UDC 796.012:796.015.31+796.333

DEVELOPING COORDINATIVE ABILITIES THROUGH MOVEMENT GAMES

***Moisescu Petronel Cristian*[1],**
***Gürbüz Ali*[2],**
[1]*"Dunărea de Jos" University of Galati, Romania*
[2]*Mimar Sinan Fine Arts University, Department of Physical Education and Sports, Turkey*

Keywords: *physical education, pupils, coordinative abilities, motor games.*
Abstract. ***T****eaching activities based on modern teaching-learning-assessment techniques are today the most favourable aspect of higher-level motor acquisitions in the study of coordinative abiloities, with scientific methods of reality investigation. The means used favour the development of coordinative abilities, generate intrinsic motivation, decrease the pressure exerted by the teacher's personality, and determines even reluctant pupils to participate in movement games.*
Moreover, by the skills they acquire, the pupils practice the moves in a straightforward and accurate manner, get familiarized with self-guided learning, shape their personality, display a suitable civic conduct, and change their view on learning.

The topic actuality derives from the fact that skill (nowadays renamed ensemble of coordinative abilities), is one of the most complex and important motor skills, considered by certain experts a corollary of the other skills. In this respect, the actuality and importance of the topic of research stem from conceiving the didactic approach on various subjects, with different contents (movement games), as more often than not the development of motor skills has not always enjoyed the necessary attention in point of the methodological founding of this process, all the more that seen from this angle coordinative abilities, under all forms of manifestation, may be favourably influenced at this age (9-10 yo).

Sports games, movement games, preparatory games for sports games, relays and contests contain in their structure motor acts and actions that may positively influence motor skills and, through their attractive character, may have a positive influence on the pupils' attitude towards the process of motor skill education, especially if their content also relies on the game object (the ball).

Their attractive character and the presence of the game objects make children forget the less pleasant aspects of the mere process through which motor skills are educated by simple, singular means, directly tailored for each motor skill in turn.

In this context, the present topic was chosen, as it is better for this ensemble, called coordinative abilities, to be educated (developed) through diverse movement games than traditional strict methods.

The purpose of research is to improve the educational process and increase the degree of manifestation of the coordinative abilities using attractive means, carefully selected from the area of motor games. At the same time, the purpose of the paper is to study thoroughly the peculiarities and characteristics of coordination abilities, to know their essential delimitations, the forms of manifestation, as well as the methodological procedures and the means of development/ education found in the provisions of the primary education curriculum, and to apply, within the teaching approach, various specific movement games.

The research methods used were as follows: the documentation method, the observation method, the experiment, the test method, the statistico-mathematical method, and the table and graph method. In order to determine the manifestation level of coordinative abilities, a battery of 6 specific tests applied in two stages was used. In the two stages of the experiment, the participants were the pupils in class III A (experimental class) and III B (control class). The two classes did not have the same number of subjects, therefore the research comprised only 25 pupils in each class (15 boys and 10 girls) in order to allow a relevant comparative study.

The experiment had the following variables: the variable "subject" consisting of the sample subjected to investigation (3rd graders, aged 9-10, boys and girls, with a certain physical development, a certain motor "experience" and a certain development level of the motor skill indices), the variable "stimulus" which included the operational models used for this sample in order to reach the objective (movement games) and their

planning, as well as the variable "response", consisting of the results obtained by the pupils in the tests they were subjected to.

To assess the manifestation level of coordinative abilities, we used the following tests: ball throwing towards a target, while facing opposite it, the "Romberg" test; the "Square" test; the "Matorin" test; the "Figurative Path" test.

The means used in order to develop coordinative abilities were a number of 19 movement games, in addition to 10 dynamic relays. All these means corresponded to the development level of the children and were accurately scheduled all through the experiment.

Findings and results As a result of the instructive educational process of physical education and the comparison between the initial and the final results, it is confirmed that the manifestation level of the coordinative abilities reaches significantly higher values in the experimental group as compared to the witness group. The means used (movement games) aimed at developing coordinative abilities positively stimulated the pupils' attitude towards and interest in practising physical exercise, in general, and the lesson of physical education, in particular. The results obtained and the statistical indices calculated for all the five tests are shown in Table 1.

Table 1. Statistical indices in the test of coordinative abilities

No.	Event	Statistical indicators	Exp. group		Witness group	
			Initial test	Final test	Initial test	Final test
1	Throwing ball to target when facing opposite it (points)	X	8.85	11.16	8.88	10.55
		S	1.97	2.07	2.31	2.02
		Cv	21.4	18.53	26.08	22.07
2	The Romberg test (sec)	X	7.51	7.93	7.51	7.67
		S	0.52	0.45	0.39	0.37
		Cv	6.93	5.69	5.23	4.81
3	The square test (sec)	X	0.47	0.48	0.5	0.50
		S	0.59	0.585	1.27	0.60
		Cv	2.57	2.6	2.3	2.59
4	The Matorin test (degrees)	X	226.25	242.16	216.08	229.41
		S	15.11	15.56	13.93	15.44
		Cv	6.79	6.455	6.44	6.74
5	The "Figurative path" test (no. of errors)	X	19.53	17.95	21.8	20.3
		S	3.055	3.16	2.93	3.16

Motor training presupposes the education of motor skills by a pedagogical process of guiding physical development in view of obtaining changes in the desired direction.

