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BABEŞ-BOLYAI



# EDUCATIO ARTIS GYMNASTICAE

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**UNIVERSITATIS BABEŞ-BOLYAI**  
**EDUCATIO ARTIS GYMNASTICAE**

**2/2014**  
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## EXPERIENCES OF SECONDARY SCHOOL STUDENTS WITH P.E. TEACHERS IN SLOVAKIA

BRANISLAV ANTALA<sup>1</sup>, JAROMÍR ŠIMONEK<sup>2,\*</sup> & NATÁLIA CZAKOVÁ<sup>2</sup>

**ABSTRACT.** Authors in their scientific article deal with finding out, using a questionnaire, experiences of secondary school students with their physical education and sport teachers. In the focus of attention stand opinions of adolescents on various qualities of their teacher, such as whether he/she speaks with them openly, listens to them carefully, gives them a chance to choose the content of education, understands the motifs of behaviour, believes in students ability to be successful at P.E. lessons, trusts the students, encourages them, shows respect for them, copes with human emotions, shows empathy, etc. The results showed statistically significant differences in answers between genders in 7 out of 15 items. Students presented that P.E. teacher mostly gives them a chance to choose the content of education, understands them and students are able to speak to the teacher openly. The teacher accepts them and believes in their success. However, almost half of boys stated that the teacher does not encourage them. 57.2% boys and 44.9% girls answered that their teacher shows trust in them. 45.5% boys think that their teacher listens carefully to them, while girls showed neutral attitude. 51% boys and 48.1% girls wrote that their teacher is able to cope with human emotions and shows empathy to them. Generally speaking, the research proved that P.E. teachers are quite popular persons and can motivate and encourage students.

**Keywords:** opinions of students, physical education, P.E. teacher, empathy, gender differences.

### Introduction

A good quality pedagogical process in physical education may not function without a good quality teacher. It is then logical to state what we understand about the term “quality physical education teacher”.

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The following items belong among the basic prerequisites for successful work as a physical education teacher (Lakoova, 2006):

- knowledge in the sphere of physical education and sport,
- pedagogical abilities and mastery,
- ability for self-reflection and self-criticism as the manifestation of a teachers' professionalism,
- ability for empathy and commitment in relation to pupils, reference to them,
- managerial competences applied at school and outside.

Based on a survey of opinions of over 200 high school students American expert on teaching Renée Kocol (2014) defined top three expectations of a teacher as follows:

A good teacher:

Is and makes class interesting / fun.

Has knowledge and passion in subject matter.

Has a good relationship with students.

John Dewey once said that what the best and wisest parents want for their children should be what we want for all children. This statement translates into "I want my child to have a great teacher!" All educational research and all parents know the quality of the teacher impacts the success of students at school. What do the best teachers do? One of the best sources to answer this question is students because they know what works for them. And what do they say? Middleton (2010) looked into it and found that the top things students say the best teachers do are:

- Know us personally, our interests and strengths
- Let us know who they are as individuals
- Smile at us
- Encourage us to participate in school activities
- Spend time beyond class time to help us be successful in their class
- Give us descriptive feedback on assignments
- Tell us why
- Share how what we learn is connected to real life
- Apologize when they make mistakes
- Give meaningful work
- Are energetic, enthusiastic and enjoy their job.

As one looks at this list of attributes identified by students, it is evident that no significant learning occurs without a significant relationship.

Belanger, Longden (2009) administered an online survey of 1,883 students from 10 European countries. They wanted to know what the students expect and what they experience from their instructors. "Overall, the gap

between the expected and the experienced proved to be overwhelmingly significant," the study found. They looked at three characteristics: a professor's personality, classroom environment, and teaching style. What they found out was that there was a gap of 35 percent between what students expected and what professors were able to deliver. Interestingly enough, professors did best at being "confident" and "rational" (15 percent gap) and were worst at being "inspiring" (35 percent gap).

A physical education teacher, however, differs in some things from teachers of other subjects. How does the personality of a physical education teacher differ and what is special about them? The basic specific feature is the character of the subject that is taught by the teacher. In the scheme of the structure of the teachers' personality the following factors play an important role: abilities, opinions and attitudes, needs, interests, experience, nature and temperament. The above mentioned biophysical and psychological components form the integral personality of a teacher.

System psychological attitudes define the personality of a teacher as an individual, who develops, forms, and manifests themselves in the physical, psychological, and spiritual as well as social spheres. At the same time, all the given spheres are interconnected. Physical appearance, body constitution, and health state influence the psychological balance of a personality. They influence, for example, the resistance of an individual to load, methods of stress management, interpersonal communication, etc. (Sramova, 2002).

A P.E. teacher is also a motivator, motivating students for physical activities. If the teacher does not respect preferences of his/her students he often fails to fulfil the aims of education. Therefore it is inevitable to know the sports preferences of young people. In our research work we were interested in students' opinions on their feelings when in interaction with their teacher of P.E. We also tried to find out experiences with P.E. teachers' activities during P.E. & Sport lessons.

## **Methods**

An anonymous questionnaire was distributed to 299 (male=112 and female=187) students from secondary schools situated in towns: Bratislava, Malacky, Dunajska Streda, Banska Bystrica, Zlate Moravce, Nitra, Trnava, and Presov. Average age of the students was 16.24 years. The questionnaire was intended to find out the feelings of students when interacting with their P.E. teacher. Individual parameters were assessed on the 7-grade scale of assessment: I strongly disagree (1) up to I strongly agree (7).



Results obtained were evaluated using basic statistical methods (% share). Statistical significance of the differences between boys and girls was found out using Chi-square test.

## Results

**Table 1.**

I feel that my P.E. teacher offers me the chance to choose

Chi = 29.9 p < 0.05	Boys	Girls
(1) I strongly disagree	2.7%	4.8%
(2)	1.8%	3.7%
(3)	5.4%	12.3%
(4) Neutral	25.9%	44.9%
(5)	17.9%	14.4%
(6)	29.5%	10.7%
(7) I strongly agree	17.0%	9.1%

The results show that the feelings of secondary school students concerning their P.E. teacher are different (Table 1). 64.4% boys showed positive feeling that their P.E. teacher gives them a chance to choose, while only 34.2% girls showed positive feeling. 9.9% boys and 20.8% girls do not have the feeling that the teacher gives them some choice. Indifferent attitude showed 25.9% boys and 44.9% girls. Differences between boys and girls are statistically significant on the level of  $p < 0.05$  (Chi = 29.9).

**Table 2.**

I feel that my teacher understands me

Chi = 20.0 p < 0.05	Boys	Girls
(1) I strongly disagree	1.8%	6.4 %
(2)	2.7%	2.1%
(3)	6.3%	8.6%
(4) Neutral	25.0%	36.9%
(5)	20.5%	23.0%
(6)	24.1%	12.3%
(7) I strongly agree	19.6%	10.7%

The feelings of male and female students whether the P.E. teacher understands them are different (Table 2). In 64.2% boys prevail positive feelings, 25.0% presented neutral attitude and 10.8% do not have the feeling that their teacher understands them. 46.0% girls stated that they have the

feeling that their teacher understands them, 36.9 % showed neutral attitude and 17.1% have the feeling that their teacher does not understand them. Differences between boys and girls are statistically significant on the level of  $p < 0.05$  (Chi = 20.0).

**Table 3.**

I can openly talk to the teacher during the lessons

Chi = 5.2 p > 0.05	Boys	Girls
(1) I strongly disagree	3.6%	5.3%
(2)	1.8%	3.2%
(3)	8.0%	7.0%
(4) Neutral	30.4%	32.1%
(5)	17.9%	23.5%
(6)	19.6%	17.6%
(7) I strongly agree	18.8%	11.2%

Table 3 shows that both girls (52.3%) and boys (56.3%) can openly speak to their teacher. Neutral attitude was presented by 30.4% boys and 32.1% girls. During the lessons 30.4% boys and 32.1% girls do not know the way how to speak with the teacher. The level of significance is higher than 0.05 ( $p = 0.522$ ), which means that the result is statistically not significant (Chi = 5.2).

**Table 4.**

My P.E. teacher believes in my ability to be successful at the lesson

Chi = 13.1 p < 0.05	Boys	Girls
(1) I strongly disagree	0.9%	3.7%
(2)	3.6%	3.7%
(3)	1.8%	7.0%
(4) Neutral	24.1%	28.3%
(5)	28.6%	17.1%
(6)	14.3%	19.8%
(7) I strongly agree	26.8%	20.3%

67.9% boys and 57.2% girls stated that their teacher trusts their ability to be successful at the lesson (Table 4). Neutral attitude showed 24.1% boys and 28.3% girls. Disagreement was shown by only 6.3% boys and 14.4% girls. Differences between the genders are statistically significant on the level of  $p < 0.05$  (Chi = 13.1).

**Table 5.**

I think that my P.E. teacher accepts me

Chi=13.4 p < 0.05	Boys	Girls
(1) I strongly disagree	0.9%	3.2%
(2)	0.9%	4.3%
(3)	6.3%	7.0%
(4) Neutral	25.0%	38.5%
(5)	26.8%	19.8%
(6)	21.4%	14.4%
(7) I strongly agree	18.8%	12.8%

Research results (Table 5) higher acceptance from their teacher at P.E. lessons is felt by boys (67.0%) than by girls (46.1%), while neutral attitude was shown by 38.5% girls and 25% boys. 8.1% boys and 14.5% girls think that their P.E. teacher does not accept them. Differences between boys and girls are statistically significant on the level of  $p < 0.05$  (Chi=13.4).

**Table 6.**

My teacher is convinced that I really understand the importance of P.E. lessons and their content

Chi= 21.1 p < 0.05	Boys	Girls
(1) I strongly disagree	0.0%	7.5%
(2)	3.6%	5.9%
(3)	3.6%	9.1%
(4) Neutral	29.5%	35.3%
(5)	17.9%	15.0%
(6)	18.8%	13.9%
(7) I strongly agree	26.8%	13.4%

From Table 6 it is clear that 63.5% boys and 42.3% girls agree with the fact that their teacher is convinced that they understand the importance of P.E. lessons and their content. 22.5% girls and only 7.2% boys do not agree with the statement. Neutral attitude was shown by 29.5% boys and 35.3% girls. Differences between boys and girls are statistically significant on the level of  $p < 0.05$  (Chi= 21.1).

**Table 7.**

## My P.E. teacher encourages me to ask questions

Chi= 8.3 p >0.05	Boys	Girls
(1) I strongly disagree	3.6%	8.6%
(2)	5.4%	8.0%
(3)	12.5%	12.3%
(4) Neutral	49.1%	34.8%
(5)	16.1%	18.2%
(6)	7.1%	8.0%
(7) I strongly agree	6.3%	10.2%

29.5% boys and 36.4% girls answered to the question whether their teacher encourages them to ask questions positively, while 49.1% boys and 34.8% girls showed neutral attitude (Table 7). 21.5% boys and 28.9% girls expressed their feeling that their teacher does not encourage them to ask questions. The level of significance is higher than 0.05 ( $p = 0.2157$ ), which means that the result is not statistically significant ( $Chi = 8.3$ ).

**Table 8.**

## I feel trust in my P.E. teacher

Chi = 11.1 p >0.05	Boys	Girls
(1) I strongly disagree	6.3%	8.6%
(2)	1.8%	7.5%
(3)	3.6%	5.9%
(4) Neutral	31.3%	33.2%
(5)	25.0%	25.1%
(6)	14.3%	11.2%
(7) I strongly agree	17.9%	8.6%

A big trust to their teacher was felt by 57.2% boys and 44.9% girls, while neutral attitude was shown by 31.3% boys and 33.2% girls (Table 8). 11.7% boys and 22% girls do not feel trust in their teacher. The level of significance is higher than 0.05 ( $p = 0.0855$ ), which means that the result is not statistically significant ( $Chi = 11.1$ ).

**Table 9.**

My P.E. teacher answers to my questions thoroughly and in details

Chi = 4.2 p > 0.05	Boys	Girls
(1) I strongly disagree	1.8%	3.2%
(2)	8.0%	3.7%
(3)	8.9%	6.4%
(4) Neutral	23.2%	26.7%
(5)	24.1%	24.6%
(6)	17.9%	20.3%
(7) I strongly agree	16.1%	15.0%

Results showed (Table 9) that P.E. teacher answers the questions carefully and in details (58.1% boys and 59.0% girls). Indifferent attitude was shown by 23.2% boys and 26.7% girls. 18.7% boys and 13.3% girls expressed their opinion that teacher does not answer their questions duly and in details. The level of significance is higher than 0.05 ( $p = 0.6554$ ), which means that the result is not statistically significant (Chi = 4.2).

**Table 10.**

My P.E. teacher listens to my suggestions concerning  
how to do things at lessons

Chi = 13.6 p < 0.05	Boys	Girls
(1) I strongly disagree	5.4%	5.3%
(2)	2.7%	9.6%
(3)	17.9%	13.9%
(4) Neutral	28.6%	38.5%
(5)	23.2%	20.3%
(6)	10.7%	8.0%
(7) I strongly agree	11.6%	4.3%

The question, whether their teacher listens to their suggestions was answered positively by 45.5% boys and 32.6% girls, while neutral attitude was shown by 28.6% boys and 38.5% girls (Table 10). 26.0% boys and 28.8% girls do not agree with the fact that their teacher listens to their suggestions. The difference between boys and girls is statistically significant on the level of  $p < 0.05$  (Chi = 13.6).

**Table 11.**

## My P.E. teacher copes with human emotions

Chi = 3.6 p = > 0.05	Boys	Girls
(1) I strongly disagree	3.6%	7.0%
(2)	3.6%	4.8%
(3)	8.9%	6.4%
(4) Neutral	33.0%	33.7%
(5)	14.3%	17.1%
(6)	18.8%	17.6%
(7) I strongly agree	17.9%	13.4%

The results show (Table 11) that 51.0% boys and 48.1 % girls think that their teacher copes with human emotions very well. Neutral attitude was presented by 33.0% boys and 33.7% girls. The remaining 16.1% boys and 18.2% girls stated that their P.E. teacher does not cope well with human emotions. The level of significance is higher than 0.05 ( $p = 0.7318$ ), which means that the results is not statistically significant (Chi = 3.6).

**Table 12.**

## I have a feeling that my P.E. teacher shows respect for my person

Chi = 8.1 p > 0.05	Boys	Girls
(1) I strongly disagree	2.7%	4.8%
(2)	1.8%	4.3%
(3)	9.8%	9.6%
(4) Neutral	32.1%	31.6%
(5)	16.1%	24.6%
(6)	23.2%	15.0%
(7) I strongly agree	14.3%	10.2%

53.6% boys and 49.8% girls suppose that their P.E. teacher shows respect for them (Table 12). Neutral attitudes were shown by 32.1% boys and 31.6% girls. The remaining 14.3% boys and 18.7% girls stated that their teacher does not show respect for their person. The level of significance is higher than 0.05 ( $p = 0.2342$ ), which means that the result is not statistically significant (Chi = 8.1).

**Table 13.**

I do not like the way my P.E. teacher talks to me

Chi = 4.6 p > 0.05	Boys	Girls
(1) I strongly disagree	26.8%	23.0%
(2)	25.0%	20.9%
(3)	8.0%	15.0%
(4) Neutral	25.0%	25.7%
(5)	6.3%	4.3%
(6)	4.5%	5.9%
(7) I strongly agree	4.5%	5.3%

The results show (Table 13) that 15.3% boys and 15.5% girls expressed their opinion that they do not like the way how teacher speaks with them. Neutral attitude was shown by 25.0% boys and 25.7% girls. 59.8% boys and 58.9% girls state that they like the way their teacher speaks to them. The level of significance is higher than 0.05 ( $p = 0.5926$ ), which means that the result is statistically not significant ( $Chi = 4.6$ ).

**Table 14.**

Before suggesting some way of how to do certain things, my P.E. teacher tries to understand how I understand them

Chi = 6.5 p > 0.05	Boys	Girls
(1) I strongly disagree	5.4%	6.4%
(2)	2.7%	7.5%
(3)	17.0%	9.6%
(4) Neutral	48.2%	50.8%
(5)	13.4%	14.4%
(6)	6.3%	4.8%
(7) I strongly agree	7.1%	6.4%

The results show (Table 14) that before the teacher suggests a new way of doing things, he tries to understand the way how the students see them. 26.8% boys and 25.6% girls agree with this. 48.2% boys and 50.8% girls showed neutral attitude, while 25.1% boys and 23.5% girls do not agree with this statement. The level of statistical significance is higher than 0.05 ( $p = 0.3657$ ), which means that the result is not statistically significant ( $Chi = 6.5$ ).

**Table 15.**

I feel that I am able to share my feelings with my P.E. teacher

Chi = 19.1 p < 0.05	Boys	Girls
(1) I strongly disagree	8.9%	15.5%
(2)	17.0%	9.6%
(3)	14.3%	9.6%
(4) Neutral	27.7%	39.6%
(5)	13.4%	18.2%
(6)	8.9%	4.8%
(7) I strongly agree	9.8%	2.7%

32.1% boys and 25.7% girls are able to share their feelings with their teacher (Table 15). Neutral attitude was presented by 27.7% boys and 39.6% girls. 40.2% boys and 34.7% girls stated that they do not know how to share the feelings with their teacher. The difference between boys and girls is statistically significant on the level of  $p < 0.05$  (Chi = 19.1).

**Table 16.**

Experience of students with their P.E. teacher

Arithmetic mean of answers of boys is **4.62** and girls **4.28**. Answers of both gender students oscillate between the values 4 and 5, which represent the tendency toward neutral or partly agree statement. Boys showed a little bit more positive attitude in their answers.

### Conclusions

Our research was aimed at enlarging the knowledge on students' attitudes concerning particular aspects of P.E. lessons, to find out current opinions of students on their teacher. Answers of both boys and girls have the tendency to incline to positive opinions on their teacher, however, boys presented even more positive attitudes than girls (Table 16). The obtained differences were statistically not significant, but boys assumed that their teacher trusts them

	Boys (average)	Girls (average)
1.	<b>5.10</b>	4.28
2.	<b>5.10</b>	4.47
3.	<b>4.91</b>	4.63
4.	<b>5.25</b>	4.91
5.	<b>5.15</b>	4.62
6.	<b>5.25</b>	4.39
7.	<b>4.15</b>	4.10
8.	<b>4.81</b>	4.26
9.	4.77	<b>4.86</b>
10.	<b>4.40</b>	4.00
11.	<b>4.78</b>	4.55
12.	<b>4.83</b>	4.52
13.	2.90	<b>3.06</b>
14.	<b>4.08</b>	3.99
15.	<b>3.85</b>	3.60



and believes that they could be successful. He/she convinced himself/herself that students understand what they do. The male students felt that the teacher gives them a choice to choose the content of education and that their teacher understands them well. On the contrary girls mainly appreciate that their P.E. teacher trusts their ability to be successful at the lesson and answers all their questions thoroughly and in details. They also appreciate that they can openly speak to their teacher.

It is a positive finding that secondary school students showed trust in their P.E. teacher (boys = 57.2%, girls = 44.9%. 45.5% boys think that the teacher carefully listens to the students and 51% boys and 48.1% girls think that the teacher copes with the emotions at P.E. lessons. 40.2 boys believe that they can share the ideas with the teacher, while girls showed a rather neutral statement (39.6%). Students do not mind the way how the teacher speaks with them and think that the teacher shows trust and respect for them. All of these features of the teacher-student relationship are good prerequisites for a serious relationship of the most important factors of education. Teachers are one of the main motivators of adolescents for active sport and form their attitudes to active lifestyle. That is why the P.E. lessons should be flexible, attractive so that they evoke the feelings of satisfaction, joy and positivism. Formation of positive attitudes to physical activity is one of the most important tasks of P.E. teachers at school.

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## THE RELATIONSHIP BETWEEN EXERCICES AND SELF-ESTEEM

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EMILIA FLORINA GROSU<sup>3</sup>

**ABSTRACT.** Background. A growing number of studies show the effects of exercise and self-esteem, which prompted us to study changes related to self-esteem, as a result of sports and weight loss. Objectives. This paper aims to highlight the relationship between exercise and self-esteem. The basic issue is the definition and description of these two concepts, analyzing the relationship between them. Methods. In designing this study we used the study of the bibliographical material (documentation), the observation method (measuring weight), the test method (test Rosenberg - 1965), graphics and the statistical method (data processing). Measurements and Rosenberg test were applied to two samples (control and experiment) of 30 students; we have registered the initial results and after six months, during which the sample experiment was performed exercise in the form of aerobic gymnastics, regularly and organized. The results obtained were processed using SPSS and implemented in graphics. Results. By practicing regular physical exercise we reach energy consumption, which leads to lower fat and thus the weight loss and increased self-esteem. The analysis of the results confirms the interdependence of exercise and self-esteem. Conclusions. Exercise has a positive effect on self-esteem. As an individual, if you lose weight you look better - physically, you feel better - emotionally, you reach to fit better in social terms, resulting in a change in self-image, it increases more and more.

**Keywords:** exercise, self-esteem.

**Rezumat. Relația dintre exercițiile fizice și stima de sine. Premize.** Un număr tot mai mare de studii arată efectele exercițiilor fizice asupra stimei de sine, ceea ce ne-a determinat să studiem modificările apărute la nivelul stimei de sine ca urmare a practicării exercițiilor fizice și a scăderii în greutate. **Obiective.** Lucrarea de față are ca obiectiv evidențierea relației dintre exercițiile fizice și

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stima de sine. S-a plecat de la definirea și descrierea acestora analizând relația între cele două noțiuni. *Metode.* În conceperea acestei lucrări s-a folosit studiul materialelor bibliografice (documentarea), metoda observației (măsurarea greutateii), metoda testelor (testul Rosenberg – 1965), reprezentarea grafică, metoda statistică (prelucrarea datelor obținute). Măsurătorile și testul Rosenberg s-au aplicat pe două eșantioane (de control, de experiment) a câte 30 de studenți și s-au înregistrat rezultatele inițial și după șase luni timp în care cu eșantionul de experiment s-a practicat exercițiile fizice sub forma gimnasticii aerobice în mod regulat și organizat. Rezultatele obținute au fost prelucrate cu ajutorul aplicațiilor SPSS și transpuse în grafice. *Rezultate.* Prin practicarea exercițiilor fizice în mod regulat se ajunge la consum de energie, ceea ce duce la diminuarea grăsimilor și implicit la scăderea în greutate și creșterea stimei de sine. Analiza rezultatelor confirmă interdependența dintre exercițiile fizice și stima de sine. *Concluzii.* Exercițiile fizice au un efect pozitiv asupra stimei de sine. Ca individ dacă ai pierdut din greutate arăți mai bine din punct de vedere fizic, te simți mai bine din punct de vedere emoțional, reușești să te integrezi mai bine din punct de vedere social, rezultând o modificare a imaginii de sine, deci stima de sine crește.

**Cuvinte cheie:** exercițiul fizic, stimă de sine.

## Introduction

Since we wanted to start from:

- a) Physical educations' benefits on the body;
- b) factors that cause obesity;
- c) the contribution of exercise to improve self-esteem;

we consider it is necessary to define and develop these concepts.

Exercise "is the action involving mainly the body, handled systematically and consciously, in order to improve the physical and motor ability of the people". (Șiclovan, I., 1979)

The general benefit of the exercise is to improve the overall health and the ability to do certain activities for a period of time. Exercise has the following effects:

1. Health - Improving the physical quality of life
  - To feel good
2. Mental health and wellbeing:
  - Increases intellectual capacity
  - Increase stress control
  - Eliminate depression

- Helps you sleep better and reduce anxiety
  - Increase confidence and self-esteem
  - Preventing and combating headaches
  - To stop smoking
3. Functional capabilities:
- Increases energy levels
  - Improves muscle strength and endurance
  - Improves bone density and prevent osteoporosis
  - Increases flexibility
  - Creates protection from stress
  - Improves body posture
4. Weight control:
- Maintenance and reducing weight
  - Increase metabolism and burn calories
  - Decreases obesity
5. Cardio – vascular health:
- The heart becomes stronger and it decreases the pulse
  - Reduce the risk of heart disease
  - Decreased pulse pressure
  - Reduces the risk of cardiac injury
6. Disease prevention:
- Immune system becomes stronger
  - Increase blood sugar control
  - Increase good cholesterol and lowers bad cholesterol
  - Reduces the risk of developing various diseases such as colon cancer, type II diabetes and lung disease
7. Aging and longevity:
- Helps you easily and slowly grow old
  - To have a long active period
  - Keep your independent life style
  - Reduce the risk of fracture and osteoporosis.

