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VOLLEYBALL TECHNIQUE – TOOL IN THE DEVELOPMENT OF KINESTHETIC SENSE

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Abstract: *The research aims is to monitor and determines a methodological system of actions with specific methods of volleyball game and its applying in to didactic activities with students, in order to develop the psychomotor skills generally and for kinaesthetic sense, especially. For the experimental group, the development of kinaesthetic sense was realised by introducing of the various techniques specific to the volleyball game in teaching activities In the control group for development of kinaesthetic sense has been acted only with specific means from other sports.*

Key words: *kinesthetic sense, volleyball technique, students.*

1. Introduction

The educational process represents the instructive-educative complex activity, developed in an organized and systematic way by students and teachers in universities, thanks to which students are gifted with a system of knowledge, skills, attainments, abilities, intellectual and motive acquisition, based on which they gain scientific knowledge of reality, they form their conception of the world, moral beliefs, traits and also skills of knowledge, research and creation [6].

It is known that psychomotor development is the result of integration of mental and motor functions in the nervous system maturation effect aimed at the subject's report of his body. Psychomotor abilities assume the possibilities for the individual to acquire and perform complex motor actions (with greater difficulty), conducting accurately and economically the movements in time and space, with the speed and strength required in accordance with the situations that arise during the performing actions [4].

Specialized literature [2], [3], [7] considers fundamental five manifestations of psychomotor skills such as:

- Capacity assessment and adjustment parameters and space-temporal dynamics;
- The ability to maintain balance;
- Sense of rhythm;
- The capacity of space orientation;
- The ability to coordinate movements.

The descriptive taxonomy of psychomotor skills, treated in synthetic form is [5]:

- Perceptual skills and perceptual – motor skills;
- Coordination – dexterity– sight;
- Motor skills (qualities);
- Non-verbal communication;
- Relaxation.

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2. Materials and methods

2.1. Purpose

The research proposed to create a methodology system of acting with specific means of volleyball game and its implementation in teaching physical education with Medical students, in order to develop kinesthetic sense.

2.2. Objectives

The main objective of the research was to introduce the game of volleyball in the didactic activities to Medical students as a mean of achieving the objectives of training, but also for developing the psychomotor capacities in general, and especially the kinesthetic sense.

2.3. Premises

The concept of psychological training, therefore of psychomotor training cannot be limited to the sphere of moral and volitional factors, because they engage in some way those intellectuals and attitudes, all being manifestations of the human psyche.

So, psychological training through the psychomotor components, can be considered a part of the whole process of education and training of the student.

2.4. Hypothesis

Through this research we intend to demonstrate that the development of kinesthetic sense on medical students can be achieved more efficient through specific means of volleyball game.

2.5. Research methods used

- Collecting methods of data research system: self-observation method, observation method, psycho-pedagogical experiment, communication method, research documents method;
- Mathematical-statistical system methods of processing and interpretation of research data: organization and presentation of data, statistical graphics, determination of statistical indicators, comparison / reporting;
- Checking and evaluation methods of research results: the current observation, questioning.

2.6. Subjects

The research was performed on two groups of subjects from the University of Medicine, 2'nd year of study: the experimental group (E) consists of 44 students and control group (C) consists of 51 students. The research was conducted between October 2011 – January 2012. In group E, the teaching activities were characterized by introducing the training elements and specific techniques of volleyball game. In group C, was acted exclusively by specific means of other sports than volleyball. Thus, the drive technology for the experimental group consisted in learning, consolidation and improvement of specific elements and techniques of volleyball game:

- Fundamental position while passing the ball up and down with two hands;
- Passing with both hands and lift up the attack;
- Organizing three hits in their own field;
- Taking over the ball coming from attack with two hands from bottom and from serve;
- Serve from up above, gliding;
- Learning the individual and collective blockage;
- Learning to dive back and sides;
- Doubling and self-doubling kick attack.

2.7. Protocol research

The research was conducted during the academic year 2011-2012, at the University of Medicine and Pharmacy in Tîrgu Mures, Physical Education Department.

Program and testing stages for both groups included:

- T1 testing or pre-testing conducted in October 2011, in the beginning of Semester I;
- T2 testing and post-testing was held in January 2011 at the end of the first semester, after the implementation of specific technical complexes of volleyball game in Lot E.

2.8. Control samples

The administration of pre-testing (T1) aimed the qualitative level of kinesthetic sense and also collecting the start data. We measured the kinesthetic sense with a kinezimeter which, schematically can be described as follows: graduated ruler, provided with the cursors, on which the examined subject performs a certain amplitude motion, eyes closed, followed then by the reproduction, without the features of the cursors mark. It will measure the difference between the two executions, with the skillful arm in the way that the subject wants it.