General and multilateral physical training is a process oriented towards developing and educating motor skills, by means of selective and global processing of the body segments, the great bodily functions and motor qualities.

By using motor games in practice in order to develop coordinative abilities, a huge interest was raised by the evolution of the motor parameters of the pupils included in the pedagogical experiment, at the level of both groups. The tests used are commonly used in specialised literature and practice.

The arithmetic average for the test called ***"throwing the ball to the target, facing opposite it"*** (Figure 1) indicates a difference of only 0.03 points in the initial test in favour of the witness group. The final test shows significant progress for the experimental group, the difference between the two groups being 0.62 points in favour of the experimental group. Thus, the experimental group registers a value of the progress of 26.12%, while the witness group's progress is 18.98%. It is

noticeable that both groups made great progress, but higher for the experimental group. Also, the variability coefficient of the experimental group shows better homogeneity.

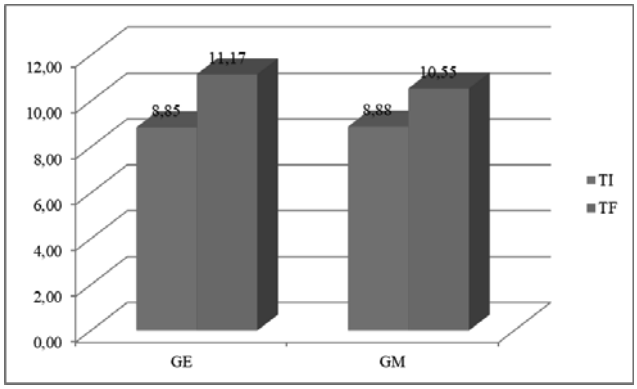

Fig. 1 Ball throwing to target, facing opposite it (points)

In the case of the ***Romberg test*** the average of the witness group improved by 5.41% in the final test as compared to the initial test, and the absolute value of the progress made is 0.43 seconds. The experimental group improved their performance by 2.26%, i.e. the absolute value of the progress made is 0.17 seconds (Figure 2).

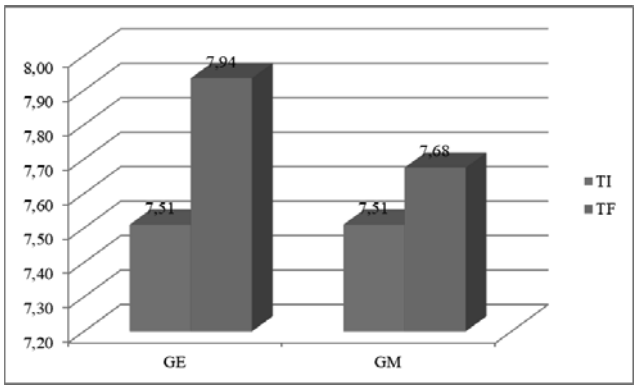

Fig. 2 The "Romberg" test (sec)

From the analysis of the indices regarding result homogeneity, it may be seen that the standard deviation is between 0.58 and 0.37, and the variability coefficient is under 6.93%, which points to high homogeneity and low variability for the two groups in the initial and final tests.

The third test designated to assess the movement coordination ability called the ***"Square" test*** shows a 4% average improvement in the witness group for the initial test, respectively a 2 second-improvement of the result average.

In the experimental group the performance increased significantly, i.e. by 8.51% as compared to the initial test, which means an absolute value of 4 seconds (Figure 3). Both groups display high homogeneity in both the initial and the final test.

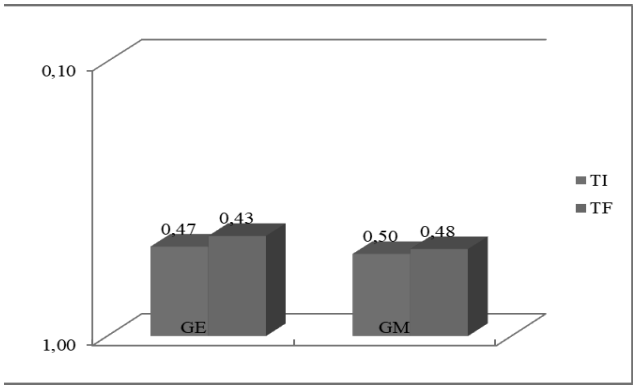

Fig. 3 The square test (sec)

The same ascending evolution is visible in the ***Matorin test*** for both groups in the experiment (Figure 4). If the difference of the group average in the initial test was 10.17 degrees in favour of the experimental group, in the final test the differences increases to 12.75 degrees. The experimental group registers an absolute value progress of 15.92 degrees, while the witness group's progress is 13.38 degrees.