Effects of aerobic gymnastics:

- vital capacity increases;
- improves pulmonary elasticity;
- toning the respiratory muscles;
- balances blood pressure;
- improves blood circulation;
- strengthens bones;
- tones muscular system;

- balances glucose metabolism;
- increases immunity;
- systematic and rhythmic blood oxygenation.

Besides the fact that obesity is a major health problem, it is also an aesthetic problem. Obesity is caused by a number of factors such as family disorganized lifestyle, excessive food intake, unhealthy diet rich in fats and carbohydrates, irregular mealtimes, sedentary lifestyle, “pecking” continuously between meals and the most important factor being physical inactivity.

Self-esteem: Rosenberg (in 1979) defines self-esteem as a complex cognitive and affective synthesis.

He believes that self-esteem dictates attitudes, more or less right, of the individual towards himself. Self-esteem is how we evaluate ourselves in relation to others and their own expectations and awareness of the value and it is directly proportional to our past, present and future.

According to F. Sordes - Ader, G. Leveque, N. Oubrayrie and C. Safont Mottay (1998) global self-esteem has the following dimensions: emotional self (self-control level) social self (sense of social recognition), self employment (job performance) physical self (including body image, perception of own body, the opinions of the others on your own appearance and physical fitness) anticipatory self (attitude towards what it awaits for one in the future).

Referring to the physical self, which includes body image, we can highlight the role of exercise in improving this image in terms of body shape and weight. As the appearance is nicer the body image is better and it increases the self esteem. A high self esteem gives greater confidence, ones values, as an individual, are higher, you accept risks more easily, you emphasize your own skills.

Generally, obese persons will have a low self esteem. They will tend to feel uncomfortable with their body, perceiving their body size as a personal failure, to avoid risks, to feel shame and anxiety. These dissatisfactions affect lifestyle and are directly proportional to physical and mental health.

## **Objectives**

The research aims at:

- Highlighting the relationship between exercise and self-esteem;
- Development of programs of aerobics body styling (sculpture);
- Measurements and data recording;
- Applying Rosenberg test;

## Assumptions

We suppose that exercise programs, such as body styling, and aerobic exercises affect the self-esteem.

## Research subjects

The research was done on two samples of 30 students (control group and experimental group) at North University of Baia Mare, students aged between 19 and 21 years. The control group was measured and recorded initially and after six months for body weight and then it was applied the Rosenberg test, also initially and after six months.

In the experimental group we had initially measured and recorded weight and Rosenberg test. During six months we had a daily exercise program, three times weekly, 50-minute of body styling and aerobic programs aiming at weight reduction and increasing self-esteem. Finally we measured and recorded again weight, and self-esteem scale was applied.

## Results

The results obtained from measuring the subjects included in the experiment were analyzed in terms of the following parameters: arithmetic mean, standard deviation, median, minimum and maximum values. These parameters were included in the charts presented in this paper, charts showing differences arising between the progress of experimental group's components and the control group's progress.

The values obtained after the statistical analysis performed, based on the results recorded in the measurement of body mass (weight) and Rosenberg test are summarized in Tables 1 and 2.

**Table no. 1.**

### Weight values

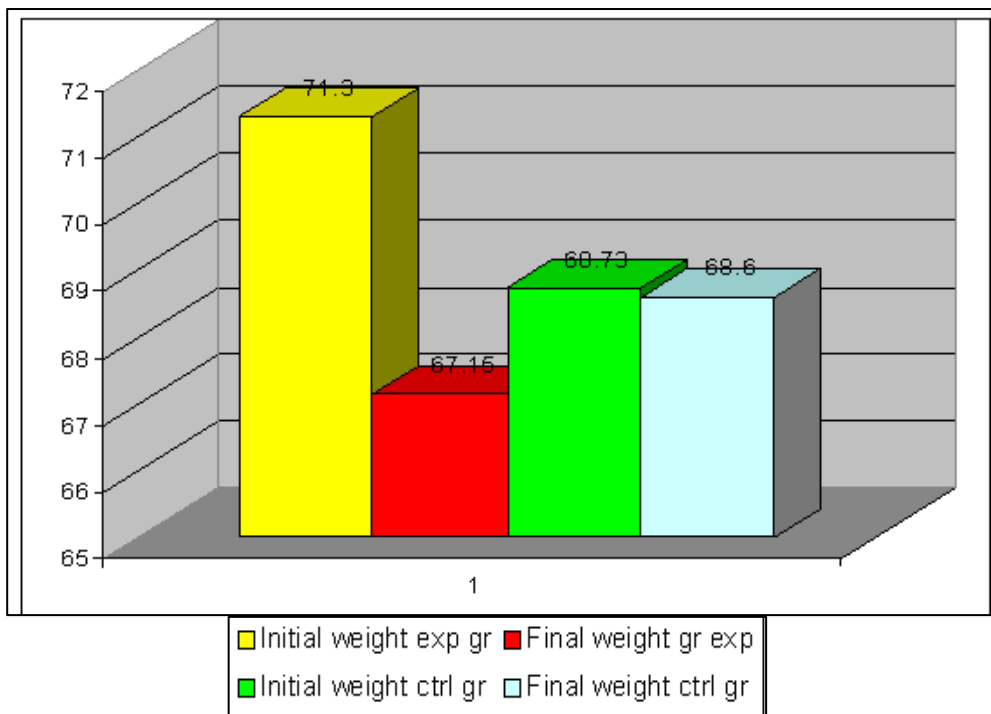
Parameters	Control group		The experimental group	
	initial weight	final weight	initial weight	final weight
<b>Arith. mean</b>	68.73	68.6	71.3	67.15
<b>Min.</b>	51	51	55	51.5
<b>Max.</b>	88	87	113	105
<b>Median</b>	65.75	65.75	68	64
<b>Std.deviation</b>	9.66	9.81	15.37	14.57



**Table no. 2.**

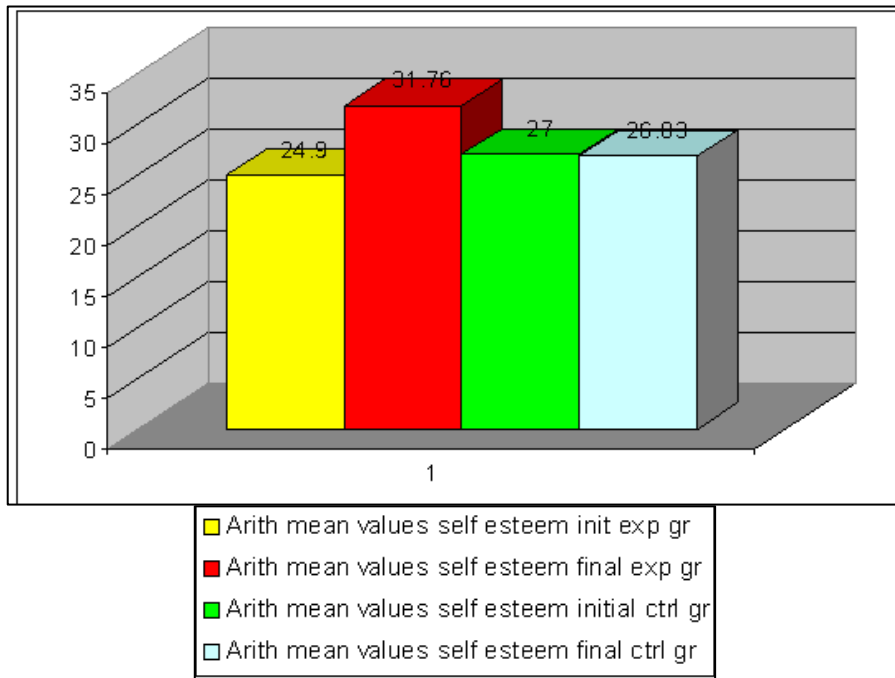
Values of self-esteem

Parameters	Control group		The experimental group	
	Initial self esteem	Final self esteem	Initial self esteem	Final self esteem
<b>arith. mean</b>	27	26.83	24.9	31.76
<b>Min.</b>	18	18	16	24
<b>Max.</b>	35	35	31	39
<b>Median</b>	27	27	25	32
<b>std.deviation</b>	4.28	4.35	3.82	3.53

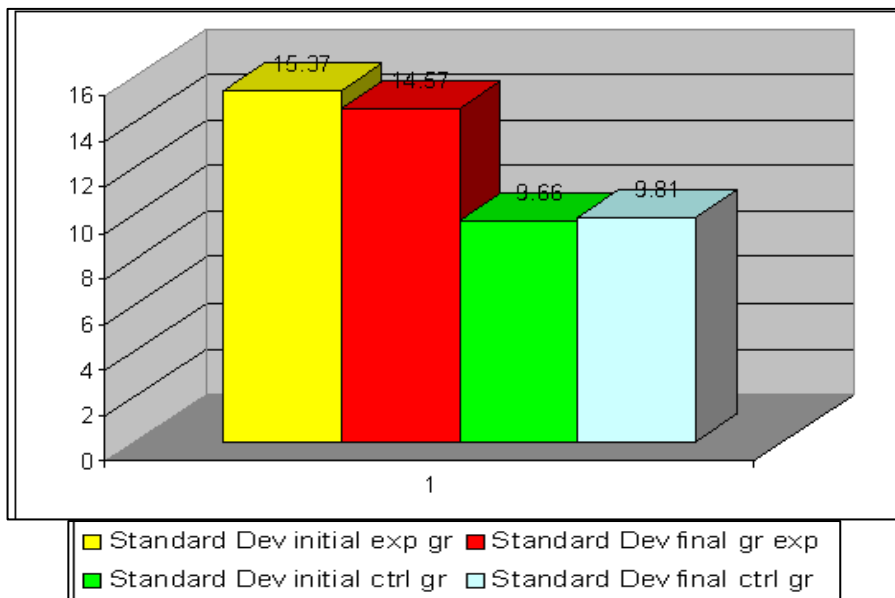


**Chart No. 1. Weight's arithmetic mean values**

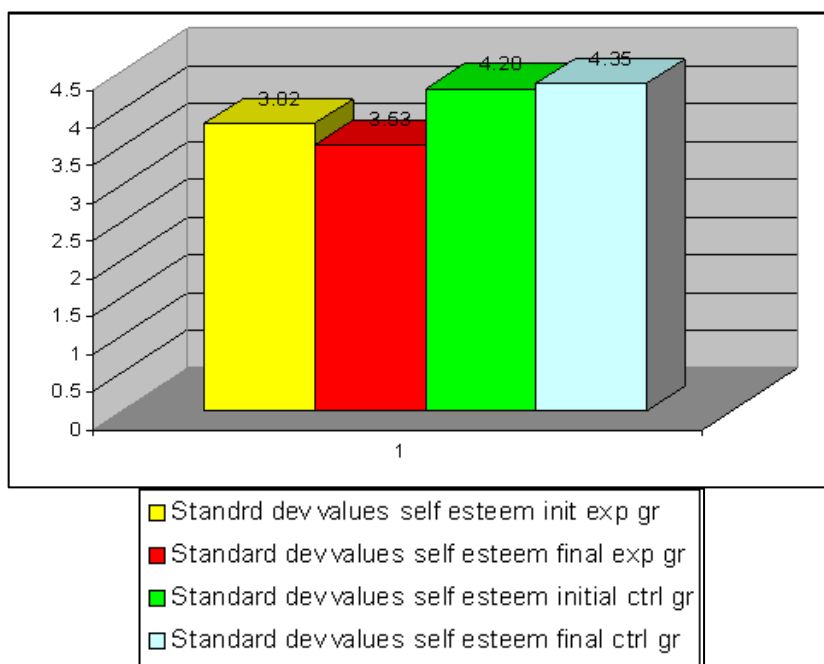
THE RELATIONSHIP BETWEEN EXERCICES AND SELF-ESTEEM



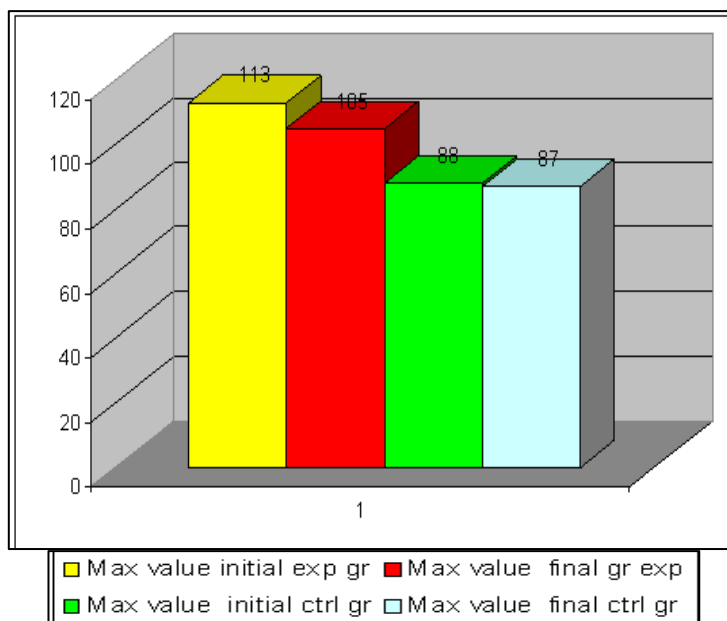
**Chart No. 2. Self-esteem's arithmetic mean values**



**Chart No. 3. Weight's standard deviation values**

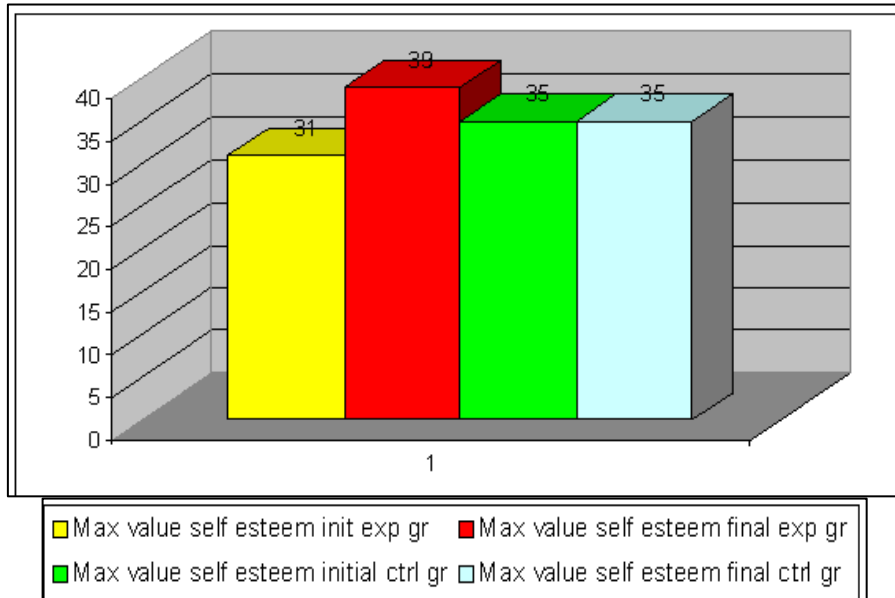


**Chart No. 4. Self-esteem's standard deviation values**

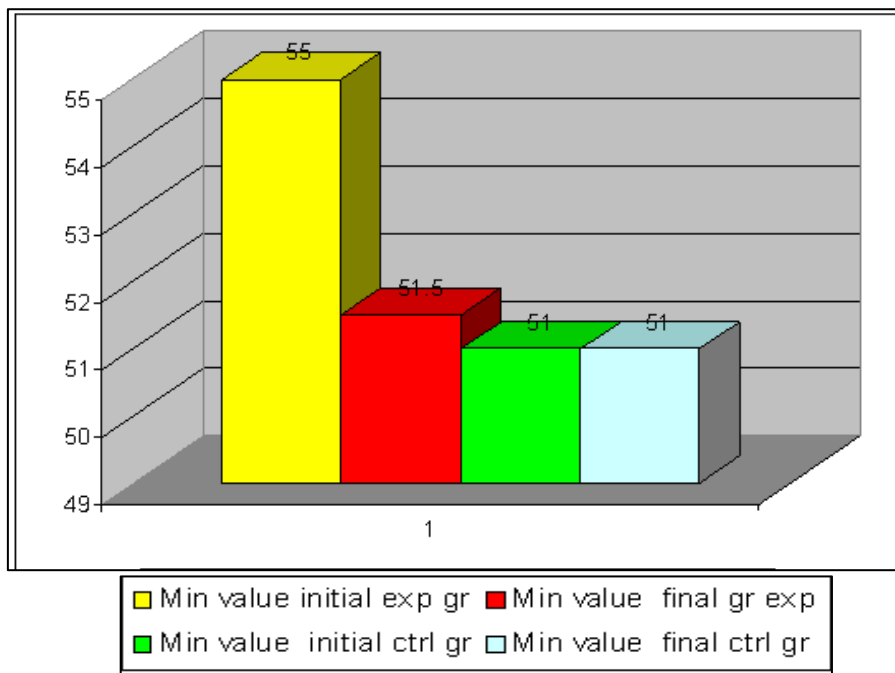


**Chart No. 5. Weight's maximum values**

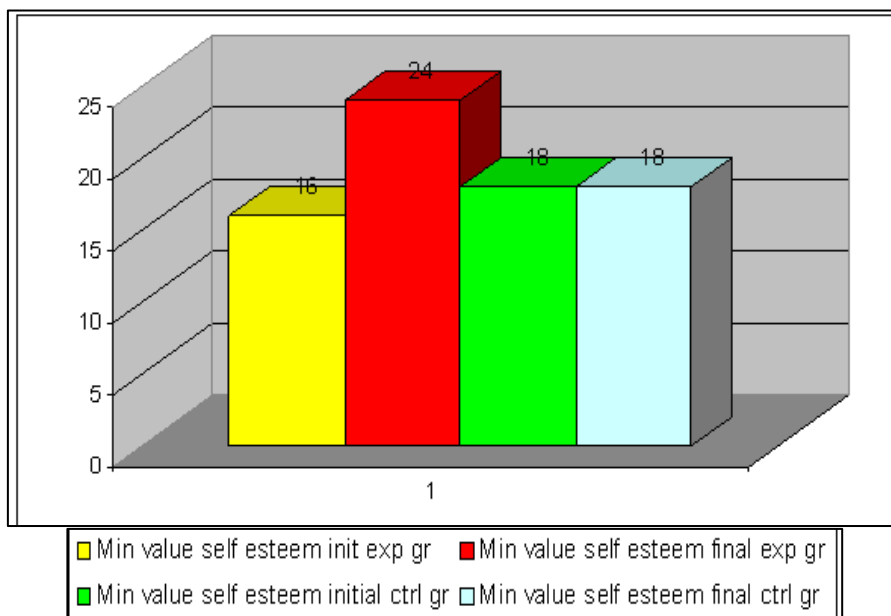
THE RELATIONSHIP BETWEEN EXERCICES AND SELF-ESTEEM



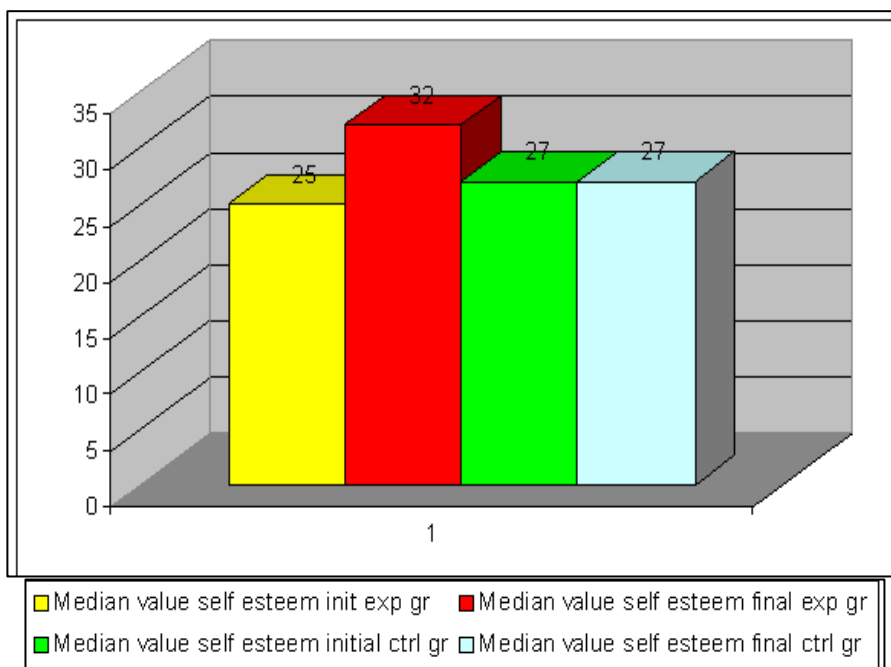
**Chart No. 6. Self-esteem's maximum values**



**Chart No. 7. Weight's minimum values**



**Chart No. 8. Self-esteem's minimum values**



**Chart No. 9. Self-esteem's median**

**Discussions**

Table no. 1 and chart no.1 presents weight’s arithmetic mean. In the experimental group it decreased from 71.3 to 67.15, or 4 kg, while for the control group the decrease is insignificant, 130 grams.

Table no. 2 and chart no. 2 presents the self-esteem’s arithmetic mean. In the experimental group it increased from 24.9 to 31.76, meaning 6.86 points, while for the control group, the self-esteem decreases from 27 to 26.83, i.e. -0.17 points.

Table no. 1 and chart no. 3 shows the evolution of weight’s standard deviation. In the experimental group it decreased from 15.37 to 14.57, i.e. 0.80 kg, from which we deduce an increase in homogeneity of the experimental group during the period under review, compared to the control group where the standard deviation increases from 9.66 to 9.81 (0.15 points), which means that group homogeneity decreases from initial testing to final testing.

Table 2 and chart no. 4 shows the evolution of self-esteem’s standard deviation. In the experimental group it decreased from 3.82 to 3.53, i.e. by 0.29 points, from which we deduce the experimental group’s homogeneity increased in the analyzed period, comparing with control group’s standard deviation, that increases from 4.28 to 4.35 (0.07 points) which means that group’s homogeneity decreases from initial testing to final testing.

**Statistically significant results for self-esteem**

To see if there are significant differences between the studied groups, for the normal distribution data we used the t Test (Student). For the uneven distribution values, or ranks, we used the nonparametric test Mann-Whitney (U), for two unpaired samples, or the Wilcoxon test for two paired samples, values that can be found in Table No. 3

**Table 3.**

Values of statistical significance for self-esteem

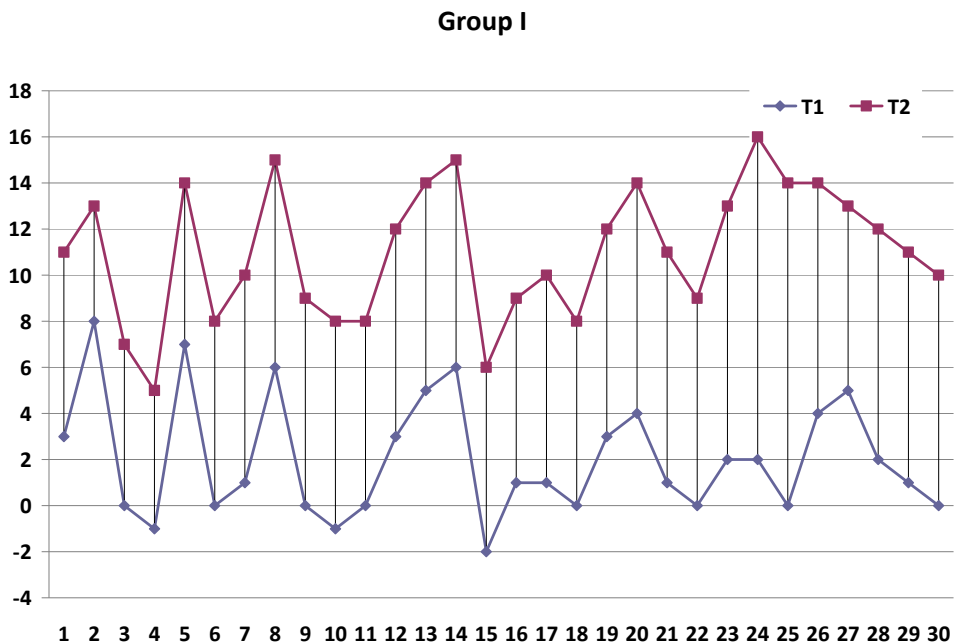
Group	<i>Statistical Significance (p)</i>		
	Unpaired Samples		Paired Samples
	T <sub>1</sub>	T <sub>2</sub>	(T <sub>1</sub> - T <sub>2</sub> )
I	I-II: 0,5981	I-II: < 0,0001	<0.001
II	-		< 0,0001

For the statistical analysis of self-esteem questionnaire scores, when comparing the two groups, there were no statistically significant differences observed between them, at the time T1 ( $p = 0.5981$ ). Statistically significant strong differences were observed between the two groups at T2 time ( $p < 0.0001$ ).

