

CZU 796.012.2+796.4.412

STUDY ON THE EXISTENCE OF CORRELATIONS BETWEEN THE INDICES OF COORDINATIVE CAPACITIES DEVELOPMENT AND THE RESULT OF THE FINAL EVALUATION IN THE "ARTISTIC GYMNASTICS" DISCIPLINE

Moga Carolina¹

¹*State University of Physical Education and Sport, Chisinau, Republic of Moldova*

Abstract. Numerous scientific studies prove the importance of improving the methodology of developing coordination skills but also identify links between this quality, ensuring the optimal level of motor training of subjects. In this paper are presented the results of the study on the existence of correlative links between the indices of development of coordination skills and the result of the final evaluation of the discipline "Artistic Gymnastics". For this purpose, a test was carried out where the first year students participated, the kinetherapy faculty, being tested through 10 tests in order to assess the coordination skills. The test results confirmed the existence of a reciprocal link highlighting significant interdependencies between the indices obtained. The investigations performed on the analysis of the correlation of the coordination capacity parameters and the result of the final evaluation allow us to mention that the intensity of the links is significant at high and medium level in 23 cases, which tells us that the obtained indices influence each other in the tested samples.

Keywords: coordination skills; final evaluation, discipline "Artistic Gymnastics", first year students.

The issue of coordinative capacity research is of particular interest to specialists in physical education and sports field. A significant number of researches prove the importance of improving the methodology of the development of coordinative capacities but also identify links between these qualities for ensuring the optimal level of motor training of the subjects. Thus, the ability of the student to correctly coordinate their actions contributes to the quicker acquisition of rational techniques of gymnastics exercises, makes the moves more economical, varied, diverse and effective. In connection with this it is current the development of new qualitative methodologies, technologies for training of motor actions, the detection of productive means, methods and forms of learning, used in the instructive-educational process.

The components of the education system are in a continuous interaction influencing each other. Evaluation as a structural part of physical education activity is one of the

essential components of the instructive-educational process. This criterion provides information on the efficiency of the knowledge process, the achievement of the objectives, finalities, making it possible to detect the dysfunctions and, consequently, to regulate it [1, 2].

The reason for selecting the research topic was determined by the need to know the presence of correlative links between the level of coordinative capacities development and the results obtained at the end of the gymnastics course.

The aim of this study is to improve the training process of 1st year students by selecting the most effective means for the development of coordinative capacities.

In order to achieve this aim, the following research objectives were selected:

1. Study and generalization of specialized literature on the issue of coordinative capacities development;

2. Testing the level of coordinative capacities development to the 1st year students, kinetotherapy faculty;

3. Analysis of the correlation interdependencies between the coordinative capacities indices and the results obtained at the end of the study of "Artistic gymnastics" course.

Research methods: the bibliographic study; pedagogical observation; the concluded experiment; testing method; mathematical and statistical methods.

Based on the above related, we have developed a program that provides for the control and evaluation the level of the core coordinative capacities development that are the basis of the evolution of students' psychomotor activities. Thus, in this article we intend to find out whether there is any interdependence between the parameters proposed by us in research with the results obtained in the final evaluation in the Artistic Gymnastics Course. For this purpose, a test was carried out involving 10 1st year students from kinetotherapy faculty. Further, the results obtained by them were mathematically processed and then correlated with the score obtained in the final evaluation. This was possible by calculating the correlation coefficient in Spearman's rank (Ps). The data obtained from the processing of the results are presented in Table 1.

Therefore, the students were tested by means of 10 tests for the assessment of the coordinative capacities:

1. Vault with 360° turn without visual control (degrees);
2. The ruler test (cm);
3. Romberg's test (15 sec);
4. Vault with the heels on a line with visual control (cm);
5. Vault with the heels on a line without visual control (cm);

6. Turns on gymnastic bench in 15 sec (no. reps.);

7. Walking with closed eyes on a line (cm);

8. 2 round off forward, vault in extension (score);

9. 2 consecutive side turnovers (score);

10. Technical training (score).

The selection of the tests was carried out with the aim of controlling and evaluating the coordinative capacities as one of the criteria for training the qualitative skills of exercises in artistic gymnastics. The values of the correlation of the indices for the development of the coordinative capacities and the result of the final evaluation are presented in Table 1.

Table 1 presents the correlation coefficients that reflect the presence of links between the final evaluation parameters obtained by the students with the tests for the assessment of the coordinative capacities. In total, following the calculations, several significant correlative links have been found to be strong and medium.

Thus, after calculating the Ps coefficient, a positive correlation link can be observed at the higher level between the *technical training* level and the result obtained in the *final evaluation*: $Ps=0.885$, $a=1\%$. These results indicate that students who have been able to sustain record-keeping combinations at a high level have gained a better score at the end of the artistic gymnastics course.

According to the data in the table, after mathematical and statistical processing of the results, we deduced that the most obvious correlative links are also found in the *Romberg's test with vault with the heels on a line without visual control*: $Ps=0,797$, $a=1\%$. Therefore, we deduce obvious correlative links between the balance-keeping capacity with the spatial orientation capacity and the static-kinaesthetic stability assessment of the students.