In the case of the variability coefficient there are values between 6.79 and 6.445, which show high homogeneity for both groups.

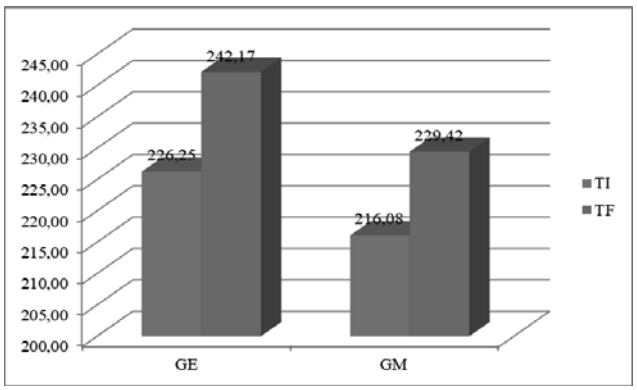

Fig. 4 The Matorin test (degrees)

The fifth test given to the two groups was the ***"Figurative Path" Test.*** The difference in the initial test was 2.27 errors, while in the final test it becomes 2.35 errors. Both groups have an ascending evolution, the experimental group improving the absolute value of the group average of 1.58 errors, while the witness group registered a value of 1.5 errors. In this event there are no

significant differences in the progress of the two groups. The homogeneity coefficient indicates low homogeneity for both groups.

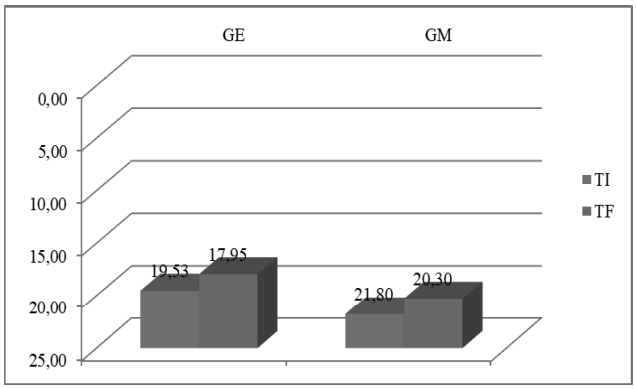

Fig. 5. The Figurative Path test (no. of errors)

Conclusions and recommendations. The teaching activities based on modern teaching-learning-assessment techniques are, in the present stage of the study of coordinative abilities, the most favourable aspect of motor acquisitions at higher level, with scientific methods of reality investigation. The means used favour the development of coordinative abilities, generate intrinsic motivation, decrease the pressure issued from the teacher's personality, determining even reluctant pupils to join in the movement games.

Besides, through the skills acquired the pupils practise the moves in a simple, accurate manner, become familiar with self-guided learning, shape their personality, manifest the right civic conduct, and change their vision on learning.

Coordinative abilities and their forms of manifestation may very well be developed separately, as well as part of the lesson stages aiming at teaching basic and specific motor skills for certain elementary sports branches.

It is very important that at the end of lessons on topics oriented towards developing coordinative abilities the pupils should be recommended to practise some of the games learnt in class on their own in their free time, but only after being provided with clear explanations and accurate directions regarding the succession, dosage, quantification, means to designate the winner, etc.

In point of engaging in effort, during the experiment, it may be said that no reluctant attitude was noticed, all the more that after a while the pupils developed an urge to reach personal "performance", against an emulation background, as the lessons became more and more interesting and attractive.

References:

1. Acsinte A. (2007) Jocuri şi activităţi dinamice de timp liber. Iaşi: Performantica.
2. Alexe N. (1993) Antrenamentul sportiv modern. Bucureşti: Editis.
3. Bompa O.T. (2001) Dezvoltarea calităţilor biomotrice. Bucureşti: Ex Ponto.
4. Cârstea G. (1993) Teoria şi metodica educaţiei fizice şi sportului. Bucureşti: Universul.
5. Dragnea A. (1984) Măsurare şi evaluare în educaţie fizică şi sport. Bucureşti: Sport-Turism.
6. Dragnea A., Bota A. (1999) Teoria activităţilor motrice. Bucureşti: Ed. Didactică şi Pedagogică R.A.
7. Epuran M. (1992) Metodologia cercetării activităţilor corporale. Bucureşti: A.N.E.F.S., vol. I.
8. Prescorniţă A. (2004) Capacitatea motrică şi capacităţile coordinative. Braşov: Ed. Universităţii "Transilvania".
9. Raţă G., Raţă B.C. (2006) Aptitudinile în activitatea motrică. Bacău: EduSoft.
10. Tudor V. (1999) Capacităţile condiţionale, coordinative şi intermediare-componente ale capacităţii motrice. Bucureşti: R.A.I.