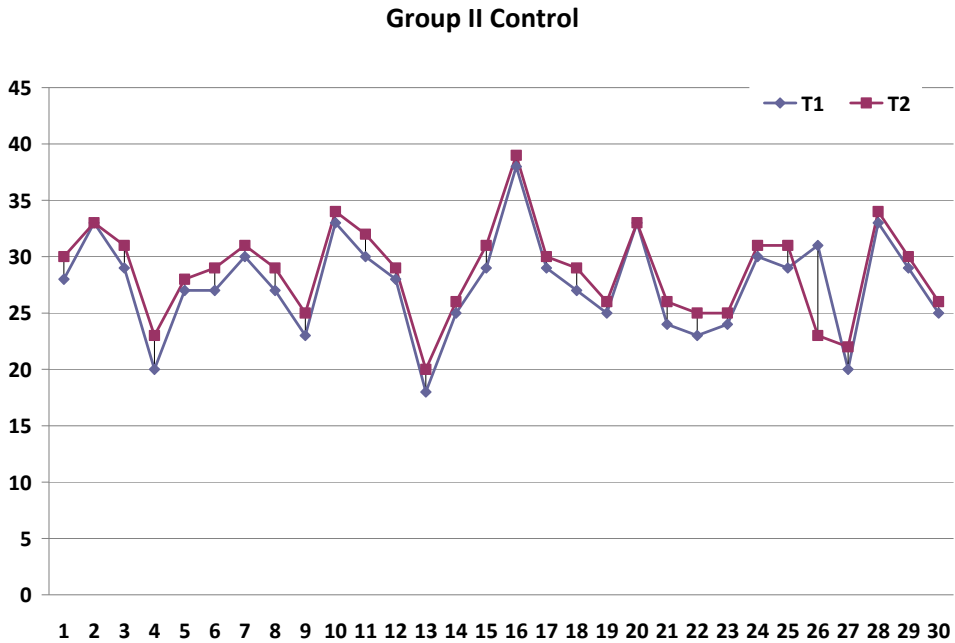
For the statistical analysis of the scores on the questionnaire applied to paired samples (times T1-T2), we observed highly statistically significant differences for the two groups ( $p < 0.001$ ).

In the statistical analysis applied to the questionnaire scores, at the unpaired samples, there were statistically significant differences observed between any of the groups, at the time T1 ( $p > 0.05$ ). At the time T2 highly statistically significant differences were observed between the groups I-II ( $p < 0.001$ ).

The evolution of the results can be seen in graphs 10 and 11.



**Graph 10. Individual variations of self-esteem questionnaire scores for the experimental group**



**Graph 11. Individual variations of self-esteem questionnaire scores for the control group**

## Conclusions

After SPSS statistical analysis of the results obtained for the two groups (experimental and control) and their interpretation we arrived to the following conclusions:

- The experimental group made significant progress both in terms of weight and self-esteem parameters;
- Students who participated in aerobics classes lost weight, improving their body image and self-esteem;
- We can say that the body styling programs applied to the experiment group were effective, reaching the goal;
- There are visible positive effects obtained by the experimental group, confirming research's hypothesis that exercise affects obesity and self-esteem.



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## EXPERIMENTAL STUDY ON EFFICIENCY PROGRAM DEVELOPMENT ON EMOTIONAL INTELLIGENCE TO IMPROVE PERFORMANCE SPORTS JUNIOR GYMNASTS IV LEVEL 1

RAMONA ANCUȚA NUȚ<sup>1,\*</sup>, EMILIA FLORINA GROSU<sup>1</sup>

**ABSTRACT.** Research they wish to undertake tooth emerges a practical necessity on finding answers to some of the cause's failure of athletes in competitions. I stopped on this subject because of the experience I had as artistic gymnastics athlete, noting difficulties in competitions during the exercises because emotions even if physical and technical preparation were high. I believe that in addition to physical and technical preparation of athletes and coaches theoretical knowledge necessary knowledge and managing emotions, feelings and rational thought to improve athletic performance. In conducting the research we proposed a strategy to drive growth by developing emotional intelligence sports performance, identifying and valuing emotional and social skills training and competitions and evaluating the effectiveness of this strategy. This study has a two-factor design with two variables: independent (initial testing partial and final training program) and dependent (performance). In the experiment of 3 gymnasts participated artistic gymnastics clubs in Romania, aged between 6 and 10 years. To test the preparedness of gymnasts using a grid of observation for monitoring difficulty and fulfilled the requirements for implementing the 4 devices, noted in training and competitions.

**Keywords:** emotional intelligence, performance sports, artistic gymnastics

**REZUMAT.** *Studiu privind eficiența programului experimental de dezvoltare a inteligenței emoționale asupra îmbunătățirii performanței sportive la gimnastele junioare IV - nivel 1.* Cercetarea pe care doresc să o efectuez se conturează dint-o necesitate practică privind găsirea unor răspunsuri la unele din cauzele care determină eșecul sportivilor de performanță în competiții. M-am oprit asupra acestei teme datorită experienței pe care am avut-o ca și sportivă de performanță în gimnastica artistică, observând dificultățile care apăreau în timpul desfășurării exercițiilor în competiții din cauza emoțiilor chiar dacă pregătirea fizică și tehnică erau la un nivel ridicat. Consider că pe

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lângă pregătirea fizică și tehnică a sportivilor și cunoștințele teoretice ale antrenorilor este necesară cunoașterea și gestionarea emoțiilor, sentimentelor și gândirii raționale pentru a îmbunătăți performanțele sportive. În realizarea cercetării ne-am propus elaborarea unei strategii de acțiune în vederea creșterii performanței sportive prin dezvoltarea inteligenței emoționale, identificarea și valorificarea competențelor emoționale și sociale în antrenament și competiții și evaluarea eficienței acestei strategii. Acest studiu are un design bifactorial cu 2 variabile: independentă (testarea inițială, parțială, finală și programul de pregătire) și dependentă (performanță). La realizarea experimentului au participat gimnaste de la 3 cluburi sportive de gimnastică artistică din România, cu vârste cuprinse între 6 și 10 ani. Pentru testarea nivelului de pregătire a gimnastelor s-a folosit o grilă de observație pentru monitorizarea îndeplinirii cerințelor de dificultate și a cerințelor de execuție la cele 4 aparate, notate în antrenament și competiții.

**Cuvinte cheie:** inteligență emoțională, performanță sportivă, gimnastică artistică

## **The purpose and importance of research**

Because complex artistic gymnastics is a discipline in which the athlete is required at a high level both physically and mentally and changes in the last period in the Code of Points (requirements are very high and difficult to achieve physical), sees a need in their training approach and emotionally.

As general purpose in conducting the research we proposed a strategy to drive growth by developing emotional intelligence sports performance, identifying and valuing emotional and social skills training and competitions and evaluating the effectiveness of this strategy.

## **Objectives and tasks of research**

This study aims to highlight the extent to which various programs of technical and psychological influence the performance of gymnasts.

## **Research hypotheses**

In professional sports besides their technical, physical and tactical play an important role in achieving performance plays psychological preparation. For this reason emotional intelligence can help the athletic performance through its development through various means.

In developing this research hypothesis we started the next general premise:

We assume that the application of emotional intelligence development strategies to prepare gymnasts, improve sports performance in 4 apparatus in the competition.

### **Variables and experimental design**

This study has a two-factor design with two variables.

#### *The independent variable*

Factor 1 - initial testing T1 (pretest) → T2 → testing means testing the final T3 (posttest)

Factor 2 - program: - standard program;  
- complex technical training program;  
- technical training program complex + program emotional development;

*The dependent variable* - Performance: - degree of difficulty;  
- runtime errors;  
- on each device;  
- conditions for training and competition.

### **Subjects**

In the experiment of 3 gymnasts participated artistic gymnastics clubs in the country, namely: CSS Viitorul Cluj-Napoca, CSM Cluj-Napoca and CSS CSM Sibiu. Gymnasts were divided into 3 groups: 19 gymnasts in the experimental group (CSSV Cluj-Napoca), 19 in control group 1 (CSM Cluj-Napoca) and 20 in control group 2 (CSS Sibiu). Subjects were aged between 6 and 10 years.

### **Materials**

To test the preparedness of gymnasts using a grid of observation for monitoring difficulty and fulfilled the requirements for implementing the 4 devices, noted in training and competitions. The grid contains the point value of the exercise of technical and value in terms of execution. (Classification schedule FRG, 2001; Code points of the International Federation of Gymnastics, 2011).

### **Procedure**

The study was conducted in the period December 2012 - June 2013, three tests were performed: initial testing period December, 2012, partial testing period April, 2013 and final test on June 2013. This test was applied to

check the level of technical and artistic training both in the last practice before the competition and compete and applied on the 3 lots of gymnasts.

Gymnasts were noted by coaches during a workout, a week before the competition and during the competition scoring was done by a qualified arbitration, with arbitration records.

To achieve our research was necessary to study the internal competition calendar Romanian Gymnastics Federation. Following consultation we determined its main competitions attended by gymnasts involved in the experiment conducted. To enable participation in competitions and gymnasts aged 6 and 8 years old too small for competition program organized by the FRG, was performed in parallel with these competitions, contests Friendly fulfilling all the conditions of a major competition (spectators, referees, organized atmosphere specific race).

Testing the level of technical and artistic training was conducted taking into account the classification of the FRG program and the FIG Code of Points. Arbitration in artistic gymnastics consists of two committees: the jury and the jury B. A jury has rated the difficulty of assessing the value of elements and groups of elements requirements jury B seeks and evaluates mistakes and penalties exercises general and specific performance and composition appropriate artistic mistakes.

During the experimental study was introduced to prepare the gymnasts two training programs: an improved technical training program which applied both experimental group and control group 1:01 psychological training program for developing emotional intelligence, which applied only experimental group. Gymnasts' control groups 2 were conducted preparatory work under the standard model with traditional means, not interfering with their preparation in any form. Control group 2 athletes have benefited in the training, psychological preparation.

### **Develop the structure and content of the experimental model of psychological training - development of emotional intelligence**

Education Program rational emotive behavior involves three steps:

- Planning stage, which fixes the problematic areas of interest, plan lessons;
- Implementation phase, when activities are planned, it develops strategies for problems that may occur;
- Stage feedback when evaluating previous activities and changes are future actions.

Develop program became the model author Ann Vernon (Vernon, 2006), who developed two programs: thoughts, emotions and behaviors, translated to us in the name of development and emotional intelligence Passport Program. Our program was guided by the author's first program, development of emotional intelligence, and covers the following topics (Vernon, 2004):

- self-acceptance: self observation and awareness of feelings as they occur, to have presence of mind, to have the power to hold things you think but not accepted rest of the world
- emotions: emotions involved awareness and adaptation to the situation of the moment, awareness of the cause that generated a sense and finding ways to control emotions (fear, sadness, anger, anxiety) can make the connection between what you think, say and do;
- beliefs and behaviors: guidance by values and personal goals, you support certain principles you believe in, even if they are not embraced by the rest of the majority, act ethically and flawless, to recognize the causes and effects of behaviors
- problem solving and decision making;
- Interpersonal relationships.

For self-acceptance has been working on self observation and awareness of feelings as they arise. Controlling emotions involved adapting to the situation of the moment, awareness cause that generated a sense and finding ways to control emotions (fear, sadness, anger, anxiety). Motivation to work on the car, here's emotions were channeled to an end. He was concerned sensitivity to the feelings and problems of others and the ability to look from their point of view, understanding that people can things differently than I felt. Interpersonal relations aimed to control the emotions of other people, competence and social skills. The program takes into account the level of development of the gymnasts and the specific problems that may occur at this level (Vernon, 1983).

Program duration was 3 months, with a session of one hour per week. The program was held in the gym at the end of training and was conducted by a qualified person is licensed psychologist, assisted by graduate students from the Faculty of Psychology of the University of Babes-Bolyai University, Cluj-Napoca.

### **Develop the structure and content of the experimental model of technical and artistic**

Current artistic gymnastics is characterized by great dynamism, amplitude and execution risk, requiring a higher level of precision and expressiveness in terms of execution of technical elements. Change continues to

special requirements contained in the code of points and permanently change the value of the various elements leads to the requirement of permanent adaptation of the training process, where these adaptations need to be very fast, in order to obtain the best results in competitions (Popa, 2011).

Improved technical training program was conducted during a calendar year competition and contains a wide variety and range of means to augment technical and artistic content to be consistent with the highest standards of composition exercises the 4 devices.

Content technical and artistic training program includes:

1. Exercises for developing technical training of all elements of the programs FRG classification at the 4 devices contest (vault, parallel beam ground). They aim to:

- Learning, strengthening and improving the technical elements;
- Training the skills they require technique and proper execution of the movement;

- Developing and improving motor skills and psychomotor.

2. Exercises to improve artistic training resolves the following issues:

- Specific training attire, correct;
- Development of general bases of the movement;
- Learning, strengthening and improving the artistic elements;
- Educating rhythm and musicality.

At the basis of technical and artistic pattern formed:

- ✓ technical requirements of Schedule FRG classification at the 4 units;
- ✓ execution requirements, the mistakes, according to the FIG Code of Points ;
- ✓ analysis gymnasts preparing planning documents on the 3 clubs;
- ✓ data obtained from the study of literature .

The technical training and artistic gymnasts was designed for each stage of preparation (preparatory, pre-competitive and competitive) with a well defined structure and content. Shares driving the training means were set in such a way as to contribute to objectives.

## **Results and Discussion**

Analysis of program results took into account the three conditions of the program (standard program PS, improved technical program PT, technical program improved psychological preparation PTP) and 2 cases of measurement of the dependent variable: conditions for training and competition conditions.

The dependent variable was performance measured as mark in each unit and made note. Each dependent variable was measured at the beginning, middle and end of the program.

### Results

In the table below are past averages and standard deviations for all variables considered in the study, measured 3 times for each of the three training programs, conditions for training and competition.

**Table 1.**

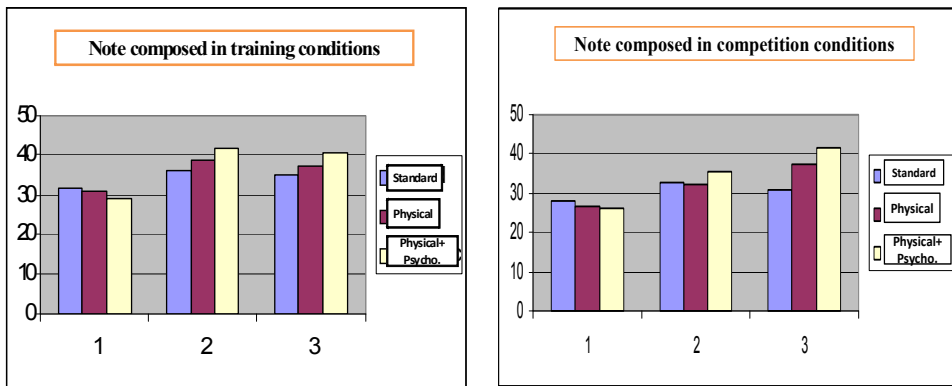
#### Results of ANOVA

	<i>Program S</i>			<i>Program PT</i>			<i>Program PTP</i>		
	Initially	Partially	Final	Initially	Partially	Final	Initially	Partially	Final
<b>TRAIN</b>									
Total	31.73 (11.36)	30.79 (10.85)	29.85 (9.93)	36.03 (9.05)	38.57 (7.87)	41.39 (7.59)	34.88 (6.74)	37.17 (6.57)	40.43 (6.19)
Vault	7.99 (3.22)	8.19 (3.22)	7.89 (2.79)	9.40 (2.66)	9.80 (2.55)	10.26 (2.44)	8.65 (2.46)	8.87 (2.24)	9.67 (2.13)
Unevers bars	7.90 (2.98)	7.72 (2.95)	7.39 (2.77)	8.81 (2.05)	9.41 (2.07)	9.98 (1.94)	8.57 (1.67)	9.24 (1.52)	9.75 (1.44)
Balance beam	7.51 (2.83)	6.70 (2.68)	6.75 (2.28)	8.83 (2.48)	9.44 (1.80)	10.44 (1.63)	8.73 (1.60)	9.31 (1.44)	10.20 (1.48)
Floor	8.33 (2.66)	8.18 (2.48)	7.82 (2.60)	9.01 (2.10)	9.91 (1.87)	10.61 (1.84)	8.92 (1.52)	9.74 (1.61)	10.80 (1.48)
<b>COMP</b>									
Total	27.89 (10.64)	26.51 (10.56)	26.22 (9.80)	32.50 (9.09)	32.37 (8.74)	35.31 (8.63)	30.92 (6.19)	37.35 (6.28)	41.37 (5.53)
Vault	7.17 (3.04)	6.93 (3.63)	7.36 (3.17)	8.66 (2.69)	8.51 (3.17)	9.04 (2.32)	7.74 (2.27)	9.25 (2.07)	10.09 (1.93)
Unevers bars	6.87 (2.74)	6.88 (2.55)	6.25 (2.54)	8.15 (2.08)	8.08 (2.55)	8.52 (2.53)	7.84 (1.57)	9.25 (1.40)	9.85 (1.18)
Balance beam	6.02 (2.65)	5.34 (2.69)	5.79 (2.25)	6.77 (2.68)	6.87 (2.24)	8.95 (1.82)	6.71 (1.58)	9.02 (1.49)	10.30 (1.41)
Floor	7.83 (2.60)	7.36 (2.74)	6.81 (2.33)	8.91 (2.06)	8.90 (2.05)	8.78 (2.54)	8.62 (1.43)	9.82 (1.60)	11.12 (1.31)

The first groups were compared to the baseline before the start of the program to see if there are any significant differences between them. ANOVA showed no significant difference between the three groups for any of the variables. The fact that the three groups are based on a similar level of performance allows us to compare the groups without having to control the variables. Thus, comparing the performance of three test groups using ANOVA



for repeated measures computed separately in terms of training and competition conditions, with the independent variables and the type of training program factor (groups) and the three points of measurement of the dependent variable (time factor). Thus, the note made in terms of training, there is significant intra-group differences (F<sub>time</sub>), which shows that all athletes have evolved over time, regardless of the group they belong to. The differences are observed between the groups and an effect of the interaction, indicating that there are differences in performance depending on the program and the time course of preparation. Virtually all athletes evolve over time, but not the same, but different, depending on the group to which it belongs. The same results are found in conditions of competition. The results are presented graphically.



Note: 1 = initial T 2 = partial T 3 = T final

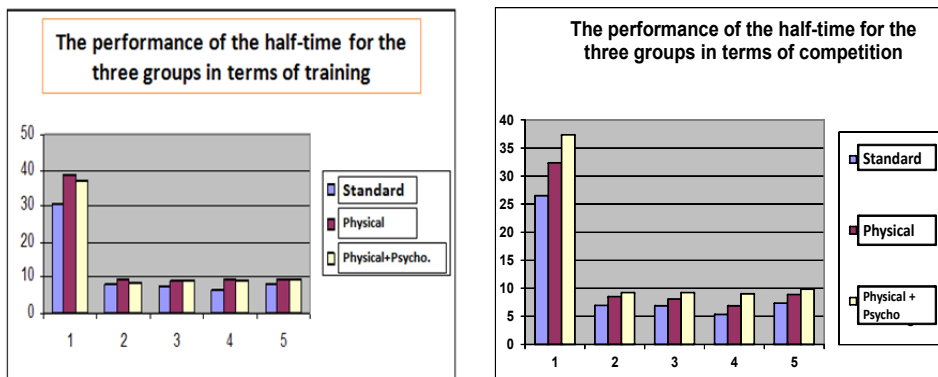
**Chart no. 1.** Note composed – training and competition

To better understand the differences between groups, we analyzed two groups in the active moments of the program (middle and end, initial measurement not involving differences between groups and there are no significant differences between groups, as we have already pointed out). The reason we chose to measure the dependent variables and half of what we considered to be the duration of a training program related to cost-effectiveness. Basically, the program with enhanced technical training involves a different way of doing training gymnasts (takes longer). But the program that involves both technical and psychological preparation is clearly a program involving higher implementation costs. Thus, if the effect of improving performance and faster I could appear in future development programs include a shorter program, but with the same effects and lower costs. Half-time was 6 weeks and end at 12 weeks.

Regarding the note made in terms of training, it appears that both groups have modified training program (PT and PTP) were significantly better compared to the control group (PS) with a large effect size. And performance is significantly better devices for PT and PTP groups except performance on vault, where results do not appear significantly different from those of the control group. The best performance is recorded on the balance beam, where we find a large effect size, while the parallel and soil have a medium effect size.

In terms of training, both the total score and on each machine, there are significant differences between the 2 groups with the modified program. At half-time, part psychological preparation for PTP group does not bring any benefit.

Under conditions of competition, however, the results look different. Compared with the control group (PS), physical training group improved significantly better performance has only beam apparatus ( $t(37) = 2.108$ ,  $p = .042$ ,  $d = 0.61$ ), remaining significant differences disappear training provided. But the group with physical training and psychological (PTP), the differences are significant for the group with both standard program composed note (with a large effect size) and on each machine (large effect size). In addition, competitive conditions and significant differences between PT and PTP group composed note (where we have a medium effect size), and the beam (with a large effect size in favor of PTP).



Note: 1 = initial T 2 = partial T 3 = T final

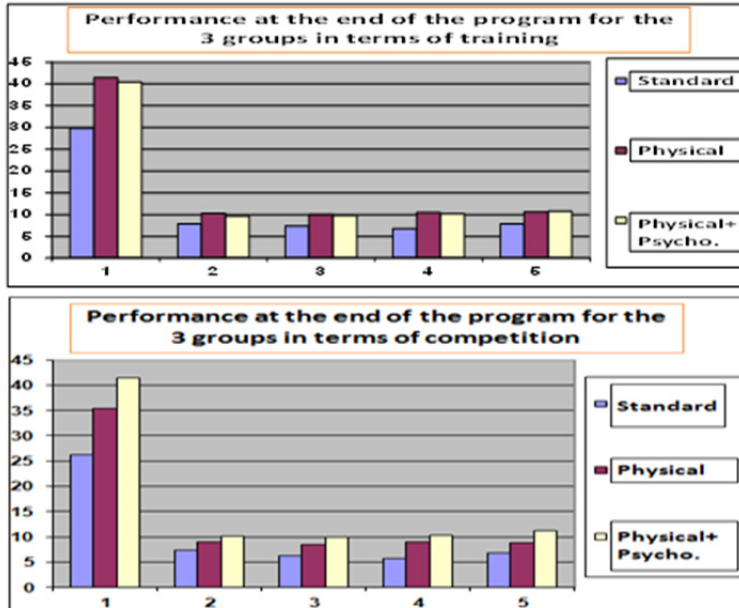
**Chart no. 2.** Performance at the middle of the program - training and competition

Summarizing the results of the mid program note that after 12 weeks of training under both PT group and PTP group (namely groups that have a training program changed from the usual) already have better performance in note composed and almost all devices except jumping machine. Here, technical

training program could be reviewed and improved to achieve significant outcomes to this unit. In terms of competition, by the middle of the program PTP group has a clear advantage both to the standard group and to the group with enhanced technical training.