Table 1. Array of the correlation coefficients between the coordinative capacities development indices resulting from the final evaluation in the "artistic gymnastics" discipline (boys, n=10)

No. d/o	Name of test	1	2	3	4	5	6	7	8	9	10	11
1	<i>Vault 360° without visual control (no. rep)</i>		0,324	0,349	0,567	0,367	0,141	0,209	0,646	0,497	-0,197	0,167
2	<i>Ruler test (cm)</i>			-0,027	-0,167	0,182	0,482	0,664	-0,146	0,339	0,170	0,361
3	<i>Romberg's test (15 sec)</i>				-0,061	0,797	-0,130	0,533	0,218	0,176	0,132	0,091
4	<i>Vault with the heels on a line with visual control(cm)</i>					0,136	0,061	-0,085	0,433	0,080	0,391	0,391
5	<i>Vault with the heels on a line without visual control(cm)</i>						-0,127	-0,042	0,203	0,258	0,270	-0,149
6	<i>Turns on gymnastic bench. (15 sec)</i>							0,615	0,109	-0,178	0,355	-0,176
7	<i>Walking with closed eyes on a line (cm)</i>								0,197	0,155	0,212	-0,221
8	<i>2 round off forward, vault in extension (score)</i>									0,793	0,420	0,355
9	<i>2 consecutive side turnovers (score)</i>										0,620	0,403
10	<i>Technical training</i>											0,885
11	<i>Final evaluation</i>											

Note. Significant limits of correlation coefficients present in the table: $P_s \geq 0,29$ - poorlink; $P_s 0,30-0,69$ - medium link; $P_s 0,70-1,0$ - close link.

Also at the high level significantly correlate the *2 round off forward, vault in extension* test with the *2 consecutive side turnovers* test included in the research. In this case, the index P_s equals with 0.793 but $a=1\%$.

Calculation of the correlation coefficient in the *ruler test* revealed a positive link with the indices of *walking with closed eyes on the line* test ($P_s=0.664$, $a=5\%$). This high score highlights an important link between the results demonstrated by students in the research. Thus, we conclude that the visual-motor reaction capacity correlates significantly with the static-kinetic stability assessment capacity.

Obtaining a significant positive correlation ($P_s=0.646$, $a=5\%$) was also possible in the research of the *vault with 360° turn without visual control* and *walking with closed eyes on the line* indices. It can thus be stated that the result of the 360° vault is in a direct

connection with the movement on a straight line, thus increasing the level of orientation in space of the students, both tests being executed with the exclusion of the visual analyser.

Also, there was an average correlation but quite close to the correlative values between the tests *2 consecutive side turnovers* and the students' *technical training* level, the P_s index having the value 0.620. The result confirms that with the increase of the quality of the execution of 2 consecutive side turnovers, it also increases the level of execution of the combinations at the gymnastics apparatus.

From the data presented in Table 1, there is a significant link medium but also close to the strong one established when calculating the correlation of tests *turns on gymnastics bench* with *walking with closed eyes on the line* ($P_s = 0.615$). The results obtained by the students in both tests prove the interdependence of the relationships between the tests for the static



and kinetic stability assessment capacity of the participants in the experiment.

A significant connection was also achieved in the case of the indices pairs correlation *vault with 360° turn without visual control* with *vault with the heels on a line with visual control* and *Romberg's test* with *walking with closed eyes on the line*. Correlations $P_s = 0.567$ and 0.533 demonstrate the presence of intermediate positive functional links for the tests included in the research.

Obtaining significant correlation coefficients at the medium level was also possible between the following parameters:

- *Vault with 360 turn without visual control* with *2 consecutive side turnovers*: $P_s = 0.497$;

- *Ruler test* with *turns on gymnastic bench*: $P_s = 0.482$;

- *Vault with the heels on a line with visual control* with *2 round off forward, vault in extension*: $P_s = 0.433$;

- *2 round off forward, vault in extension* with *technical training*: $P_s = 0.420$;

- *2 consecutive side turnovers* with *final evaluation*: $P_s = 0.403$;

- *vault with the heels on a line with visual control* with *technical training*: $P_s = 0.391$;

- *vault with the heels on a line with visual control* with *final evaluation*: $P_s = 0.391$;

- *Vault with 360° turn without visual control* with *vault with the heels on a line without visual control*: $P_s = 0.367$;

- *Ruler test* with *final evaluation*: $P_s = 0.361$;

- *Turns on gymnastic bench* with *technical training*: $P_s = 0.355$;

- *2 round off forward, vault in extension* with *final evaluation*: $P_s = 0.355$;

- *Vault with 360° turn without visual control* with *Romberg's test*: $P_s = 0.349$;

- *Ruler test* with *2 consecutive side turnovers*: $P_s = 0.339$;

- *Vault with 360° turn without visual control* with *Ruler test*: $P_s = 0.324$.

All these tests confirmed the existence of a mutual relationship, pointing out significant interdependencies between the test results.

In this way, investigations on the results of the correlation of the coordinative capacity parameters and the outcome of the final evaluation allow us to mention that the intensity of the links is significant at a high and medium level in 23 cases, which tells us that the investigated indices influence each other in the tested samples.

Based on the synthesis of the information obtained in our study, we can assert with certainty the following:

1. Coordinative capacities play an important role in the educational process of students in artistic gymnastics discipline.

2. The results of the correlation analysis of the coordinative capacity indices with the score from the final evaluation show positive interdependencies within 23 indices of the total of 55 studied ones.

3. The strategy applied by us accomplishes the goal that the study consists in improving the training of the 1st year students by selecting the most efficient means for the development of the coordinative capacities.

References:

1. Firea, E. (1984). *Metodica educației fizice școlare*. București: Ed. Pedagogică.
2. Ботяев, В.Л., Стрельцов, В.А., Апокин, В.В. (2012). *Теоретическое обоснование и отбор тестов для оценки способностей спортсменов, специализирующихся в сложнокоординационных видах спорта*. В: Теория и практика физической культуры, №4, с. 86-89.