The post-testing (T2) period aimed the highlighting pedagogical intervention in the experimental groups compared to the controlled ones. A second action of comparative measurement of the subjects results at the post-testing probe was performed by comparing the scores obtained by subjects in the experimental group, respectively of global scores at the final evaluation, at the scores obtained in the initial evaluation phase. The role of this phase was to determine whether and in what extent the experimental group was significantly detached from the control group.

2.9. Mathematical relations

The checking of the hypothesis of the research was to determine three statistics parameters: average, dispersion and comparison test "z". Thus, we used the following formula to test "z" [1]:

$$z = \frac{|m_1 - m_2|}{\sqrt{\frac{\sigma_1^2}{N_1} + \frac{\sigma_2^2}{N_2}}}$$

m_1, m_2 = averages = $\frac{\sum x}{N} = \frac{T}{N}$

T = total sample values

$\sum x$ = the sum of the individual

N = number of sample

σ_1, σ_2 = dispersions = $\frac{\sum (x-m)^2}{N-1}$

N_1, N_2 = number of subjects

$\sum (x - m)^2$(sum of squares) $\sum x^2 - \frac{T^2}{N}$

3. Results

The measurements made to determine kinesthetic sensitivity parameters are:

Summary of the results of the experimental group (E) Table 1

The difference between executions (cm.)	Frequencies Pre-test	Frequencies Post-test
-5	1	0
-4	1	0
-3	2	1
-2	5	9
-1	3	8
0	2	5
1	10	11
2	7	6
3	6	3
4	4	1
5	3	0
6	0	0

Summary of the results of the control group (C) Table 2

The difference between executions (cm.)	Frequencies Pre-test	Frequencies Post-test
-5	6	7
-4	6	5
-3	5	4
-2	4	5
-1	5	4
0	4	5
1	4	4
2	4	4
3	3	4
4	4	3
5	3	4
6	3	2

For calculating the comparison test "z", it was needed to determine the average values and corresponding dispersions of the two groups. These are the values:

- For the experimental group in pre-test: $m_1 = 1,02$; $\sigma_1^2 = 6,20$
- For the experimental group in the post-test: $m_2 = 0,15$, $\sigma_2^2 = 3,02$
- Post-test analysis between group E and group C: $m_3 = 0,25$, $\sigma_3^2 = 11,75$

Applying the formula, resulted the following values for "z":

- Test comparison between pre-test and post-test for group E: $z = 1,97$
- Comparison test between group E and group C: $z = 2,75$

4. Conclusions and discussions

Analyzing the Tables 1 and 2, we conclude that, after the experimental intervention, the kinesthetic sense values increased progressively from pre-test performed at the beginning of semester, academic year 2011/2012.

This conclusion is strengthened by the comparison test value "z", the post-test for the experimental group, which having the value of 1,97 is higher than 1,96; then the null hypothesis is infirmed and the specific hypothesis is accepted, considering that the difference between the two averages is statistically significant at p materiality < 0.05 [1].

A comparison test was also calculated "z" between group E and group C of frequencies in post-test, which was 2,75 higher than 1,96, resulting in the difference between the two averages is statistically significant at the threshold significance P <0.05.

Also the comparison test "z" was calculated between the group E and group C of the post-test frequencies, which was 2,75 higher than 1.96, resulting that the difference between the two averages is statistically significant at the threshold of significance.

Otherwise, the graphical representation (figure 1) presents the upward path of kinesthetic sense, observing the progress of all subjects.

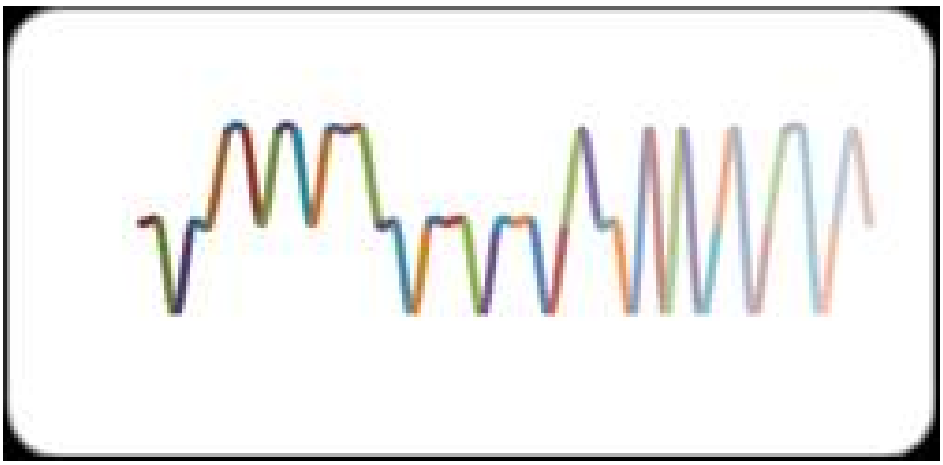

Fig. 1. *Kinesthetic sense (post-test)*

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