In terms of training, at the end of the program we find significantly better groups with modified training (PT and PTP) both made note (large effect sizes) and for each machine to the standard training group. Between the two groups with modified training (PT and PTP) there are significant differences in terms of training or at the end of the program.

In terms of competition, PT group has significantly better results compared to the control group composed note and jumping all devices except where differences are not significant. PTP group, having the advantage of psychological preparation, has a significantly better performance compared to the control group to note that compound (large effect size) and every machine, and significantly better results compared to the PT group, note composed (large effect size) and all appliances except jumping. Thus, if the training conditions did not find significant differences between groups modified training program, competing group benefit from psychological preparation is clearly superior performance.



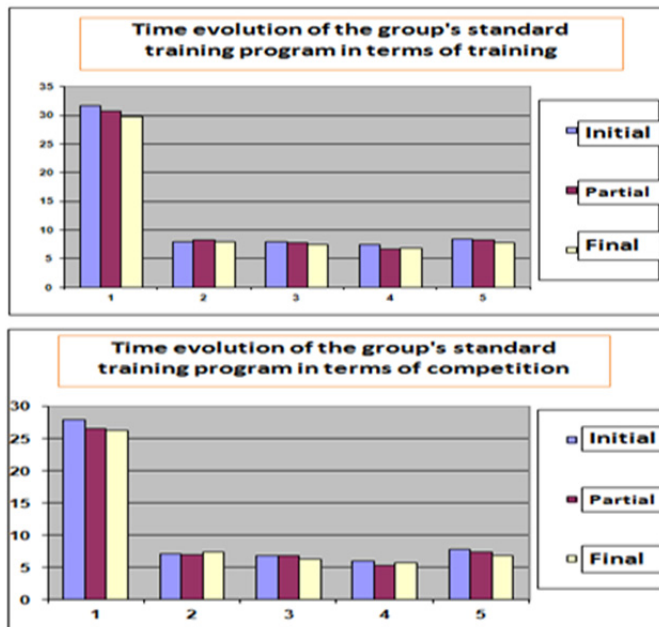
Note: 1 = initial T 2 = partial T 3 = T final

**Chart no. 3.** Performance at the end of the program – training and competition

If you sum up the results, we can say that if we follow the performance in terms of training, the additional benefit is made especially enhanced technical training component. However, this component reduces its effects in terms of competition, where the advantage is obvious psychological preparation.

Next we watched and the time evolution of each group to understand more deeply our results.

Chart 4 presents the group with standard training program, the training conditions and standard conditions.



Note: 1 = composed note 2 = vault 3 = unevers bars 4 = balance beam 5 = floor

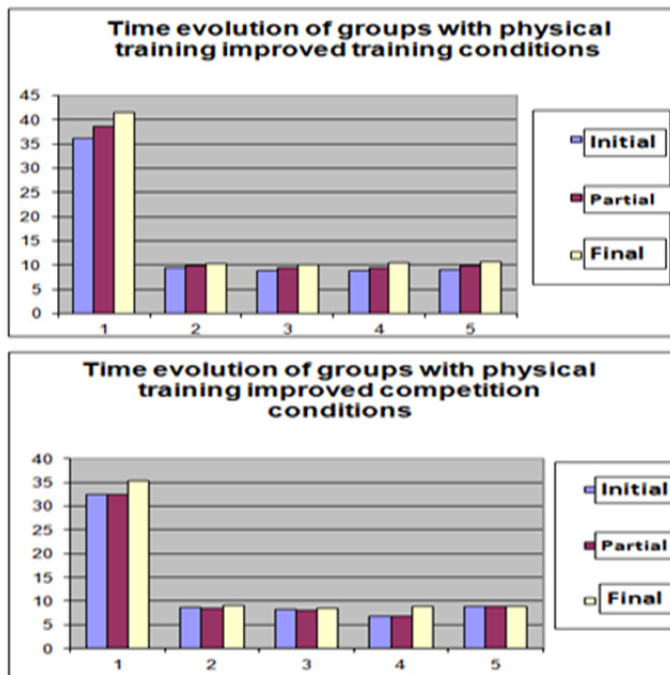
**Chart no. 4.** The evolution of the PS group –training and competition

The evolution of the control group at the standard preparation is an interesting one. See some significant over the program, but the effects are both in order to improve the performance and downward. Thus, the performance in terms of training significantly decreases composed note from beginning to end of the gymnasts watched. But one effect size is negligible. The decrease is significant and ground. Significant decrease in performance is observed and early to mid- grade program for the beam, but this device then see a performance from the middle to the end. Overall, this initial decrease followed by a recovery gives an insignificant difference from the start to the end of the program.

Under conditions of competition again find significant differences in performance downward (note composed parallel ground from beginning to end), but increases performance (beam, from the middle to the end).

Summarizing, we can say that the gymnasts in the control group receiving standard training program have a fluctuating time course characterized by decreases and increases athletic performance (these decreases and increases were generally small effect size or very small but).

Then, we analyzed the time evolution of the group with enhanced technical training program.



Note: 1 = composed note 2 = vault 3 = unevers bars 4 = balance beam 5 = floor

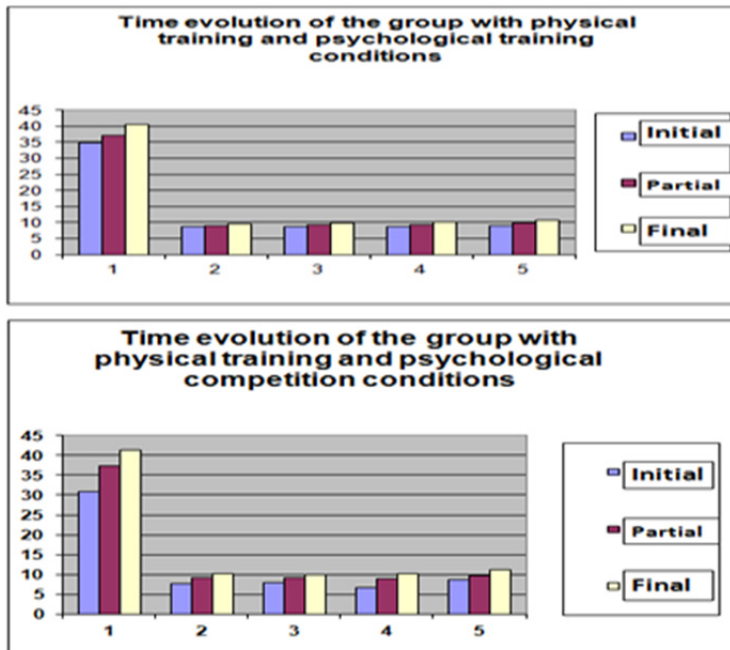
**Chart no. 5.** The evolution of the PT group – training and competition

If we follow the evolution of the technical training group improved in terms of training, we see significant performance increases throughout the program, all modes dependent variable. The best trend is observed for the device ground ( $d = 0.81$ , large size) and beam ( $d = 0.76$ , large size), and in parallel ( $d = 0.58$ , medium). Jumping occurs but smaller effect ( $d = 0.33$ ). To mark made on all devices, there is a medium to large effect size ( $d = 0.64$ ).

In terms of competition but the results look totally different. First we see a significant effect from the beginning to the middle of the treatment. So, six weeks of training techniques are insufficient to show results in competitive conditions. At the end results are seen, however, in comparison to early program note composed and beam effects that become apparent from the middle to the end of the program. The beam is again best performers, with a large effect size ( $d = 0.95$ ), while the overall performance on all devices is a small effect size ( $d = 0.31$ ).

Summarizing, we can say that the effects appear quickly improved technical preparation training conditions, but under significant competition occurs only after the middle of the program, and these effects are smaller than the training framework.

Finally, we analyzed the performance of the group with enhanced technical training program and psychological preparation.



Note: 1 = composed note 2 = vault 3 = unevers bars 4 = balance beam 5 = floor

**Chart no. 6.** The evolution of the PTP group – training and competition

Performance throughout the training program, both in terms of training and competition conditions is significant, showing all devices and note improvements made. Effects occur in the mid-program except apparatus

jumping training conditions, although under competition is a significant difference and jumping. Thus, we can say that this group has the fastest and most consistent evolution in time of the three groups. In terms of training, the group recorded an increase in performance at the end of the program to start, with large effect sizes (except jumping where size is average). Under conditions of competition, however, the effects are even more impressive, we find very large effect sizes for all grade appliances and composed most notable progress being again when the beam ( $d = 2.39$ ).

## Conclusions

As stated above, this paper aims to show how emotional intelligence can influence the performance of gymnasts in competitions.

Analysis of the survey results on the effectiveness of emotional intelligence development program on improving the performance of gymnasts was performed in three conditions of the program (standard program PS, PT improved technical program, technical program improved psychological preparation PTP) and 2 cases: conditions for training and competition. Groups were compared to the baseline before the start of the program to see if there are any significant differences between them. The results showed no significant differences among the three groups for any of the variables. The fact that the three groups are based on a similar performance level has allowed us to make comparisons between groups without having to control the variables. Thus, the note made in terms of training, there was significant intra-group differences, indicating that all athletes have fared over time, regardless of the group they belong to. Also observed differences between the groups and the interaction effect, indicating that differences in performance depending on the training program and trends. Virtually all athletes have evolved over time, but not the same, but different, depending on the group to which it belongs. I found the same results in terms of competition. In a separate analysis, the 4 apparatus, found the same structure of the results for each device, except to note jumping training conditions where there was no significant difference between groups, although there is a significant effect for time evolution and a significant interaction between time and type of training. The analysis in the 2 groups active points of the program (partly final, initial measurement not involving differences between groups and there are no significant differences between groups, as already pointed out) the results look like this.

As the note made in terms of training, it was observed that both groups have modified training program (PT and PTP) were significantly better compared to the control group (PS) with a large effect size. And performance is

significantly better devices for PT and PTP groups except performance on vault, where results do not appear significantly different from those of the control group. The best performance is recorded on the balance beam, where we find a large effect size, while the parallel and soil have a medium effect size.

In terms of training, both the total score and on each machine, there are significant differences between the 2 groups with the modified program. At half-time, part psychological preparation for PTP group does not bring any benefit. Under conditions of competition, however, the results look different. Compared with the control group (PS), group physical training has improved performance significantly better beam device only remaining significant differences vanish provided workout. But the group with physical training and psychological (PTP), the differences are significant for the group with both standard program composed note (with a large effect size) and on each machine (large effect size). In addition, competitive conditions and significant differences between PT and PTP group composed note (where we have a medium effect size), and the beam (with a large effect size in favor of PTP).

The results from the middle of the program note that after 12 weeks of training under both PT group and PTP group (ie groups that have a training program changed from the usual) already have better performance in note composed and almost all apparatus except vault apparatus. Here, technical training program could be reviewed and improved to achieve significant outcomes to this unit. In terms of competition, by the middle of the program PTP group has a clear advantage both to the standard group and to the group with technical training improved. In training conditions at the end of the program we find significantly better trained groups modified (PT and PTP) both made note (large effect sizes) and for each machine to the standard training group. Between the two groups with modified training (PT and PTP) no significant differences in terms of training or at the end of the program. In terms of competition, group PT is significantly better compared to the control group composed note and jumping all devices except where differences are not significant. PTP group, having the advantage of psychological preparation has significantly better performance than that of the control group composed note and every device, but significantly better results compared to the PT group, composed note and all appliances except jumping. Thus, if the training conditions were not found significant differences between groups with modified training program, competing group that benefited from psychological preparation had clearly superior performance. We can say that, following the performance in terms of training, the added benefit was brought mainly by improved technical training component. But this component has reduced the effects in terms of competition, where the advantage is obvious psychological preparation.



Track and the time evolution of each group. Some significant effect was observed over the program, but the effects were both in order to improve the performance and downward. Thus, the performance in terms of training in note composed decreased significantly from the beginning to the end of the period we watched gymnasts. But one effect size was negligible. The decrease is significant and ground. A significant decrease in performance was observed from the beginning to the middle of the beam note program, but this product was observed and then an increase in the performance in the middle at the end. Overall, this initial decrease followed by a recovery gives an insignificant difference from the start to the end of the program. Under conditions of competition again find significant differences in performance downward (note composed parallel ground from beginning to end), but increases performance (beam, from the middle to the end). We can say that the gymnasts in the control group who received standard training program had a fluctuating time course characterized by decreases and increases athletic performance (these decreases and increases were generally small effect size or very small but).

The analysis of the time evolution of the group with enhanced technical training program results showed that the group with enhanced technical training, training conditions had significant increases in performance throughout the program, all modes dependent variable. The best trend is observed for the device floor and beam, but also parallel. Jumping appeared but smaller effect. To mark made on all devices, there was a medium to large effect size. In terms of competition but showed very different results. First of all, there was no significant effect seen at the beginning of the middle of the treatment. So, six weeks of training techniques are insufficient to show results in competitive conditions. At the end results were seen, however, in comparison to early program note composed and beam effects that became evident from the middle to the end of the program. The beam was again best performers, with a large effect size, while the overall performance on all devices was a small effect size. We can say that the effects of improved technical training occurred faster in terms of training but competing under significant effects emerged only after the middle of the program, and these effects are smaller than the training framework.

We also investigated the performance of the group with enhanced technical training program and psychological preparation. Performance throughout the training program, both in terms of training and competition conditions was significant, which showed improvements in all units composed note. They appeared in the middle of the program, except for jumping on an exercise machine; although in terms of competition is a significant difference and jump. Thus, we can say that this group had the most rapid and consistent time evolution of the 3 groups. In terms of training, this group has increased the

performance at the end of the program to start, with large effect sizes (except jumping where size is average). Under conditions of competition, however, the effects were even more impressive, they found large effect sizes for all grade appliances and composed most notable progress being again when the beam. Analyzing all our results, we can say that we have an important effect both component technical training and psychological training component. Effects seen improved technical training to the control group in better performance in terms of training, but also perform better in terms of competing for overall performance even if the size of this effect is a small one. Even if there are small differences between the two groups, they are significant in terms of competition; this small effect can make the difference between a podium and one outside. The effects of psychological preparation of the component can be seen particularly in the superior performance of the group which received this component to the group that received the improved technical background component. While training conditions no significant differences were observed between the two groups in terms of the differences are significant competitive effect sizes of the large and very large. This is actually the entire stake preparation, performance in competition.

The most notable of the time evolution of group analysis with psychological training is that the effects on performance are, in most cases, smaller than the first part of the program in the second part. This supports the need for psychological preparation for 12 weeks to get these effects. Partial results (after 6 weeks) show us that we can achieve significant increases in performance after six weeks. Therefore, in the context of preparation for imminent competition under low cost, might develop a psychological training program just 6 weeks, less effective than 12, but still provides an increase in performance especially under competition.

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## THE MENTAL SKILLS TRAINING IN COMBAT SPORTS

BOGDAN MÎNJINĂ<sup>1</sup>

**ABSTRACT.** The importance of psychological factors for athletic performance is obvious from the common sense point of view. It was been scientifically proved too. The competition involves an intensely stressful mental state at athletes level that decrease sport performance if it's not properly managed. Combat sports matches involve a very high stress because the injury is not only a risk with a high probability, but can even be a vehicle against adversary to achieve the victory. Mental skills training is the training method for the competitive states management, whose effectiveness is supported by research findings including in combat sports. The present study aims to provide a concise, clear and comprehensive overview on it and related issues, trying to capture specific elements related to combat sports.

**Keywords:** mental skills, mental skills training, combat sports

**REZUMAT.** *Optimizarea factorilor psihologici prin intermediul antrenamentului deprinderilor mentale în sporturile de luptă.* Importanța factorului psihologic pentru performanța sportivă este evidentă din punctul de vedere al simțului comun. Aceasta a fost demonstrată și în mod științific. Competiția presupune o stare psihică intens stresantă la nivelul sportivilor care afectează performanța sportivă dacă nu este gestionată corespunzător. Meciurile din sporturile de luptă implică un stres deosebit datorită faptului că rănirea nu este doar un risc cu o probabilitate crescută, ci poate fi chiar un mijloc folosit împotriva adversarului pentru obținerea victoriei. Antrenamentul deprinderilor mentale este instrumentul pentru gestiunea stărilor psihologice competiționale, a cărui eficiență este susținută prin rezultate ale cercetării inclusiv în domeniul sporturilor de luptă. Studiul prezent își propune să ofere o imagine de ansamblu concisă, clară și cuprinzătoare asupra acestuia și aspectelor conexe, încercând să surprindă elementele specifice sporturilor de luptă.

**Cuvinte cheie:** deprinderi mentale, antrenamentul deprinderilor mentale, sporturi de luptă

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## **Introduction**

Competition is 10% physical and 90% mental. This idea can be found in various forms in many sports, including the combat ones. Percentages cannot be estimated precisely, but obviously psychological factors are important for the success in competition, especially in the case of elite athletes who are similar in terms of competitive experience, physical, technical and tactical level. The sport psychology contribution to improve the athletes performance is based on two fundamental principles: the mind can control the body and the mind must be controlled or trained in order not to have an adverse effect on the body (Locke, 2008).

Systematic mental training is used for athletes at all performance levels and especially for top athletes, who participate in the Olympics or professional. Top athletes who exhibit higher levels of psychological attributes relevant to the sports performance usually tend to use mental strategies in practice and competitions (Ryska, 1998).

If athletes are interested in obtaining the best sportive results, they should not assume that competition success is a result of an isolated factors combination that come together mysterious in competition day. Psychological training aims to support the full exploitation of the sport potential (physical, technical, tactical). Therefore, athletes should include mental skills training in the workout schedule. It not only helps achieving sports results, but form life skills that support everyday life problems solving.

## **Mental toughness**

The final result of mental skills training is mental toughness, which is based on specific mental skills that must be formed, maintained and improved. Mental toughness, one of the most widely used terms in everyday sporting discourse, is widely regarded in empirical studies conducted as the key to sporting success (Moran, 2012). Gould et al. (1987) conducted a study in which 82% of coaches rated mental toughness as the most important psychological characteristic in determining success in wrestlers.

About mental toughness there are a number of misconceptions encountered at the level of the people involved in sport life, such as: you must dislike opponent, you must compete as a machine, you must not express emotions, you must not be nervous, you should be born mentally tough. Actually, "mentally strong athletes are persons mentally disciplined who respond to pressures in ways that allow them to continue to be relaxed, calm and energized because they have the ability to increase the flow of positive

energy in crisis and hostility situations, also having the right attitude about problems, pressures, errors and competition” (Loehr, 1986). The attributes used in the measurement of mental toughness through Psychological Performance Inventory by Loehr (1986), actually mental skills, are the following: self-confidence, negative energy control, attention control, visualization and mental imagery control, motivation, positive energy and attitude control.

Middleton et al. (2004) define mental toughness as “an unshakeable perseverance and conviction towards some goal despite pressure or adversity”. Attaining mental toughness requires the presence of some or all of the twelve mental toughness components, divided into two categories:

- factors that orient an individual to be mentally tough: self-efficacy (“the athlete’s judgment or belief in his or her own ability to succeed in reaching a specific goal”), mental self-concept (“viewing one’s self as being mentally strong in relation to dealing with adversity”), potential (“believing that you have the inherent ability or capacity for growth, development or coming into being”), task familiarity (“having a good understanding and being well acquainted with the task or adversity”), personal bests (“an internal motivation or drive to pursue personal best performances”), task value (“the quality of importance or the significance the successful completion of the task holds for the individual”), goal commitment (“the act of binding oneself intellectually and emotionally to a goal or a course of action”).

- the actions of mental toughness: task specific attention (“the unshakeable concentration of mental processes on a task whilst excluding other distractions from concentration”), perseverance (“persisting in or remaining constant to a purpose, idea, or task in the face of obstacles, discouragement or adversity”), positivity (“the process of being positive and remaining positive in the face of adversity or challenge”), stress minimization (“the process of reducing ones emotional reaction to adversity”), and positive comparisons (“sensing that you’re coping better with adversity and thus have a psychological and competitive advantage over your opponent”) (idem).

Jones et al. (2007) developed a conceptual framework of mental toughness which has high practical value because it can help to explain how and under what conditions these can be formed, maintained and optimized. It includes the following dimensions and components: attitude/mindset (belief, focus), training (using long term goals as a source of motivation, controlling the environment, pushing yourself to the limit), competition (belief, staying focused, awareness and control of thoughts and feelings, controlling the environment), post-competition (handling failure or succes). According to the same authors, the division of mental toughness into specific dimensions and further into

components allow the profiles creation within which the perceived individual strengths and weaknesses of the athlete can be identified.

In a study conducted by Connaughton et al. (2010) are identified the following factors that influence the mental toughness development and maintenance: skill mastery, competitiveness, successes, international competitive experience, education and advice, the use of psychological skills, access to an understanding social support network, and reflective practice.

Some people have an innate predisposition to have a greater mental toughness. In the absence of such a predisposition, it can be formed and developed through exposure to the environment or mental skills training influences (Weinberg, 2013). Even innate predisposition can be developed through exposure to these influences. Weinberg (2013) argues that mental toughness training by means of exposure to environmental influences is often the result of the coach activity. Among the influence factors from environment previous author list: a tough practice environment (e.g., intense competition training, harsh physical training), a positive mental environment (e.g., an atmosphere that supports confidence/positive, the existence of high expectations) and opportunities for awareness/learning (e.g., observing other people mentally tough). Also, mental skills training have an important role in the mental toughness formation, maintenance and optimization. The mental skills training programs could be implemented to counteract any identified weaknesses and to further enhance any strengths in the appropriate dimensions of the mental toughness (Jones et al., 2007). Elite athletes reported the successful use of mental skills training to support the development and maintaining of mental toughness (Weinberg, 2013).

When implementing strategies for developing mental toughness, both the knowledge of environmental influences and those relating to mental skills training can be combined to achieve efficiency (idem).

### **Competition optimum state**

Specialized research identified an ideal mental state for competing typically associated with peak performance. This is an optimal or heightened consciousness state, within modified consciousness states, that was captured through a series of relatively similar concepts in sport psychology: zone, flow state, ideal performance state and peak experience.

Loehr (1986) identified 12 categories that reflect the ideal mental state for peak performance: physically relaxed, mentally calm, low anxiety, energy, optimism, enjoyment, effortless, automatic, alert, mental focus, self-confident and in control.

Csikszentmihalyi (1990) proposed the concept of flow, considered by many specialists as representing the optimal mental state for sport performance. It is defined as a psychological state in which people are so involved in an activity so that nothing else seems to matter for them. The usage of the term zone, frequently used in sporting discourse related to exceptional performances, is related to Hanin's theory of the zone of optimal functioning, which state that, for each athlete, performance would reach an optimal state when anxiety levels remained within a specific zone (Locke, 2008).

In addition to psychological state necessary to obtain peak performance, the athlete must have an appropriate physiological state, which is directly associated with optimal psychological state. Arousal refers to the physical level of activation of the person and the intensity of his behavior, frequently confused with anxiety which has physiological manifestations of increased arousal (Balague, 2005). The inverted U hypothesis states that there is an optimal level of arousal for sports performance and if arousal level is higher or lower compared to that, sport performance will be reduced. Optimal arousal level for achieving athletic performance is specific to each individual, depending on his personality and stress coping style.

Mastering basic skills of the sport and physical preparation are prerequisites for developing optimal state for competition. Also, this state is facilitated by mental habits such as avoiding negative thinking, good emotional control, relaxation, suitable arousal levels, goal setting, mental imagery and positive self talk (Jackson et al., 2001). Jackson's (1995, as cited in Locke, 2008) study with elite athletes identified the factors that influenced (being motivated, achieving optimal arousal and being focused) and harmed (e.g., negative interactions with team mates and poor environmental conditions) the flow state. Therefore, one of the main goals of mental skills training is regularly getting the optimal mental state in the moment of sport competition.

### **Defining elements of mental skills training**

Mental skills are internal capabilities to effectively and consistently self-control the psychological factors that support the improving of individual performance. For their formation and training are used techniques, procedures and drills.

Four basic mental skills, more exactly mental skills techniques, are generally recognized in sports psychology: mental imagery, relaxation, positive self talk and goal setting (McDaniel et al., 2009). Several mental skills (and techniques) associated with peak athletic performance have been identified, such as holding competition routines and well designed plans, high levels of



motivation and commitment, adaptive skills to cope with distractive factors and unexpected events, increased attention focus, high self-confidence levels, the arousal level self-regulation, goal setting and visualization (Williams & Krane, 2001).

