Table 1.

At all 5 applied tests are indicated increases of average values, at both, experimental and control group. The increases are bigger at experimental group caused by conducting of sportive training hours, as well as by the use of specific exercises, coordination games for sports lessons.

The subjects of the control group did not benefit from the content of the applicative program.

### CONCLUSIONS.

A good development of coordination capacities facilitates the learning ability of new technical actions, being extremely important for beginner athletes, which at this stage acquire a very large volume of motor knowledge specific to the practice test.

The pupils from the experimental group have demonstrated a high degree of activity, interest and motivation during games with coordination exercises and at games with fighting elements which are specific for taekwondo.

The results obtained by pupils included in basic experiment show the efficiency of use of the program proposed in sportive training lesson, in which are approached themes of motor qualities, especially the coordination skill. This has improved the physical training indicators, regardless of the initial level at which they was. The higher results at tests of coordination's development in experimental group are due to the work volume with emphasis on coordination's development.

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## Training of Professional Competencies in Tourism Internshipsin Terms of Labor Market Requirements

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### Abstract

At the present stage, the fundamental objective of the university is the formation of a quality specialist, ready for practical work, able to adapt quickly to environmental changes, find flexible and optimal solutions, use modern technologies, identify influences of the external environment on the field of professional activity. In this context, it is important to improve the training process of specialists in the field of tourism by modernising the study programs according to the needs of the labour market. Under market economy conditions, a particular attention should be paid to organizing and conducting the practice internships, because the practical skills are achieved by the students from the “tourism” specialty, mainly in this type of activity (the practice of initiation and technology).

*Keywords: Internships, labour market, professional competencies, beneficiaries, employers*

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