Mental skills techniques are used for mental skills training, but some of them also may be ways of expressing them, such as breathing and positive self-talk techniques. The complexity level of techniques varies from simple (e.g., cue words) to very complex (e.g., stress inoculation training).

As in many specialty papers there are confusions between mental skills and mental skills techniques, we propose forwards a classification and definition of principal mental skills useful including for combat sports and we mention mental skills techniques associated for every. It is inspired by classifications of several authors (e.g., Bacon, 2001; Zaichkowsky, 2007) to which we added relevant skills and training techniques.

**Table 1.**

Classification of principal mental skills and correspondent training techniques

<b>Basic mental skills</b>	<b>Mental skills techniques</b>
<i>Thoughts control</i> The ability to stay positive and to eliminate any negative thoughts or emotions	positive thinking, positive affirmations, thought stopping, changing self talk from negative to positive, confronting negative thoughts, reframing, rational emotive therapy, stress inoculation training, cue words, pre-competition routines, competition mental plan, competition adaptation plan
<i>Arousal control</i> The ability to increase/ decrease the degree of arousal to an optimal level	Arousal drop techniques (cognitive techniques, centering, progressive relaxation, mindfulness, autogenic training, meditation, breath control, biofeedback, pre-competition routines, competition mental plan, competition adaptation plan) Arousal increase techniques (music, energizing cue words, rapid muscle tension and relaxation, exercise, rapid deep breathing, energizing scenes visualization)
<i>Attention control</i> Ability to concentrate on appropriate issues, while irrelevant distraction factors are stopped	centering, meditation, concentration, mindfulness, attention control training, competition mental plan, competition adaptation plan

THE MENTAL SKILLS TRAINING IN COMBAT SPORTS

<b>Basic mental skills</b>	<b>Mental skills techniques</b>
<i>Motivation</i> The ability to persevere in making the effort necessary to do difficult sport activities, even if the rewards are not available in the immediate future, the presence of intrinsic motivation	goal setting, goals visualization, sports lectures reading, instructional videos watching, documentaries about elite athletes watching
<i>Self Confidence</i> Athlete's ability to form realistic expectations about success	positive thinking, positive affirmations, thought stopping, changing self talk from negative to positive, confronting negative thoughts, reframing, modeling, mental imagery, mental rehearsal, mental training, visual motor behavior rehearsal, self-hypnosis, pre-competition routines, competition mental plan, competition adaptation plan
<i>Competition mental skills</i> Ability to use immediately before and during the competition of thoughts, actions, images and emotions necessary for the athlete to perform at his full potential	simulation, pre-competition routines, competition mental plan, competition adaptation plan
<i>Managing psychological injuries</i> Managing psychological factors that play a significant role in exposing athletes at risk of injury and in recovery	centering, progressive relaxation, autogenic training, meditation, mindfulness, breath control, biofeedback, positive thinking, positive affirmations, thought stopping, changing self talk from negative to positive, combating negative thoughts, reframing, mental imagery, self-hypnosis, goal setting

As can be seen in the table the same techniques can be used in many mental skills areas.

Encouragement, care and education provided by the athlete coach are very important. An example of mental skills training technique commonly used by coaches are pep talks addressed to athletes immediately before or during competition to instill enthusiasm and for moral support.

Mental skills training represent the systematic and consistent practice of mental skills to improve performance, to increase the enjoyment or to obtain a higher satisfaction from the sport activity (Weinberg & Gould, 2011). The ultimate goal of mental skills training is self-regulation, which is the ability of a person to work for achieving short and long term goals through monitoring and effective management of his thoughts, emotions or behaviors (idem). The

individual's ability to control mental and emotional processes support task performance, creates psychological foundation for self-confidence and personal wellbeing (Boyd & Zenong, 1999) and increase his motivation to continue doing efforts for trying to improve his sport performance (Wulf & Toole, 1999).

The benefits of mental skills training have been argued by many authors. For example, Beauchamp et al. (2012) affirm that the effectiveness of psychological skills training on performance has been suggested in previous sport psychology reviews (e.g., Gould & Eklund, 2007; Hardy, Jones & Gould, 1996; Landers, 1995; Vealey, 1988, 2007; Weinberg & Comar, 1994).

### **Principles of mental skills training**

The fundamental principle of mental skills training is its approach in the same way as physical skills. From this principle comes the need for mental skills regular practice. Learning the mental skills requires perseverance, involvement and confidence in their ability to improve sport performance. Proper teaching of mental skills is another essential element for their achievement.

Mental skills training specialization principle ensures the validity and effectiveness of the programs and techniques used for mental skills training.

Very important are the principles from the mind-body relationship area. According to the ideomotor principle mental imagery helps learning motor skills because when a person imagines that practice a movement, electrical impulses transmitted by the nervous system stimulates his muscles in a manner similar to the situation in which it is physically executed. Relaxation principle states that a person cannot be relaxed and tense at the same time. It can be triggered by a number of mental skills techniques such as progressive relaxation or breathing. Using such techniques will also have the secondary result of getting mental relaxation state.

Principle of inner thoughts influence on performance underlies mental skills cognitive techniques. The change of inner thoughts can influence behavioral change and thus improve athletic performance.

According to the individualization principle mental skills techniques must be selected, designed and used customized, depending on personality and individual needs, the situations, the team and the specific sport. Some specialists consider that the most appropriate would be an individualized mental training program that involves learning a wide range of mental skills, from which the athletes will select the ones he will include in his mental training plan based on effectiveness observed in his practice.

The principle of individual responsibility requires that the athletes to be effectively committed in the mental training, so it is not randomly done or left to others (e.g., coaches, psychologists, parents).

Principle of practicing mental skills in similar competitions situations involve the use of mental skills training techniques in contexts similar to those encountered in competitions, characterized by a high stress and high demand of physical qualities.

The principle of adapting mental skills teaching methods and techniques to the characteristics of specific sport advise that the mental training to be taught by people who know well sport life in general, demands and mental experiences encountered in critical training phases (practice, competition and transition) and the key characteristics of the specific sport in which the mental training is realized. Such knowledge is best achieved through the sport personal practicing at competitive level.

The principle of creating an active learning environment sustain that the best way to implement effective mental training programs is ensuring facilitating environmental conditions, such as: self-direction, relevance, adaptation, reflexivity, socialization (Farres, 2000).

Taking into account the principles set out above, mental skills training programs were most likely to be characterized by efficiency.

### **Mental skills training programs**

Disparate using of mental skills techniques will not lead to peak performance in competitions. The integration of these skills in mental skills training programs and further within physical training is very important from a practical point of view because “it may help ensure quality practice and facilitate the effective transfer of mental skills into competition” (Davenport, 2006). An effective interaction among physical, technical, tactical, and psychological preparations should exist within each of the critical phases of the training program (preparatory, competition, and transition) to achieve a high level of proficiency (Blumenstein et al, 2005). Any psychological intervention introduced to elite athletes during their training should reflect the aims of each critical phase of the program (idem).

Bacon (2001) believes that the mental skills training planning must take into account following key points:

1. Annual training organizing based on the periodisation principles.
2. Teaching first basic mental skills, then developing and practicing sport specific versions of these skills, and finally, developing a plan for each athlete to use these skills in the competition.
3. Mental training individualization, the introduction of different skills and related techniques and empowering the athlete to decide which are effective in his case.

#### 4. Integrating mental training into regular sports training.

The mental training objectives of the each annually sport training program phases, proposed by Bacon (2001), are:

**Table 2.**

Mental training objectives of annually training program phases

<i>Phase</i>	<i>Objectives of mental training</i>
General	<ol style="list-style-type: none"> <li>1. Assessment of the mental skills</li> <li>2. Learning the skills in a quiet setting</li> </ol>
Particular	<ol style="list-style-type: none"> <li>1. Adaptation and practicing the mental skills in specific sport training situations</li> <li>2. Using of the mental skills to help achieve the objectives of sports training</li> <li>3. Maintaining the basic mental skills</li> </ol>
Precompetitive	<ol style="list-style-type: none"> <li>1. Designing and practicing of the mental plans</li> <li>2. Using the mental plan in simulations</li> <li>3. Maintaining the basic mental skills</li> </ol>
Competitive	<ol style="list-style-type: none"> <li>1. Evaluating and refining of the mental plan</li> <li>2. Using the mental skills for training in rapport with specific adversary or competitions</li> <li>3. Using mental skills for stress management</li> </ol>
Unloading after competition	<ol style="list-style-type: none"> <li>1. Using mental skills to support recovery and relieve stress</li> </ol>
Transition	<ol style="list-style-type: none"> <li>1. Performing recreational activities to maintain physical training and prevent burnout</li> </ol>

According to Weinberg & Gould (2010, as cited by Beauchamp et al, 2012), within sport psychology practice there is some interest in the implementation of psychological skills training as a critical component within the yearly training plans of national team programs.

Blumenstein and Lidor (2007) describe the four-year psychological preparation program they give to Israeli elite athletes whose goal was to participate in the 2008 Olympic Games. This psychological preparation program included three phases:

- Year 1 - Analysis, orientation, and basic foundations - the psychological preparation in Year 1 had two objectives: first, "to examine the contribution to the athlete's success of the psychological preparation given to

the continuing athletes and returning athletes during the previous year (i.e., the Olympic Year of the previous four-year cycle of preparation)”; the second, “to provide the athletes with the psychological preparation they needed to achieve their athletic goals”.

- Years 2 and 3 – International experience and advanced practice – the main objective of the psychological preparation was “to teach the athletes specific intervention techniques that could be effectively used in practice sessions, multi-day competitions, and tournaments”.

- Year 4 – The Olympic year - the psychological preparation provided to the athletes during this year had three objectives: first, “to help the athletes ready themselves for several key competitions in which they had to “bring everything together” and perform at the height of their abilities in order to meet the Olympic criteria”; second, “to continue the psychological preparation of those athletes who had already met the criteria and whose participation in the Olympics was assured”; third, “to help those athletes who failed to meet the Olympic criteria, and therefore would not participate in the Olympic Games, cope effectively with their feelings of deep disappointment and failure”.

To design and implement customized mental training programs is required considerable effort and expertise. When these cannot be used for various reasons, standard mental skills training programs can be the solution. These are useful also in the general phase of the periodically sport training program. Some of the standard mental skills programs are:

- Seven step program to peak performance, developed by Suinn in 1986. The first stage includes relaxation training based on progressive relaxation. In the second step stress management implies its recognition and the use of the centering to control it. The centering is then implemented in practice and competition. The third stage implies the thought control in which negative thoughts are replaced with positive thoughts. In the fourth stage the best personal performance are reviewed to develop self-regulation skills. The next step includes training based on visual motor behavior rehearsal. In the sixth stage the athlete learns to control attention, to focus and to refocus it after the disturbing factors action. The last step require to athletes learning to recognize and to control their arousal level.

- Rushall's program, elaborated in 1992, includes encouraging of a positive approach to sporting experience, goal setting, commitment development, imagery, relaxation skills, pre-competition and competition skills and team building.

- Fazy and Hardy have designed in 1995 a program that includes goal setting, relaxation training, mental rehearsal and concentration.

A number of sport psychologists (Boutcher & Rotella, 1987; Hardy, Jones, & Gould, 1996; Vealey & Greenleaf, 2006) have suggested that “grouping of psychological strategies into a program approach may be useful when working with individual and or team sports” (Beauchamp et al., 2012).

### **Psychological characteristics of combat sports**

Each sport has specific psychological demands that affect the type of mental skills training necessary to improve sports performance. Their understanding and balancing with the needs of athletes can help to prioritize both mental training and the choice of specific mental skills techniques.

The specific nature and structure of any sport are among the most important determinants likely to affect its mental challenges (Moran, 2012). Combat sports are competitive contact sports where two combatants are fighting against each other under certain rules, typically in order to simulate a real fight with bare hands (Miller et al, 2009). The main objective of the combat sports competition match is the adversary dominance achieved through striking, joint lock or grappling techniques. While in the majority of sports injuries are accidental, in combat sports these are means to dominate the adversary and finally to achieve the victory. Through sports competitions regulations is trying to minimize the risk of injury. In boxing, in addition to injuries caused by blows to the body, long-term neurological symptoms associated with the practice have been identified: brain injury, dysarthria, memory perturbations, vestibular brain dysfunctions and sensory, motor and cognitive perturbations. The most common serious injuries caused by the use of grappling techniques are located at the level of ankles, shoulders, elbows, knees and neck. The risk of injury is an extreme intensity stressing factor acting on the athlete in the matches from competitions and even in the training sparring.

Matsumoto et al. (2009) show that judo athletes and generally combat sports athletes constantly have to make motor decisions in the matches from competitions to adapt their tactics and techniques to those of opponents, in an environment with a high stress largely due to the fact that they are not only in competition with each other, but at the same time fighting against each other. According to the authors mentioned above, additional stress is caused by loss of points against the opponent because defense of points earned is much easier than recovering lost points. Ziv and Lidor (2013) highlights that “during a judo combat, a split-second lack of concentration can lead to a quick defeat”, and “a quiet mind, in conjunction with awareness of the opponent’s energy and intentions, can lead to the execution of correct defensive or offensive techniques at the right moment, leading to victory”.

Competition in the combat sports (such as boxing, fencing, judo, taekwondo, and wrestling) “requires task specific psychological readiness that will enable the performer to act in combat situations that may often change within extremely short periods of time” (Pedro and Durbin, 2001, as cited in Ziv and Lidor, 2013). The combat sports athletes are faced with challenges very demanding psychologically, such as: emotional and mental states are subject to extreme fluctuations during combat matches; the competing combat athlete simultaneously attack and defend while concealing his or her intentions from the opponent, and while in an state of extreme tension; to make decisions under time pressure while facing aggressive opponents and to decide on alternative tactical movements (e.g., attentional flexibility), all while striving to achieve the designated goals (Ziv and Lidor, 2013).

From the above it emerges that combat sports imply emotional (in principal caused by the considerable risk of injury) and intellectual (need to make tactical decisions under high stress and urgency and in complex situations) demands of high intensity. The mental skills training is useful to help athletes cope with these demands. In the case of contact combat sports it may be indispensable if we take into account that some research found that the contact combat athletes have more accentuated neuroticism trait issues than non-contact athletes. Among these research, Steven et al. (2006) revealed that judo players in comparison to other athletes have more unstable mood states changes, low coping strategies and self-set goals, high somatic tensions, aggressive behaviors, neuroticism and psychotism scores, and Wlas et al. (2007) reported that aggression control was significantly lower and self-aggression significantly higher in boxers compared with non contact groups (Sohrabi et al, 2011).

### **Mental skills training in combat sports**

In general, research on martial arts practitioners suggests that the mental skills techniques found to be effective for athletes in general are effective in increasing the performance in martial arts too (Frank, 2002), of some many have combat sports expressions. This situation is the same for all combat sports.

In the field of combat sports have been conducted a several studies on mental skills training. Harpold (2008) identified a series of mental skills and techniques used by mixed martial arts practitioners intuitively (which are not the result of systematic specialized training): self confidence (repetition, opponent scouting, self talk, training support provided by partners, coaches, loved ones), visualization/mental rehearsal (initial mental plans, situational response plans to opponent's actions), arousal regulation (breath control, self talk, increased athlete's arousal as response to physical contact caused by a blow), discipline/mental tough (change of lifestyle and social activity involving social activity regression and drastic daily routine changes, workout regimen, weight



loss) and motivation (intrinsic and extrinsic). Martial arts and kickboxing practitioners have mentioned using the following mental skills and techniques: self-talk, relaxation, attention focusing, arousal control, goal setting, mental imagery, mental coping to blows, mental plans, self-monitoring, record keeping, modeling and competitions simulation (Harpold, 2008; Devonport, 2006). Gould et al. (1981) found that compared to wrestlers who do not get results, successful wrestlers are more self confident and ahead of the competition focuses only on information about the fights. Visual motor behavior rehearsing has been found effective in improving physical performance of martial arts practitioners (Frank, 2002). Gould et al. (1981), in the wrestling case, and Matsumoto, Konno, & Ha (2009), in the judo case, outlines the importance of pre-competitive routines for sports performance facilitation. Based on research conducted on martial artists, Seabourne (1998, as cited in Frank, 2002) argue that: relaxation and mental imagery used together are more effective than either used alone; martial artists practicing relaxation and mental imagery ten minutes every day performed better than those who used them immediately before competition; even individual techniques taught in groups are better than standard group techniques; there is no difference between mental imagery guided by an instructor and that self-directed; individualized cognitive techniques improve performance. In a review of 18 studies on psychological preparation of competitive judokas, Ziv and Lidor (2013) identified five psychological categories: (a) imagery, (b) motivation, (c) stress, anxiety, and mood states, (d) eating attitudes and weight control, and (e) coach/athlete interactions. To demonstrate how sport psychology preparation can be effectively integrated into the physical, technical, and tactical preparations within the preparatory, competition, and transition critical phases of the training program, Blumenstein et al. (2005) selected a combat sport - judo.

Blumenstein and Lidor (2007) give specific examples of the use of the psychological program in judo in their study describing the four-year psychological preparation program given to Israeli elite athletes whose goal is to participate in the 2008 Olympic Games. They used three psychological programs during the psychological preparation:

- the Five-Step Approach - The 5-SA is a self-regulation technique incorporating biofeedback training, which enables athletes “to transfer the psycho-regulative skills performed in sterile laboratory settings to real practice and competition settings, utilizing testing and different simulative materials”. The technique is composed of five stages: (a) introduction – learning various self-regulation techniques (e.g., imagery, focusing-attention, and self-talk), (b) identification (identifying and strengthening the most efficient biofeedback response modality), (c) simulation (biofeedback training with simulated competitive stress), (d) transformation (bringing mental preparation from the laboratory to the field), and (e) realization (achieving optimal regulation in competition).

- Specific Psychological Training Program - was composed of mental skill techniques (focusing attention, imagery, self-talk, and relaxation).

- Response Training Program - The main objective of this program, containing several reaction time tasks, was “to enhance the judokas responses under real-life settings (e.g., combat)”. A computer-simulation setting was used and several factors (e.g., video demonstration of actual combats, external distractions such as noise, and competitions between two judokas performing the reaction time tasks at the same time) were adopted during training “in order to expose the athlete to more real-life competitive situations”.

Ziv and Lidor (2013) argue that “those professionals who regularly work with competitive combat athletes should obtain relevant information on psychological interventions that are evidence-based, in order to plan task enhancement sport psychology programs aimed at preparing these athletes for practice sessions and combats”.

## Conclusion

Research argued the effectiveness of using the mental skills training in sport in general and specifically in combat sports. The psychological skills training was added in the yearly training plans of some national team programs. There have been implemented four-year psychological preparation programs for the athletes whose goal was to participate in the Olympic Games.

In practice, to ensure efficiency of the mental skills training must be meet several conditions, such as: its customization based on the specific needs of the athletes, the team, and of the specific sport; its integration in rapport with the objectives of critical phases of sport training program; ongoing practice of mental skills training techniques for a long time. Also, the knowledge of the principles of mental skills training and clear delineation of mental skills from techniques in this field are very important aspects from a practical viewpoint.

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## EVALUATION OF PHYSIOLOGICAL PARAMETERS OF CHILDREN WITH PSYCHOMOTRICAL DISABILITIES UNDER THE INFLUENCE OF WATER EXERCISING

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**ABSTRACT.** Adapted sports activity is a major benefit for the life of children with disabilities, but unfortunately there are so few institutions that manage to take care of this matter. We are glad to make acquaintance to "EU POT" a non-governmental organization, that succeeded in calling up and developing physical exercises through adapted swimming for this category of children. The physical effort from the adapted swimming lessons determine variations of the physiological constants of the organism. The organization "EU POT" together with the Humanistic Sciences Department of Valahia University has developed an adapted swimming programme for the children with psycho motric disabilities of the Special Arts and Crafts School from Târgoviste. Since this is pioneering work, we have followed and evaluated the physiological parameters of the children that participated in this programme. We consider that this evaluation offers us a clear perspective of their values, that modify under effort influence and even under the emotions generated by medical devices. We have developed measurements of these physiological parameters before and after effort and we have interpreted the obtained results. The results have presented really interesting changes, some values have increased after effort, but some have diminished after physical exercising in aquatic environment. The obtained results are extremely various and are personally interpreted for each individual, due to the different conditions that the children are suffering of.

**Key Words:** physiological parameters, children with disabilities, adapted physical exercise

**REZUMAT.** *Evaluarea parametrilor fiziologici la copiii cu dizabilități psihomotrice, sub influența exercițiului fizic adaptat.* Activitatea sportivă adaptată este un beneficiu major în viața copiilor cu dizabilități, dar din păcate sunt puține instituțiile care se ocupă de aceștia. Avem bucuria de a cunoaște o organizație „EU POT”, care a reușit să se mobilizeze și să desfășoare exerciții fizice de înot adaptat cu acești copii. Efortul fizic din lecțiile de înot adaptat determină variații ale constantelor fiziologice ale organismului. Organizația „Eu

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Pot" împreună cu Departamentul de Științe Umaniste al Universității „Valahia” din Târgoviște a desfășurat un stagiul de înot adaptat cu copiii cu dizabilități psiho-motrice ai școlii Speciale de Arte și Meserii, Târgoviște. Deoarece este o activitate de pionierat am urmărit și am evaluat parametrii fiziologici ai copiilor participanți la activitatea sportivă. Considerăm că evaluarea parametrilor fiziologici la copiii cu dizabilități ne oferă o imagine clară a valorilor acestora, care se modifică sub influența efortului sau chiar a emoțiilor generate de aparatura medicală. S-au desfășurat măsurători ale parametrilor fiziologici înainte și după efort și s-au realizat interpretări ale rezultatelor obținute. Valorile au prezentat modificări foarte interesante, unele valori au crescut după efort, dar alte valori au scăzut după desfășurarea efortului în apă. Rezultatele obținute sunt extrem de variate și sunt interpretate în mod personalizat, pentru fiecare copil în parte, existând diferite afecțiuni în grupul copiilor de lucru.

**Cuvinte cheie:** parametrii fiziologici, copii cu dizabilități, exercițiu fizic adaptat.

## Introduction

Children are part of a very special category of human race, special beings in our lives, who mark our personalities, beliefs, feelings and they make us choose new paths in life. Children with disabilities should have equal chances as normal children do, but unfortunately not all of us have the same perspective. The modern and ultra performance society brought us the speed of light in communication, offered exceptional technologies but at the same time brought also genetic mistakes. Not all things can be only positive, that is why we must take responsibility for every negative effect that may come from a positive reaction, somewhere in the Universe.

Children with disabilities are the ones who have Down syndrome, autism, paresis, hemi paresis and mental retard. The Down syndrome is not a disease, but a genetic disorder caused by a plus presence of 21 chromosome, also called 21<sup>st</sup> trisomy. It has been reported about children who suffer of Down syndrome that they develop less motor abilities than the children who suffer of mental disorders.

Autism is a complex disorder, which appears in the first 3 years of life and it's caused by a neurological dysfunction that makes social interaction very difficult, along with communication abilities. Children who suffer of autism have difficulties in verbal and non-verbal communication, social interaction and even relaxing activities. Some studies reveal the fact that autism can be genetically influenced. Many researchers have focused on discovering the gene that causes autism, whereas some have associated it with a compromised immune system.

Hemiparesis consists of a reduction of the muscular force in one half of the body, due to damage of the central motor neuron.

Paresis represents the decrease of muscular force and it's characterized by: ataxia, abolition of reflexes and deep sensibility impaired. Along with these neurological signs comes a dimorphic syndrome, usually represented by a sharper carving of the planetary bolt and rarely by a kyphoscoliosis.

Mental retardation is characterized by a substantial limitation of the cognitive functions that show a significantly lower level of intellect and the coexistence of at least two limited application skills (communication, self-care, social abilities, rest and work).

**The purpose** of this activity was to monitor, evaluate and compare during this adapted swimming activity the evolution of the following physiological parameters: heart rate, peripheral blood oxygen saturation and blood pressure.

### **Physiological parameters**

**Heart Rate** represents the number of heart beats per minute. The measurement is done either directly by compression of the radial artery on bone structure or indirectly by compressing the artery with cuff blood pressure monitor and displaying electronic pulse along with heart rate.

**Peripheral Blood Oxygen Saturation.** Pulse oximetry is a noninvasive technique that is performed routinely to monitor SO<sub>2</sub>. For evaluation we used a transducer placed on the distal phalanx, which monitored oxygen saturation of arterial blood.

**Blood Pressure (TA)** is the pressure exerted by the blood on the vessel wall during the contraction and relaxation of the heart rhythm, which consists of two components:

- Systolic pressure - the pressure exerted on artery walls when the heart contracts - with normal values between 100 and 130 mm Hg
- Diastolic pressure - the blood presses against the walls of the artery when the heart relaxes between two contractions (in diastole) - with normal values below 85 mmHg.

### **Objectives of the activity**

- Observing the behavior manifestations of children when entering into the pool
- Evaluation of rest and exercise parameters at the beginning and end of activity
- Correlation of results with the children's affections
- Analysis and interpretation of results



**Hypothesis.** We believe that the evaluation of physiological parameters of children with disabilities gives us a clear picture of their values, which change under the influence of effort or emotions generated by medical devices.

**Conduct activities.** Lot studied consists of 7 children with psycho-motor disabilities, who have been monitored during 6 months, June to November 2012, changes in cardiovascular parameters.

Permanently he had a teacher and a doctor to oversee the lessons and to intervene in emergency medical cases.

## Material

During the activities we had a pulse oximeter and an electronic tensiometer with which we measured cardiac biological constants values, meaning peripheral blood oxygen saturation and blood pressure.

## Research Methods

**Table no. 1.**

### Anthropomorphic Measurements

No.	Name and Surname	Diagnosis	Age (years)	Height (cm)	Weight (kg)
1	L C	Down Syndrome	17	140	43
2	B G	Down Syndrome	17	144	53
3	D P	Down Syndrome	15	145	57
4	E U	Reduced IQ	17	164	70
5	D A	Autism	12	160	61
6	D S	Tetraparesis	15	160	35
7	D T	Epilepsy, Hemiparesis	15	155	76

## Medical Testing

**Table no. 2.**

### Cardiovascular Parameters – June 2012

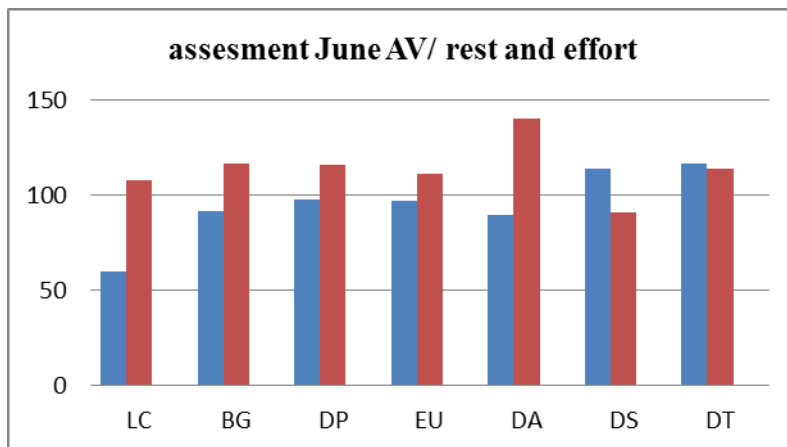
No.	Name and Surname	Age (years)	Rest			Effort		
			AV (min)	SaO2 (%)	TA (mm Hg)	AV (min)	SaO2 (%)	TA (mm Hg)
1	L C	17	60	84	138/77	108	99	140/82
2	B G	17	92	97	128/89	117	95	136/85
3	D P	15	98	79	142/90	116	99	145/90
4	E U	17	97	98	132/67	111	99	142/77
5	D A	12	90	96	132/72	140	99	140/70
6	D S	15	114	99	138/85	91	99	142/90
7	D T	15	117	97	125/70	114	96	130/82

**Table no. 3.**

Cardiovascular Parameters – November 2012

No	Name and Surname	Age (years)	Rest			Effort		
			AV (min)	SaO2 (%)	TA (mm Hg)	AV (min)	SaO2 (%)	AV (min)
1	LC	17	78	99	121/78	99	90	127/83
2	BG	17	87	95	124/88	91	62	133/81
3	DP	15	104	98	132/92	102	96	131/88
4	EU	17	93	95	130/71	130	95	138/72
5	DA	12	83	96	129/82	89	99	120/61
6	DS	15	110	99	125/93	109	94	133/85
7	DT	15	117	97	115/62	90	88	128/74

**Medical Interpretation of the results**



**Graph no. 1.** Cardiovascular Parameters – June 2012

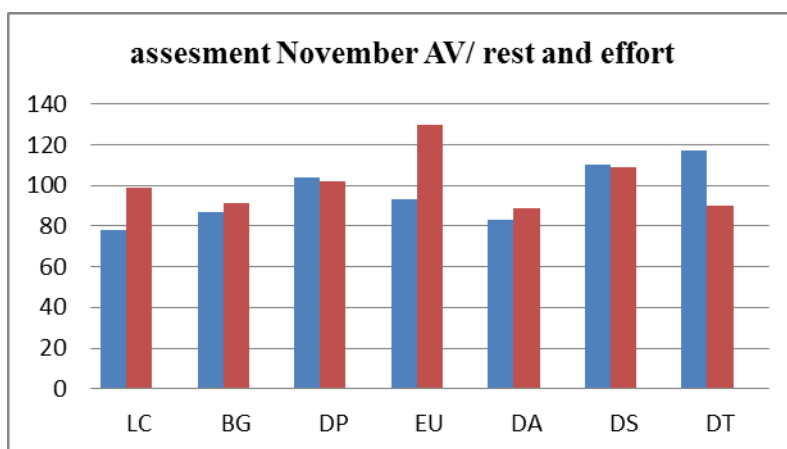
We can observe in the graphic above that we have extremely various AV evolution. The first three who have Down syndrome start with a medium value of rest, but we can't say that this is the standard value. It is possible that the bigger value of rest of DP can be present due to the presence of specialized equipment. After effort it can be observed a positive response, increasing AV, normal reaction when exercising and relatively close.

For the EU athlete we can observe a slight evolution from rest to effort, because he has good physical condition and more active motric activity, effort deployed being quite easy for the specificities of this child.

For DA, AV values are pretty high, but we must take into consideration autism also. This is reflected very well in evaluation after effort, the child being at his first swimming lessons, contact with strangers, which makes it very difficult for autism challenged children, who are agitated and reacting to the presence of the device in water.

For DS and DT we have a very interesting evolution. At first, the values are high, probably due to the presence of medical healthcare and devices. Later on, the values have decreased, because children have accomodated and relaxed. Children with

For children presenting serious conditions, water helps to relax and perform certain movements easier, which for those with paralysis, are very difficult to perform even on land.



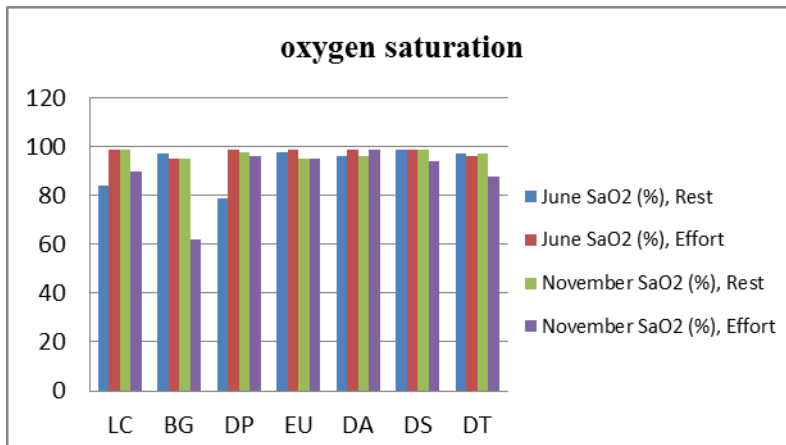
**Graph no. 2.** Cardiovascular Parameters – November 2012

In the evaluation carried out in November we have observed changes in the parameters evaluated. Thus the first three athletes with Down syndrome have a high enough AV value, because these children are eager to exercise in water and a little nervous when entering into the pool. On the other hand, it is very well observed that the value when doing effort, increases very little, even decreases at DP, who is a child with a quieter temperament. Because children feel extremely well in water, they are no longer nervous, nor frightened and they have adapted very well to the sporting activity, the difference between effort and rest is not very high.

For EU, rest values are approximately the same as they were when starting the activity, but the effort value is much higher, because this child swims very well, one full length of the pool without stopping, only with the assistance of volunteers, thus leading to a great effort for him.

For DA autistic, the values are limited, a fact that demonstrates a complex adaptation to many factors: to effort during water exercising, to water pressure against organism and also to the external factors. This child presents a listless behavior, exercising in water being carried out at a slower pace, which reflects in reduced heart rate effort.

For DS and DT we consider that effort has firstly a relaxing effect. On the other hand, DS starts effort with a very high AV, mainly due to emotions, but maintains a high AV value because he succeeded swimming alone, supported only on aqua-tube. However, for DT water is an excellent environment for developing and doing certain movements. Due to the existing conditions, movements have reduced amplitude and very low realisation speed, being permanently helped by two volunteers.



**Graph no. 3.** Rating oxygen saturation at rest and during exercise, May and November

LC and DP have a starting value of SaO<sub>2</sub> less for June, when we started work. As a result of developed effort, a larger quantity of oxygen has mobilized, reaching 100%. Because children didn't make higher intensity exercises, the SaO<sub>2</sub> evolution is normal. After approximately 7 months activity, the concentration of oxygen has increased as weekly exercise is carried out, by mobilizing more often oxygen supplies. Values decreased after exercise because the body has adapted to the exercise conducted.

For BG we have the highest indicator of rest value, observing that after effort, the oxygen saturation decreases, in May as in November, due to the intense effort. It seems like the effort while participating in a contest is so intensely that consumes much of the body's oxygen reserves.

For EU, DA, DS and DT, children with severely affections, effort deployed by them is more peaceful. Thus, the exercise intensity being lighter, the development of the oxygen saturation is less fluctuating.

**Table no. 4.**

Blood pressure assessment, November / rest and exercise

No	Name and Surname	Rest	Effort
		TA (mmHg)	TA (mmHg)
1	LC	121/78	127/83
2	BG	124/88	133/81
3	DP	132/92	131/88
4	EU	130/71	138/72
5	DA	129/82	120/61
6	DS	125/93	133/85
7	DT	115/62	128/74

The evolution of blood pressure is presented under various aspects, according to each children particularities:

For LC, a child with physical integrity, swimming exercises have had a growing trend, but not with high or very high intensity. The effort that he can deploy is a moderate one, thus the blood pressure presents a slightly upward curve.

For BG, who develops higher intensity exercises with a higher oxygen consumption, the blood pressure evolution presents an upward curve, thus correlating with all values of the evaluated indicators, reflecting the fact that this athlete has a more energetic character.

DP was very emotional during blood pressure assesment, fact that led to obtaining a very high value. Then, doing a similar effort as participating in a competition, the value decreased, being actually the efective value of practical exercise.

EP is an athlete that performs adapted swimming without help, the physical effort that he deploys being much higher than the one of other athletes.

DA has autism and therefore an increased excitability, which makes the initial assessment of the blood pressure to be higher than after performing their exercise in water, that produce physical and mental relaxation of these children.

For DS and DT, children with tetraparesis and hemiparesis, every new thing that hey encounter leds to high excitability and fear, that could be very well observed when assesing blood pressure at rest. After conducting the physical activity, which they already know and have been practicing for 7 months, they have lower blood pressure, water having a benefic calming effect.

## Conclusions

Children's contact with external elements has reflected in high values of physiological parameters, demonstrating that the influence of exogen and unknown factors is very high, especially for children with psychomotrical disabilities.

In June, after conducting new exercises, effort parameters have presented higher values for the ones who could perform moderate intensity effort and lower values for the children that relaxed and felt good in the pool (this applies to children with paresis and tetraparesis).

After 7 months of preparation with moderate workouts, the rest values have decreased, presenting a complex adaptation to environmental factors, to surrounding people, to effort deployed, not being influenced anymore by the external factors.

On the other hand, effort values have normally increased, as the ones of physical effort, or have decreased, as a moment of relaxation and recreation for children with paresis and tetraparesis.

The evolution of these values demonstrates the natural and functional adaptation that the body does, through repeated training, to external stimulents.

Also, it is very important the fact that children with physical and mental disabilities have adapted so well to the aquatic environment that they relaxed during the swimming lessons and this caused a physical relaxation, evaluated by us through various indicators .

Conducting training with children with special needs has to be done with customized programmes and individual observation for each child and each condition separately.

Observing the physical parameters of children with disabilities has demonstrated that they too can develop adaptation to exercising, showing a positive track of the followed indicators.

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## **EXERCISES FOR THE IMPROVEMENT OF ACCURACY AND POSITION ORIENTATION AND BODY MOVEMENT IN SPACE THROUGH MEANS SPECIFIC FOR THE BASKETBALL GAME**

**ADRIAN PAȘCAN<sup>1,\*</sup>, IOAN PAȘCAN<sup>1</sup>**

**ABSTRACT.** Due to the relevance of the ability regarding accuracy and the orientation of the body and limbs in space in the basketball game this paper presents a series of exercises for improving this ability. During the first phase specific exercises as responses to different signals were conceived under our guidance with the entire class, which were then practiced. During a second phase, after having understood the task, the children divided into teams needed to conceive similar exercises. The most significant were then practiced with the entire class. The research comprised of four phases: a pretest, a test during which independent variables were applied, followed by a final evaluation, and at the end a final test. The results of the research have shown that the exercises used contributed to the improvement of accuracy and body orientation in space and we recommend that they are used during physical education classes, mentioning that these are to be adapted and even supplemented according to the age of the children, the existing infrastructure and their training level. This paper presents the most significant exercises conceived and applied to the trial group.

**Keywords:** trial, accuracy, orientation in space, specific exercises, ability.

**REZUMAT.** *Exerciții pentru dezvoltarea preciziei și orientării pozițiilor și mișcărilor corpului în spațiu prin mijloace specifice jocului de baschet.* Datorită importanței în jocul de baschet a capacității de precizie și a orientării corpului și segmentelor acestuia în spațiu, această lucrare prezintă o serie de exerciții care să dezvolte această aptitudine. În prima fază, sub îndrumarea noastră au fost concepute și s-au exersat exerciții specifice, urmând ca, în faza a doua, după înțelegerea sarcinii, elevii împărțiți în formații de lucru să conceapă exerciții analoge, cele mai semnificative fiind exersate cu toată clasa. Cercetarea a cuprins patru etape: un preexperiment, un experiment în care s-au aplicat variabilele independente, urmate de o evaluare finală, iar la sfârșit un retest. Rezultatele cercetării ne-au demonstrat faptul că exercițiile folosite au

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contribuit la dezvoltarea preciziei și orientării corpului în spațiu și recomandăm utilizarea lor în lecțiile de educație fizică, cu precizarea ca aceste exerciții să fie adaptate și chiar completate în conformitate cu vârsta elevilor, baza materială existentă și nivelul lor de pregătire. Lucrarea de față prezintă cele mai semnificative exerciții create și aplicate lotului experimental.

**Cuvinte cheie:** experiment, precizie, orientare spațială, exerciții specifice, aptitudine.

## General Remarks

Movements in time, space and according to the muscle strain are assessed with the help of analyzers and, especially the kinesthetic analyser (muscular senses).

We must mention that muscular senses, although informing the motor centers with sufficient accuracy regarding the amplitude of the movement, the degree of muscle strain, the direction and intensity of movement of some limbs of the body, they are, in comparison with the visual and auditory senses, more difficult to grasp.

Taking into account this singularity, we consider that it is of utmost importance that the instruction process for building up and developing the specific psychomotor skills is to provide corresponding conditions for the performer, so that they understand the movements they perform.

It is well known that every procedure, i.e. every tactic move has precise space, time and effort parameters. If the values of these parameters are not studied closely this leads to inaccurate training, building up wrong habits, routines, accidents.

Training needs to be provided in such a manner that performers reach space and time and great precision effort differentiation step by step.

In order to conceive the exercises for improving accuracy and position orientation and movement in space the following specific methods were used:

- Training movements with high and low amplitude, with different limbs and parts of the body, starting from different initial positions;
- Performing movements with different limbs and parts of the body, in main and intermediate directions with different initial positions.

At the beginning we presented a few exercises for every methodical procedure, afterwards the pupils were divided in different teams in order for them to conceive similar exercises.

## Hypothesis

We consider that by applying an appropriate strategy, pupils from secondary school (together with the teacher) can conceive specific exercises for the improvement of the ability of accuracy and orientation of the body in space.

## Aim of the paper

Improving the instruction process of basketball, secondary school, by using specific exercises for developing the accuracy and the orientation of the body in space, according to the age singularities and the existing infrastructure.

## Location and materials

The trail took place at „Nicolae Titulescu” school from Cluj-Napoca. The school is well equipped for meeting the demands of the school curriculum for basketball.

## Subjects of the trial

Pupils from grades V and VI of „Nicolae Titulescu” school Cluj-Napoca were subjects in the trial.

106 pupils took part in the trial, 52 girls and 54 boys, equally divided into trail groups and control groups.

**Table no. 1.**

Number of sample of the form

Grade	Boys		Girls		Sum
	Trial	Control	Trial	Control	
a V-a	14	14	14	14	56
a VI-a	13	13	12	12	50
Sum	27	27	26	26	106

The trial groups were made up of pupils from grades V A and VI B, and the control groups of pupils from groups V B and VI A

## Organisation, phases and development of the trial

The trail took place under normal conditions during the physical education classes with focus on (learning topics) basketball, according to the structure of the school year, divided into semesters and focusing on the suggested work hypothesis.

The trail took place during March-June 2011

The trial consisted of 4 phases:

Phase no. 1 – *pre-trail*: March, 10<sup>th</sup> – 14<sup>th</sup> 2011.

Phase no. 2 – *trial* (per se): March, 15<sup>th</sup> – April, 15<sup>th</sup> 2011.

Phase no. 3 – *post-trial*: April, 18<sup>th</sup> – 22<sup>th</sup>.

Phase no. 4 – *retesting* (June, 5<sup>th</sup> – 12<sup>th</sup>)

## Investigation Methods

For the research the „square test” was conducted in order to evaluate the accuracy, the appraisal and the orientation in space of the body. The test consists of drawing a square with the sides measuring 90 cm on the ground, which is then divided into 9 squares with 30 cm sides. Also two little squares of the same dimension are drawn on the ground on opposite sides. Each square is then numbered and the performer is asked to start in square „0” and jump on both feet in ascending order in all squares as fast as possible, without omitting any square and without stepping on the lines.

The performer is timed and the errors are recorded. There is a one second penalty for every error.

In parts 2,3 of the lesson and in the fundamental part 5 (actual trial), during each lesson the improvement of the ability was especially trained for 10 – 12 minutes. During the first phase specific exercises as responses to different signals were conceived under our guidance with the entire class, which were then practiced. During a second phase, after having understood the task, the children divided into teams needed to conceive similar exercises. The most significant were then practiced with the entire class, using up front practicing.

In the following we present the most significant exercises conceived and applied to the trial group.

**Table no. 2.**

EXERCISES CONCEIVED AND APPLIED TO GRADES V A AND VI B					
No.	Initial position	Content of the exercise	Dosage	Work format	Training forms
1	Standing, ball in front of the body	Standing dribbling with a ball, with the free hand liftings are performed to different positions (main or intermediary).	2 min		Up front practice, individual pace
2	Standing, knees slightly bent, ball in front of the body	Standing dribbling with the right hand – moving the left foot to the side (same exercise with the other hand and other foot).	4 X	In a line on 4 rows	Up front practice, even pace

EXERCISES FOR THE IMPROVEMENT OF ACCURACY AND POSITION ORIENTATION AND BODY MOVEMENT ...

No.	Initial position	Content of the exercise	Dosage	Work format	Training forms
3	Standing, knees slightly bent, ball in front of the body	Walking (then running) dribbling, touching the lines of the basketball court with the palm of the free hand	2 min	Spread out on the court	Up front practice, individual pace
4	Standing, ball in front of the body	Dribbling following the lines of the basketball court.	2 min	In a line	Up front practice
5	Standing, ball in front of the body	Throwing the ball to the sideline of the basketball court and running to catch it before it is out.	4 X	In a line on 4 rows	Up front practice, in rows
6	Standing, ball in front of the body	Lunge walk with moving the ball between the legs, walking forward, sideward, backward.	3 X	In a line on 3 rows	Up front practice, in rows
7	Standing, ball in front of the body	Throw the ball up - high jump with turning (45°, then 90°) - catching - landing with both feet simultaneously	6 X	Spread out on the basketball court	Up front practice, individual pace
8	Standing, ball in front of the body	Dribbling with jumping on both feet, on one foot, with spreading and closing the feet etc.	2 min		Up front practice
9	Standing, ball in front of the body	Performing certain tactic procedures (with or without the ball) towards the direction indicated by the teacher.	4 min	In a line on 6 rows	Up front practice
10	Standing, ball in front of the body	Standing dribbling with transfer to basic positions (sitting down, lying down, squat, on the knees).	2 min	In a line on 4 rows	Up front practice, individual pace
11	Standing, ball in front of the body	High, very, high, low, very low dribbling with changing positions.	2 min	In a line on 4 rows	Up front practice, individual pace
12	Standing, ball in front of the body	Dribbling in the gym - upon signal stop in position of player with ball having 3 options - i.e. shooting, passing or dribbling	8 X	Spread out on the court	Up front practice
13	Standing, ball in front of the body	Performing high speed tactical moves (figure 8-waves between the legs, rotating the ball around the thigh, etc.) - upon signal performing a rapid transfer to position of player with ball having 3 options - i.e. shooting, passing or dribbling.		In a line on 4 rows	Up front practice, individual pace

No.	Initial position	Content of the exercise	Dosage	Work format	Training forms
		Variant: - upon signal a turn jump 45°, 90° or 180° and landing in position of player with ball having 3 options - i.e. shooting, passing or dribbling.			
14	Standing pairwise face to face with a ball	Catching the ball from a team member – trick pass (or throw) to the right – pass – get the ball back – trick pass (or throw) to the right	10 X		Up front practice, pairwise
15	Standing pairwise face to face with a ball	„Mirror” game – one of the pupils dribbles standing (high, low, medium) and the team member imitates.	2 min	Pairwise with a ball	Up front practice, pairwise

## Results and discussions

**Table no. 3.**

Statistic indicators regarding the “Square Test” (boys)

Cls	GRUPA EXPERIMENTALĂ									GRUPA MARTOR								
	Media			A.S.			C.V.			MEDIA			A.S.			C.V.		
	T1	T2	Ret.	T1	T2	Ret.	T1	T2	Ret.	T1	T2	Ret.	T1	T2	Ret.	T1	T2	Ret.
V	8,48	7,37	7,2	0,95	0,54	0,65	11,3	7,33	8,66	8,51	8,32	8,32	0,69	0,90	0,86	8,14	10,8	10,3
VI	7,84	6,60	6,5	0,74	0,41	0,47	9,5	6,25	6,42	7,72	7,87	8,46	0,67	0,85	0,82	8,78	10,8	9,7

**Table no. 4.**

Statistic indicators regarding the “Square Test” (girls)

Cls	GRUPA EXPERIMENTALĂ									GRUPA MARTOR								
	Media			A.S.			C.V.			MEDIA			A.S.			C.V.		
	T1	T2	Ret.	T1	T2	Ret.	T1	T2	Ret.	T1	T2	Ret.	T1	T2	Ret.	T1	T2	Ret.
V	7,90	7,25	7,25	1,01	0,87	0,86	12,8	12,0	11,6	7,60	7,51	7,4	1,033	0,93	0,93	13,5	12,4	12,4
VI	6,55	5,75	5,70	1,052	0,966	0,94	16,06	16,8	13,43	6,921	6,75	7,9	0,840	0,710	0,74	12,13	10,51	9,36

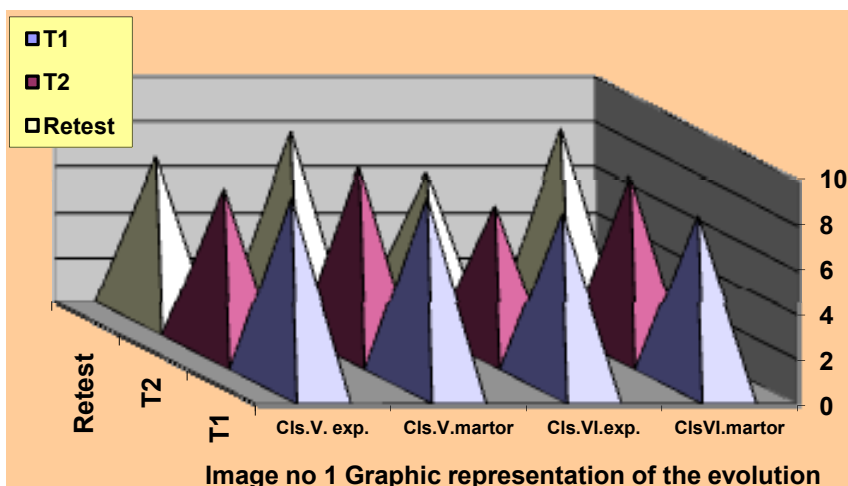
**Table no. 5.**

Significance of the difference between the average in trail groups

Grade	Test“t” student
<b>Grade V boys</b>	<b>3,2</b>
<b>Grade V girls</b>	<b>4,6</b>
<b>Grade VI boys</b>	<b>2,7</b>
<b>Grade VI girls</b>	<b>3,2</b>

With the boys’ groups the average indicates significant progress from T1 to T2 for the entire trial group, and even setback with the control group (image 1).

The variability coefficient indicates high homogeneity in T2 for the trial groups and T1 control groups and medium homogeneity in T1 in the trial groups and T2 groups.

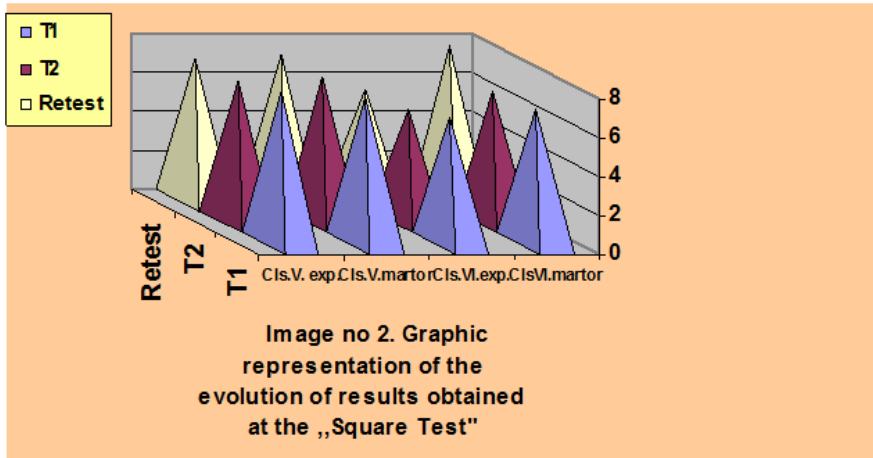


The girls’ trial groups show better values of the average in T2 as compared to T1 (image 2).

The variability coefficient shows medium homogeneity in all research groups.

During the retesting all grades of the research, except grade VI girls’ control group, show a setback.

Grade VI trial groups record a more significant improvement than grade V trial groups.



The calculated value of „t” is higher with all trail groups than the value of „t” at the significance boundary  $P=0,05$ , except grade VI boys, where it is higher event that value „t” at boundary of  $0,02$ . The highest value is recorded in grade V girls and thus the null hypothesis is infirmed, as the differences between the averages of the results are statistically significant.

## Conclusions

1. The exercises conceived and applied are efficient and contribute to the improvement of accuracy and orientation of the body in space, which are necessary to play basketball.
2. The values of the trial group are higher than the ones of the control group and can be observed in tables 3 and 4.
3. The results of the research show that the exercises, which were practiced, contributed to the improvement of accuracy and body orientation in space and we recommend that they are used during physical education classes, mentioning that these are to be adapted and even supplemented according to the age of the children, the existing infrastructure and their training level.

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## MOTOR LEARNING AND MEMORY IN ANIMALS WITH EXPERIMENTALLY INDUCED DEPRESSION (NOTE II)

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**ABSTRACT.** The effect of physical exercise on motor learning and memory in animals with experimentally induced depression was studied. Depression was induced using the Kelly method (1987), through bilateral olfactory bulbectomy. The control of depression was performed using the tail suspension test (Steru et al. 1985). We used 3 study groups, male rats. A control group (C), one with induced depression (I), and one with induced depression and trained for 28 days (II). The results obtained show a decrease in the learning capacity, without memory changes in group I. In group II we observed an increase in the learning capacity compared to the control group and group I, with a decrease in the memory capacity compared to controls and an increase in the memory capacity compared to group I. Physical exercise is a favorable factor that may contribute to the prevention of learning and memory difficulties in depression.

**Keywords:** physical exercise, depression, motor learning, memory

**REZUMAT.** *Învățarea motorie și memoria la animale cu depresie indusă experimental (nota II).* Am studiat efectul exercițiului fizic asupra învățării motorii și a memoriei la animale cu depresie indusă experimental. Depresie a fost indusă folosind metoda Kelly (1987) prin bulbectomie olfactivă. Controlul depresiei a fost făcut prin testul suspensiei cozii (Steru et al. 1985). În cercetare a fost cuprinse trei loturi, șobolani masculi. Un lot de control (C), un lot cu depresie indusă (I) și un lot cu depresie indusă și antrenat la efort timp de 28 de zile (II). Rezultatele obținute au arătat o scădere a capacității de învățare în grupul I; în privința grupului II s-a observat o creștere a capacității de învățare și a memoriei față de grupul I dar o scădere față de lotul de control. Exercițiul fizic este un factor favorabil care poate contribui la prevenirea dificultăților în învățare și în memorare legate de depresie.

**Cuvinte cheie:** exercițiu fizic, depresie, învățare motorie, memorie

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## **Introduction**

The data on motor behavior changes in animals with experimentally induced depression by olfactory bulbectomy led us to study the influence of depression on motor learning capacity and memory.

Motor learning is defined as the acquisition and maintenance of new motor skills (Foss and Keteyian 1998). The structures specialized in motor learning are in the neocortex – the premotor area and the additional motor area; the basal ganglia and the thalamus; the cerebellum (Foss and Keteyian 1998, Weineck 1995).

Motor learning involves: the reception and selection of information, the central nervous control of afferent pathways, the information processing capacity; the storage of sensory and sensory-motor information in the memory (Weineck 1995).

## **Objectives**

The effect of physical exercise on motor learning and memory in animals with experimentally induced depression was studied.

## **Material and methods**

The studies on male Wistar rats aged 4 months, with a weight of 200-250 g, from the Biobasis of the “Iuliu Hațieganu” University of Medicine and Pharmacy Cluj-Napoca, were carried out in the Experimental Research Laboratory of the Department of Physiology, with the approval of the Bioethics Board.

### ***Groups*** (n = 10 animals/group)

- group C – control group of males
- group I – males with depression
- group II – males with depression, subjected to the swimming test (one hour daily for 28 days, after day 7 postoperatively)

Depression was induced using the Kelly method (1987), through bilateral olfactory bulbectomy. The control of depression was performed using the tail suspension test (Steru et al. 1985).

### ***Testing of motor learning and memory***

The spatial learning capacity and memory were evaluated using the Morris water maze test (\*\*\*) .

The indicators for learning were:

- number of diagonals
- number of excursions
- time in D
- latency time

The moments for the testing of the learning capacity and memory were chosen after day 7 postoperatively, and were noted with  $T_1$  (day 1) and  $T_{28}$  (day 28).

### Statistical analysis

Statistical processing was performed with the Excel application (Microsoft Office 2007) and the StatsDirect v.2.7.2 software. The graphical representation of the results used the Excel application (Microsoft Office 2007).

### Results

The statistical analysis of the values of the Morris test – the learning period, considering all groups, evidenced the following:

- diagonals – highly statistically significant differences between at least two of the groups both at moment  $T_1$  ( $p = 0.0004$ ) and at moment  $T_{28}$  ( $p < 0.0001$ )
- excursions – highly statistically significant differences between at least two of the groups both at moment  $T_1$  and at moment  $T_{28}$  ( $p < 0.0001$ )
- time in D – highly statistically significant differences between at least two of the groups both at moment  $T_1$  ( $p < 0.0001$ ) and at moment  $T_{28}$  ( $p = 1.17 \times 10^{-26}$ )
- latency time – highly statistically significant differences between at least two of the groups both at moment  $T_1$  and at moment  $T_{28}$  ( $p < 0.0001$ ).

The statistical analysis of the values of the Morris test – the control moment, considering all groups, evidenced the following:

- diagonals – highly statistically significant differences between at least two of the groups at moment  $T_1$  ( $p = 0.0001$ ); at moment  $T_{28}$ , no statistically significant differences were found between any of the groups ( $p = 0.1721$ )
- excursions – highly statistically significant differences between at least two of the groups both at moment  $T_1$  and at moment  $T_{28}$  ( $p < 0.0001$ )

- time in D – highly statistically significant differences between at least two of the groups both at moment  $T_1$  ( $p = 0.0002$ ) and at moment  $T_{28}$  ( $p = 1.15 \times 10^{-5}$ ).

The statistical analysis of the values of the studied indicators for unpaired samples (group C – group I) showed:

- for the Morris test – the learning period
  - diagonals – highly statistically significant differences between the two groups at moments  $T_1$  and  $T_{28}$  ( $p < 0.001$ )
  - excursions – highly statistically significant differences between the two groups at moments  $T_1$  and  $T_{28}$  ( $p < 0.001$ )
  - time in D – highly statistically significant differences between the two groups at moments  $T_1$  and  $T_{28}$  ( $p < 0.001$ )
  - latency time – highly statistically significant differences between the two groups at moments  $T_1$  and  $T_{28}$  ( $p < 0.001$ )
- for the Morris test – control
  - diagonals – highly statistically significant differences between the two groups at moment  $T_1$  ( $p < 0.001$ )
  - excursions – highly statistically significant differences between the two groups at moments  $T_1$  and  $T_{28}$  ( $p < 0.001$ )
  - time in D – highly statistically significant differences between the two groups at moments  $T_1$  and  $T_{28}$  ( $p < 0.001$ ).

The statistical analysis of the values of the studied indicators for unpaired samples (group C – group II) showed:

- for the Morris test – the learning period
  - diagonals – highly statistically significant differences between the two groups at moments  $T_1$  and  $T_{28}$  ( $p < 0.001$ )
  - excursions – highly statistically significant differences between the two groups at moments  $T_1$  and  $T_{28}$  ( $p < 0.001$ )
  - time in D – highly statistically significant differences between the two groups at moments  $T_1$  and  $T_{28}$  ( $p < 0.001$ )
  - latency time – highly statistically significant differences between the two groups at moments  $T_1$  and  $T_{28}$  ( $p < 0.001$ )
- for the Morris test – control
  - diagonals – highly statistically significant differences between the two groups at moment  $T_1$  ( $p < 0.001$ )
  - excursions – highly statistically significant differences between the two groups at moments  $T_1$  and  $T_{28}$  ( $p < 0.001$ )
  - time in D – very statistically significant differences between the two groups at moments  $T_1$  and  $T_{28}$  ( $p < 0.01$ ).

The statistical analysis of the values of the studied indicators for unpaired samples (group I – group II) evidenced:

- for the Morris test – the learning period
  - diagonals – highly statistically significant differences between the two groups at moments  $T_1$  and  $T_{28}$  ( $p < 0.001$ )
  - excursions – highly statistically significant differences between the two groups at moments  $T_1$  and  $T_{28}$  ( $p < 0.001$ )
  - time in D – statistically significant differences between the two groups at moment  $T_1$  ( $p < 0.05$ )
  - latency time – highly statistically significant differences between the two groups at moments  $T_1$  and  $T_{28}$  ( $p < 0.001$ )
- for the Morris test – control
  - diagonals – the absence of statistically significant differences between the two groups at moments  $T_1$  and  $T_{28}$  ( $p > 0.05$ )
  - excursions – statistically significant differences between the two groups at moment  $T_1$  ( $p < 0.05$ )
  - time in D – statistically significant differences between the two groups at moment  $T_1$  ( $p < 0.05$ ) and highly statistically significant differences between the two groups at moment  $T_{28}$  ( $p < 0.001$ ).

The statistical analysis of the values of the studied indicators for paired samples (moments  $T_1 - T_{28}$  in group I) evidenced:

- for the Morris test – the learning period
  - diagonals – differences without statistical significance ( $p > 0.05$ )
  - excursions – differences without statistical significance ( $p > 0.05$ )
  - time in D – differences without statistical significance ( $p > 0.05$ )
  - latency time – highly statistically significant differences between the two moments ( $p < 0.001$ )
- for the Morris test – control
  - diagonals – highly statistically significant differences between the two moments ( $p < 0.001$ )
  - excursions – very statistically significant differences between the two moments ( $p < 0.01$ )
  - time in D – statistically significant differences between the two moments ( $p < 0.05$ ).

The statistical analysis of the values of the studied indicators for paired samples (moments  $T_1 - T_{28}$  in group II) showed:

- for the Morris test – the learning period
  - diagonals – highly statistically significant differences between the two moments ( $p < 0.001$ )
  - excursions – very statistically significant differences between the two moments ( $p < 0.01$ )
  - time in D – statistically significant differences between the two moments ( $p < 0.05$ )
  - latency time – highly statistically significant differences between the two moments ( $p < 0.001$ )
- for the Morris test – control
  - diagonals – very statistically significant differences between the two moments ( $p < 0.01$ )
  - excursions – statistically significant differences between the two moments ( $p < 0.05$ )
  - time in D – statistically significant differences between the two moments ( $p < 0.05$ ).

**Table I.**

Comparative analysis for the values of the studied indicators in the two groups and statistical significance

Test			Mean	SE	Median	SD	Min.	Max.	Statistical significance (p)	
									Unpaired samples	
					group C - group I	group C - group II				
Morris - learning	Diagonals	$T_1$	1.6	0.0580	1.54	0.1834	1.42	2	< 0.0001	0.9965
		$T_{28}$							0.0003	< 0.0001
	Excursions	$T_1$	2.93	0.0562	2.92	0.1776	2.67	3.33	< 0.0001	0.0754
		$T_{28}$							$6.67 \times 10^{-11}$	< 0.0001
	Time in D	$T_1$	3.58	0.1369	3.63	0.4329	2.83	4.17	< 0.0001	< 0.0001
		$T_{28}$							$3.66 \times 10^{-16}$	$1.49 \times 10^{-17}$
	Latency time	$T_1$	32.28	0.6745	32.67	2.1330	26.92	34,75	< 0.0001	< 0.0001
		$T_{28}$							< 0.0001	< 0.0001
Morris - control	Diagonals	$T_1$	4.9	0.3145	5	0.9944	4	7	0.0002	< 0.0001
		$T_{28}$							0.33	0.5196
	Excursions	$T_1$	10.5	0.6540	10	2.0683	8	14	< 0.0001	< 0.0001
		$T_{28}$							< 0.0001	< 0.0001
	Time in D	$T_1$	32.2	2.5465	33.5	8.0526	18	42	< 0.0001	0.0015
		$T_{28}$							0.0006	0.0086
	Latency time	$T_1$	60		60		60	60	–	–
		$T_{28}$							–	–

									group I - group II	
Morris - learning	Diagonals	T <sub>1</sub>	1.13	0.0599	1.13	0.1894	0.83	1.5	<b>7.87 x 10<sup>-5</sup></b>	
		T <sub>28</sub>	1.18	0.0593	1.17	0.1876	0.92	1.58	<b>5.45 x 10<sup>-10</sup></b>	
	Excursions	T <sub>1</sub>	1.8	0.0544	1.83	0.1721	1.58	2	<b>&lt; 0.0001</b>	
		T <sub>28</sub>	1.88	0.0531	1.875	0.1678	1.58	2.17	<b>&lt; 0.0001</b>	
	Time in D	T <sub>1</sub>	15.25	0.2101	15.08	0.6643	14.5	16.25	<b>0.0117</b>	
		T <sub>28</sub>	15.33	0.2425	15.54	0.7668	14	16.58	0.8207	
	Latency time	T <sub>1</sub>	72.35	0.5426	72.13	1.7158	69.25	74.67	<b>1.099 x 10<sup>-6</sup></b>	
		T <sub>28</sub>	67.1	0.8856	66.75	2.8004	63.75	71.92	<b>4.57 x 10<sup>-9</sup></b>	
Morris - control	Diagonals	T <sub>1</sub>	2.6	0.3055	2.5	0.9661	1	4	<b>0.8745</b>	
		T <sub>28</sub>	5.4	0.3399	5	1.0750	4	7	0.0533	
	Excursions	T <sub>1</sub>	3.4	0.2211	3.5	0.6992	2	4	<b>0.01</b>	
		T <sub>28</sub>	6.5	0.3727	7	1.1785	5	8	0.9091	
	Time in D	T <sub>1</sub>	16.6	0.7630	17.5	2.4129	12	19	<b>0.0186</b>	
		T <sub>28</sub>	19.2	0.6110	18.5	1.9322	17	22	<b>0.0002</b>	
	Latency time	T <sub>1</sub>	60		60		60	60	-	
		T <sub>28</sub>	60		60		60	60	-	
									Unpaired samples (T <sub>1</sub> - T <sub>28</sub> )	
									group I	group II
Morris - learning	Diagonals	T <sub>1</sub>	1.57	0.0631	1.58	0.1995	1.17	1.83	0.5461	<b>4.34 x 10<sup>-6</sup></b>
		T <sub>28</sub>	2.13	0.0530	2.125	0.1676	1.83	2.33		
	Excursions	T <sub>1</sub>	3.14	0.0979	3.08	0.3094	2.75	3.75	0.5703	<b>0.002</b>
		T <sub>28</sub>	4.075	0.0685	4.04	0.2168	3.67	4.42		
	Time in D	T <sub>1</sub>	16.3	0.2798	15.92	0.8847	15.5	18.08	0.8203	<b>0.0195</b>
		T <sub>28</sub>	15.41	0.2182	15.375	0.6899	14.58	16.83		
	Latency time	T <sub>1</sub>	66.14	0.6447	66.375	2.0386	63.25	69.75	<b>4.2 x 10<sup>-5</sup></b>	<b>3.61 x 10<sup>-8</sup></b>
		T <sub>28</sub>	54.69	0.7222	54.92	2.2839	51.5	58.75		
Morris - control	Diagonals	T <sub>1</sub>	2.7	0.2134	3	0.6749	2	4	<b>0.0005</b>	<b>0.0078</b>
		T <sub>28</sub>	4.5	0.2687	4.5	0.8498	3	6		
	Excursions	T <sub>1</sub>	4.9	0.4583	4.5	1.4491	3	8	<b>0.002</b>	<b>0.0391</b>
		T <sub>28</sub>	6.5	0.3727	7	1.1785	5	8		
	Time in D	T <sub>1</sub>	20.7	1.4610	20.5	4.6200	13	30	<b>0.0234</b>	<b>0.0469</b>
		T <sub>28</sub>	23.6	0.7024	23.5	2.2211	19	27		
	Latency time	T <sub>1</sub>	60		60		60	60	-	-
		T <sub>28</sub>	60		60		60	60		

## Discussion

Our results show that over the learning period, bilateral olfactory bulbectomy induced in group I compared to group C, at moments T<sub>1</sub> and T<sub>28</sub>, significant decreases in the number of diagonals and excursions and significant increases in the time spent in D and the latency time. In the group with olfactory bulbectomy subjected to exercise (group II) compared to the control group C, there were significant increases in the number of diagonals and excursions at moment T<sub>28</sub> and significant increases in the time spent in D and the latency time at moments T<sub>1</sub> and T<sub>28</sub>.



For the control of learning, it was found that group I had compared to group C significant decreases in the number of diagonals at moment  $T_1$  and significant decreases in the number of excursions and the time spent in D at moments  $T_1$  and  $T_{28}$ . In the operated group subjected to exercise (group II), compared to the control group, there were significant decreases in the number of diagonals at moment  $T_1$ , significant decreases in the number of excursions at moments  $T_1$  and  $T_{28}$ , and significant decreases in the time spent in D at moment  $T_{28}$ .

Group II, operated and subjected to exercise for 28 days, compared to operated and sedentary group I, had over the learning period significant increases in the number of diagonals, in the number of excursions, in the time spent in D, and significant decreases in the latency time at moments  $T_1$  and  $T_{28}$ . In the same group, for the control of learning, there were significant increases in the number of excursions and the time spent in D at moment  $T_1$ , and significant increases in the time spent in D at moment  $T_{28}$ .

Over the learning period, in the operated group (group I), there were no significant changes for any of the indicators at moment  $T_{28}$  compared to moment  $T_1$ . The operated and exercise trained group (group II) had, at moment  $T_{28}$  compared to moment  $T_1$ , significant differences for all indicators, with increases in the number of diagonals and excursions and decreases in the time spent in D and the latency time.

For the control of learning, in group I, significant differences in the number of diagonals and excursions as well as in the time spent in D were found, which increased at moment  $T_{28}$ , and there were significant decreases in the latency time at moment  $T_{28}$  compared to moment  $T_1$ . For the control test, group II had significant changes in the number of diagonals and excursions as well as in the time spent in D at moment  $T_{28}$ , which increased compared to moment  $T_1$ .

The motor learning and memory changes studied by other authors in the same experimental model with olfactory bulbectomy induced depression tested using the maze test have shown learning difficulties (Overstreet 1993; Jones et al. 2008), the impairment of learning and memory (Hendriksen H. 2012; Baek et al. 2012) and the inhibition of learning, without the impairment of memory (Gao LC 2009).

The results obtained show a decrease in the learning capacity, without memory changes in group I, subjected to bilateral olfactory bulbectomy. Experimental depression through olfactory bulbectomy associated with physical exercise for 28 days determined in group II an increase in the learning capacity compared to the control group and group I, with a decrease in the memory capacity compared to controls and an increase in the memory capacity compared to group I.

## Conclusions

1. Experimentally induced depression through olfactory bulbectomy determines a decrease in motor learning capacity, without the impairment of memory.
2. Physical exercise determines in animals with olfactory bulbectomy induced depression an increase in the learning capacity and memory compared to the sedentary group with induced depression.
3. Physical exercise is a favorable factor that may contribute to the prevention of learning and memory difficulties in depression.

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## HEART RATE IN THE PHYSICAL EDUCATION CLASS AT LOWER SECONDARY LEVEL

COSMIN PRODEA<sup>1,\*</sup>, ALEXANDRA GIURGIU<sup>1</sup>

**ABSTRACT.** We chose as a subject of this paper “The Dynamics of Effort in the Physical Education Class at Lower Secondary Level” on the grounds that the effort is closely related to the other components of the training process (skills, abilities, physical qualities). The key to success in the practice of physical exercise is the dosage of effort. Before, at the beginning of and during the physical effort, in response to its intensity and duration, the human body makes a number of adjustments to ensure the necessary energy within the shortest time. These adjustments consist in increasing the cardiac output (CO) on the basis of the rise in the HR (heart rate) and the volume of the blood pumped into the aorta during a ventricular systole, ventricular stroke volume (SV) and the blood flow in the muscles employed in the effort. This makes it possible to increase oxygen consumption ( $VO_2$ ). In submaximal efforts, it was found that the rate of the aerobic production of energy increases with time, while maintaining it constant. The relationship between HR and  $VO_{2max}$  is not linear with low intensity efforts. It tends to become linear with efforts of increased intensity. An explanation for this may be found in the increase of SV. It is important to note that the intensity and duration of the effort as well as the degree of development of the individual’s exercise capacity determine the weight of the changes occurring in CO components. In short and intense efforts, both HR and SV increase.

**Keywords:** heart rate, maximum oxygen level, physical effort, dynamics of effort, physical education class, pulse tester

**REZUMAT.** *Frecvența cardiacă în lecția de educație fizică și sport la nivel gimnazial.* Am ales ca temă a acestei lucrări „Dinamica efortului în lecția de educație fizică la nivelul ciclului gimnazial” pe considerentul că efortul se află în strânsă legătură cu celelalte componente ale procesului de instruire (priceperi, deprinderi, calități motrice). Cheia succesului în practicarea exercițiilor fizice o reprezintă dozarea efortului. Înainte, la începutul și în timpul efortului fizic, ca răspuns la intensitatea și durata acestuia, în organismul uman se produc o serie

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de adaptări menite să asigure în cel mai scurt timp energia necesară. Aceste adaptări constau în mărirea debitului cardiac (DC) pe seama creșterii FC și volumului de sânge pompat în artera aortă în timpul unei sistole ventriculare, volum sistolic ventricular (VSV) și a circulației sângelui în mușchii angajați în efort. Aceasta face posibilă creșterea consumului de oxigen ( $VO_2$ ). În eforturile submaximale, s-a constatat că ponderea producției aerobe a energiei crește cu timpul, în condițiile menținerii constante a acesteia. Relația dintre FC și  $VO_2$ max nu este liniară în eforturile de intensitate scăzută. Ea tinde să se liniarizeze odată cu creșterea intensității acestora. O explicație în această privință poate fi creșterea VSV. Este important de menționat că intensitatea și durata efortului precum și gradul de dezvoltare a capacității de efort a individului, determină ponderea modificărilor care au loc în componentele DC. În eforturile intense și de scurta durată, crește atât FC cât și VSV.

**Cuvinte cheie:** frecvența cardiacă, nivelul maxim de oxigen, efort fizic, dinamica efortului, lecția de educație fizică, puls tester

## Introduction

The activity of physical education and sport, organized for educational and instructive, participative or recreational purposes, becomes nowadays increasingly extensive.

The changes in the conditions of existence of the contemporary man exercise significant influences on the human body, forcing it to adapt its functions to new conditions.

The content of this paper focuses on research whose main direction is the relationship between heart rate and the maximum volume of oxygen. We analyzed the relationship between the dynamics of the heart rate and of the maximum oxygen consumption as well as the possibility of using heart rate in dosing intensity, during physical effort.

During the first three stages, the effort development follows an upward course as revealed by HR and RR (respiratory rate) values which, starting from about 70 beats/min, respectively 16-18 breaths/min, can reach levels of 120-130 beats/min, respectively 20-22 breaths/min. At the end of the third stage, acting in order to attain the specific operational objectives of the lesson entails the highest demands on the body. The downward trend of the values of functional parameters is a physiologically normal one, provided by means of the last two stages during which one tries to bring one's body back to an optimal state so as to continue with school or daily activities. This generates a downward shape of the effort curve, to levels close to those recorded before the start of the class.

## Heart rate (HR)

“Before, at the beginning of and during the physical effort, in response to its intensity and duration, the human body makes a number of adjustments to ensure the necessary energy within the shortest time”.

“These adjustments consist in increasing the cardiac output on the basis of the rise in the heart rate and the volume of the blood pumped into the aorta during a ventricular systole, ventricular stroke volume and the blood flow in the muscles employed in the effort. This makes it possible to increase oxygen consumption. In submaximal efforts, it was found that the rate of the aerobic production of energy increases with time, while maintaining it constant. The relationship between heart rate and maximum oxygen consumption level is not linear with low intensity efforts. It tends to become linear with efforts of increased intensity. An explanation for this may be found in the increase of the ventricular stroke volume”.

So, physical effort results in cardiac output increase. It is important to note that the intensity and duration of the effort as well as the degree of development of the individual's exercise capacity determine the weight of the changes occurring in cardiac output components. In short and intense efforts, both heart rate and ventricular stroke volume increase.”  
(www.medicinasportiva.ro)

## Oxygen extraction (a-v $O_{dif}$ )

“There are two main parameters that determine the size of a-v  $O_{dif}$ , namely the amount of  $O_2$  carried by the blood and the consumption need existing in the muscles engaged in the effort. Arterial oxygen varies little as compared to its level in the state of rest of  $20\text{ml dl}^{-1}$  even in the case of a higher variation of exercise intensity. But what gives the a-v  $O_{dif}$  value is  $O_2$  content in the venous blood, which is somewhere around  $12\text{-}15\text{ ml dl}^{-1}$  in a state of rest and which decreases during the maximum intensity exercise down to  $2\text{-}4\text{ ml dl}^{-1}$ .

From the time  $O_2$  reaches the muscles involved in the effort, the equivalent of the blood hemoglobin, myoglobin, the mitochondrial content and the *aerobic* enzyme apparatus of the muscles will further condition the a-v  $O_{dif}$ , the dynamics of their activity being, of course, determined by the intensity of the effort. Recruitment size and the type of muscle fibres engaged in sustaining the physical effort definitely influence the oxygen *demand*. Therefore, the physiological motivation for the use of heart rate in estimating and determining the dosage of exercise intensity lies in the way in which the heart, through its action of pumping blood into the arteries, compensates for the changes in the dynamics of peripheral circulation. Without the adjustments of the heart rate

and ventricular stroke volume, central blood circulation would be very much affected. An increased peripheral resistance would cause high blood pressure, whereas increased vasodilation of peripheral vasculature would result in low blood pressure.

Adrenaline and noradrenaline are the hormones by which the control of the sympathetic nervous system acts on heart rate and on the force of contraction of the myocardium. It can be seen that catecholamine secretion in the blood increases in proportion to the intensity of exercise.

The relationship between heart rate and maximum oxygen consumption level is not linear. This is because the cardiac output adjustment to maximum oxygen consumption level is achieved by variations in heart rate and ventricular stroke volume.

## **Hypothesis**

In this experiment, we started from the hypothesis that, by planning the dynamics of effort according to the requirements and principles for exercise in the physical education class, striving towards a balance and an optimal combination of the volume, intensity, complexity, density and purity of the effort, it would most certainly be directed at reaching maximum shape and the continuous increase in capacity. However, to achieve this goal, objective tools and techniques for monitoring the dynamics of the effort throughout one or several classes are required.

## **Goals**

The research goals were, first of all, to determine the current state of knowledge on the subject as reflected in specialized literature and research works, then to identify parameters such as: warm-up time, time of maximum effort, and ending time, setting out record-keeping documents and instruments for effort dynamics assessment (quantitative, qualitative indicators) as well as monitoring the dynamics of effort as scheduled for students.

## **Materials and methods**

The experiment took place as part of the instructive and educational process, during the classes of physical education and sport of 5th, 6th, 7th and 8th grades, with the observance of the school year structure, following the proposed work hypotheses.

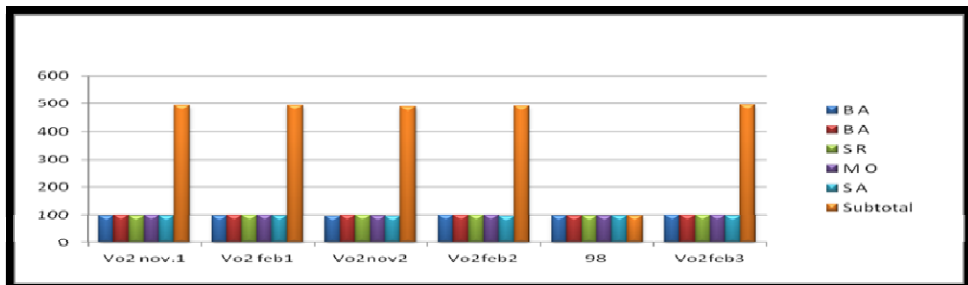
## HEART RATE IN THE PHYSICAL EDUCATION CLASS AT LOWER SECONDARY LEVEL

The research was conducted in 2 stages, the first test being performed during the period 20-30 November 2012, and the second during the period 10-20 March 2013 at primary and middle school “Octavian Goga” of Oradea. In both occasions, the tests were performed on the same selection of children to see the changes that had occurred and whether there had been any improvements in the meantime.

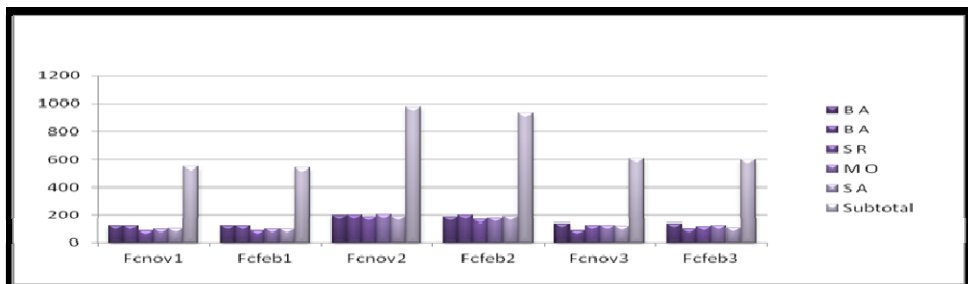
The experiment was performed on groups of children, under the same conditions in both the initial and the final tests.

The research included 4 samples, namely 5th, 6th, 7th and 8th grades. There were 5 students randomly selected, and the tests were performed at three different times of the class: **beginning of the exercise, peak of the exercise** and **after the exercise**, on which occasions we measured their heart rate and maximum volume of oxygen.

Work intensity by levels of effort with pulse-area control. I started from the premise that the oxygen debt is recovered more quickly than HR, therefore HR values were accurately determined with the help of the pulse tester.

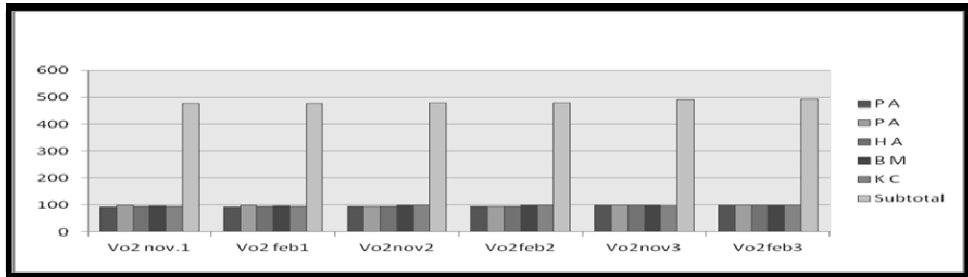


**Chart 1** – Maximum Volume of Oxygen in grade 6th B

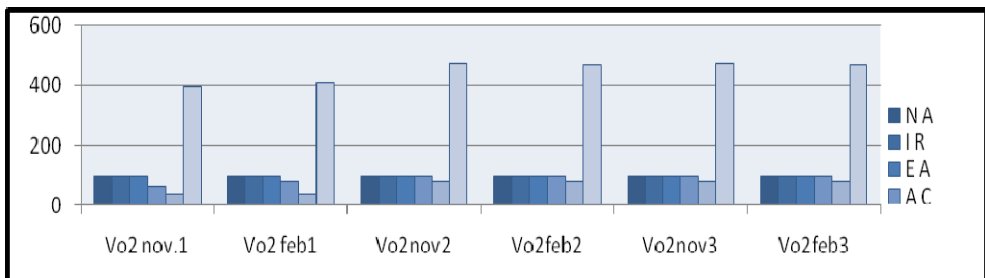


**Chart 2** – Heart Rate in grade 6th B

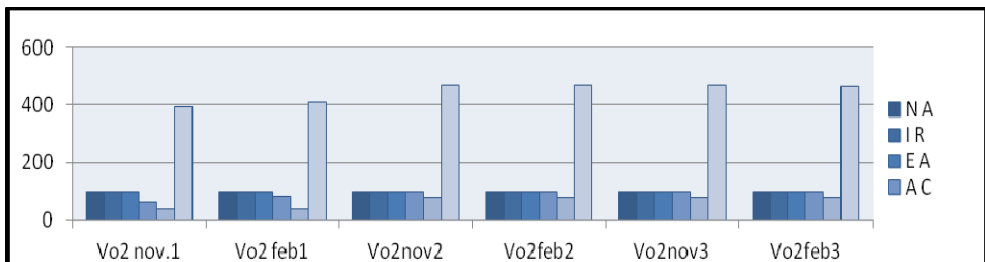




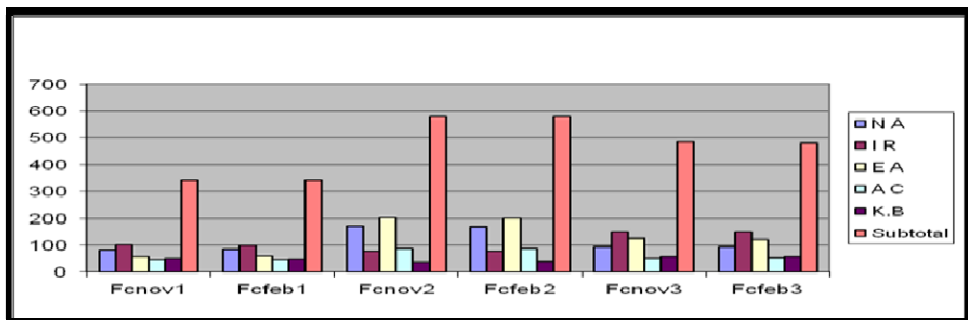
**Chart 3 – Maximum Volume of Oxygen in 8th grade**



**Chart 4 – Heart Rate in 8th grade**



**Chart 5 - Maximum Volume of Oxygen in 5th grade**



**Chart 6 – Heart Rate in 5th grade**

HEART RATE IN THE PHYSICAL EDUCATION CLASS AT LOWER SECONDARY LEVEL

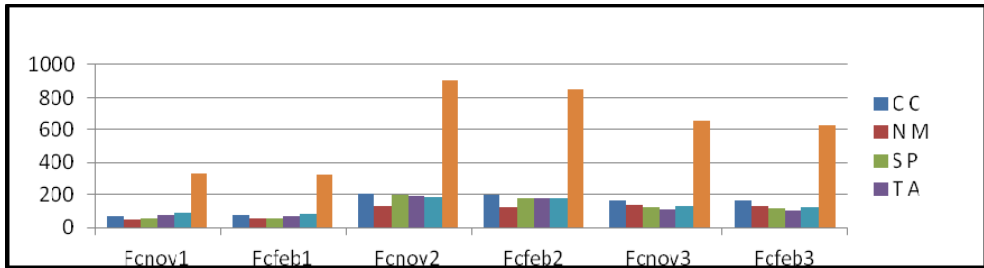


Chart 7 – Heart Rate in 7th grade

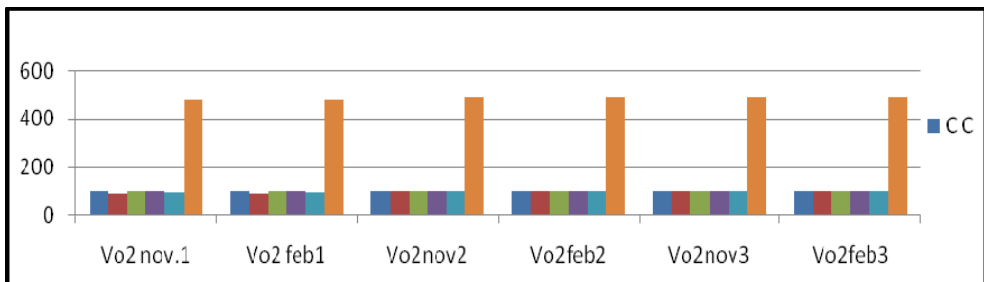


Chart 8 – Volume of Oxygen in 7th grade

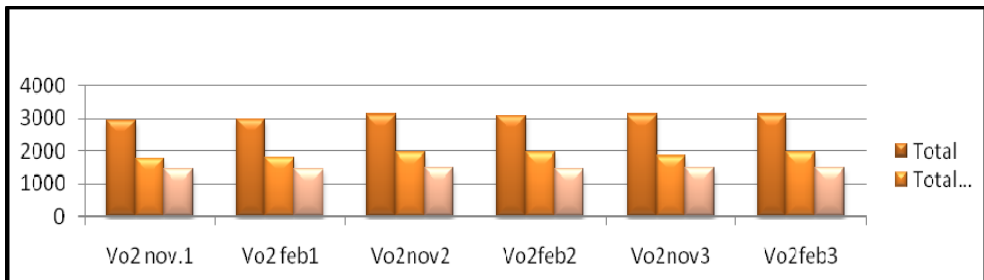


Chart 9 – Total girls and boys Maximum Volume of Oxygen

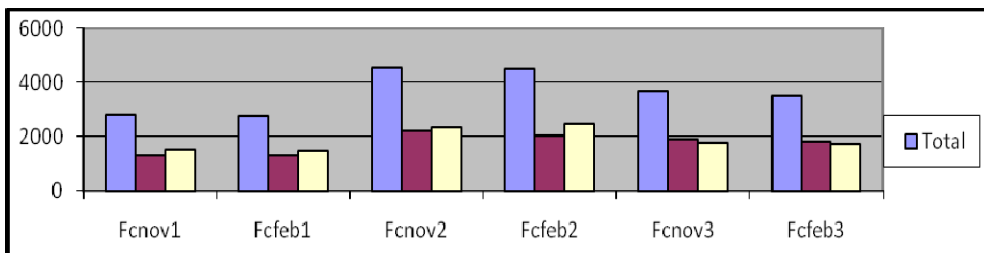


Chart 10 – Total girls and boys Heart Rate

## Discussion

All research results help to confirm the hypothesis, namely that, by planning the dynamics of effort according to the requirements and principles of exercise in the physical education class, striving towards a balance and an optimal combination of the volume, intensity, complexity, density and purity of the effort, it will certainly be directed at reaching maximum shape and the continuous increase in capacity. Also, to achieve this goal, objective tools and techniques for monitoring the dynamics of the effort throughout one or several classes are required.

The pulsations recorded were an accurate indicator of the intensity of the work performed, as well as of the recovery after effort. The use of the pulse tester allowed us an objective control of HR and of the duration between repetitions which led to improvement in the performance of the members of the experimental group as compared to the control group.

Measurement of the heart rate by using the pulse tester is a very good overall indicator of exercise intensity and can serve as an effective referral system for both the student and the teacher.

## Conclusions

In conclusion, we can say that the use of the heart rate in the determination and dosage of the intensity of physical effort is a good tool, because it reflects with high fidelity the amount of oxygen consumption required to produce energy. It is noted that, with submaximal efforts, maintaining a constant intensity during the exercise is done through a rise in the share of aerobic energy production, in the context of intensified blood circulation in the muscles involved in the effort.

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## ORADEA'S TEAMS IN THE ROMANIAN FIRST DIVISION OF WATER POLO

ȘTEFAN MAROTI<sup>1,\*</sup>, PETRU FLORIN PEȚAN<sup>1</sup> & MIHAELA GOINA<sup>2</sup>

**ABSTRACT.** There are few works that have reported on the history of this sport in Oradea. On the basis of this reality, the authors considered that a work concerning the participation of Oradea's teams in the Romanian first division of water polo would be interesting and useful for fans of this segment of Oradea's sport history. Studying the past of water polo in Oradea and publishing the results of such research is necessary because there is valuable information in archives, libraries, sports newspapers, sports columns of newspapers, personal albums, and different writings of participants in various events linked to the history of Oradea's water polo. There are many valuable pieces of information waiting to be investigated and made available to those interested. This study investigates the most important athletes and events of the best teams from our city during the 65 years of participation in the National Championship. This study describes the players, coaches and results obtained by Oradea's teams in the Romanian first division of water polo. This work takes advantage of the vast documents available and represents a monograph of Oradea's water polo history.

**Key words:** sport's history, water polo, National Championship, Oradea

**REZUMAT.** *Echipe orădene în prima divizie de polo a României.* Cu toate că dintre jocurile sportive de echipă practicate în orașul nostru poloul are cele mai bune rezultate, în literatura de specialitate se găsesc puține lucrări care să abordeze trecutul acestei discipline sportive în Oradea. Pornind de la această realitate, autorii au crezut de cuviință că o lucrare privind participarea echipelor orădene în prima divizie de polo a României este de actualitate și este utilă pentru cei interesați de acest segment al istoriei sportului orădean. Studiarea trecutului acestui sport în Oradea, publicarea rezultatelor unor asemenea cercetări este cu atât mai necesară cu cât în arhive, în biblioteci, în pagini ale ziarelor de sport, în rubricile sportive ale unor cotidiane, în albume personale, în diferite însemnări ale participanților la diferite evenimente legate

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de istoria polului orădean există informații valoroase, care așteaptă să fie cercetate și puse la dispoziția celor interesați. Lucrarea se referă la principalele momente prin care au trecut cele mai bune echipe de polo din orașul nostru în cei șaiszeci și cinci de ani de participare în campionatul național, la jucătorii, antrenorii și la rezultatele obținute de grupările orădene în prima divizie de polo a României. Lucrarea reprezintă valorificarea, și sub această formă, a documentelor studiate în vederea redactării unei monografii a poloului orădean.

**Cuvinte cheie:** istoria sportului, polo, campionat național, Oradea

### **The first years of participation in the National Championship**

In the mid 1940s in our city there were some old traditions linked to the practicing of water polo (Nagyvárad, 1912; Fehér and Hönig 1937), Oradea's water polo teams had good results in competitions during the interwar period (Nagyvárad, 1926 a; Nagyvárad, 1928; Török, 1937) and in the Transylvanian Championship during the years of the Second World War, (Nagyvárad, 1943/1999); it also had successful international connections (Nagyvárad, 1926; Nagyvárad Sportya, 1931); water polo was a prominent contributor to the Development Program of Oradea's sport, developed by the Popular Sport Organization. Despite this rich history water polo has not been considered among the primary sport disciplines in Oradea (Pásztai et al., 2011). The lack of interest from the sports local management and insufficient support from local authorities made it impossible to prepare a team to participate in the first National Championship in the summer of 1946.

Due to the enthusiasm and willingness of some young people and the support received from the management of Libertatea Fur Factory, in the summer of 1947, a water polo team from Oradea entered as one of the participants to the Swimming and Water Polo National Championship (Crisana, 1947). Even though the water polo team's activities had been observed with great interest by many inhabitants of the city and the players had a strong fan base, Oradea's water polo had to deal with shortages and other difficulties that had only been partially resolved.

From 1946 to 1957, the fact that this sport was insufficiently supported by the local authorities and the economic environment of the city resulted in Oradea being represented in only in seven editions of the best water polo teams' championship, the team missed the 1949, 1950 and 1953 editions. The uncertainty in the local water polo during this time caused the team which represented Oradea in the first division to have more than one name –

Libertatea, in 1947, Întreprinderea Comunală, in 1948, Constructorul, during 1951 - 1955, Energia, during 1956 - 1957 - depending on the economic organization which financed its activity. In these circumstances, the results were not very good, 3<sup>rd</sup> place in 1947, 5<sup>th</sup> place in 1948, four 6<sup>th</sup> places in 1951, 1955, 1956 and 1957, 8<sup>th</sup> place in 1952, and 9<sup>th</sup> place in 1954 (Vasiliu, 1998). The results of Oradea's water polo teams during that time were influenced by the fact that a series of valuable players were transferred, either to Dinamo Bucharest or to the Army's Central House Bucharest. In these circumstances, Oradea's teams weren't able to obtain outstanding results (Demjén, 1996). The unfortunate events in Oradea's water polo during that time culminated in 1957, when Energia was relegated to the second division (Sportul popular, 1957).

The problems faced by the water polo teams in that period have demonstrated that without appropriate financial support, the benevolence of some supporters of this sport, the players' enthusiasm, the desire to achieve performance cannot lead to the achievement of a solid foundation for this sport or to achieve high performance.

### **A decade of success among the best Water Polo teams in Romania**

In the summer of 1957, sports in our country were transformed with the creation of the Physical Culture and Sports Union (Kiriteşcu, 1964). This generated changes at the sports movement in Oradea. These changes had a great effect on the polo division. Forming the Sports Club of Oradea, a higher achieving sports unit, that made water polo a priority sport set an organizational framework that allowed water polo to develop in the territory (Proces verbal, 1957). In addition to these events a similar series of actions were undertaken by the water polo group. The pennant team of the local water polo club was transferred to the Sports Club of Oradea. From the first year the team was strengthened, either by bringing in valuable players from other teams such as Mureşan Alexandru, Oanţă Adrian, Antonescu, Biró Tiberiu, Novák Iosif, Rujinschi Nicolae, Culineac Iosif, Alexandrescu Ioan, or by promoting young players from the junior team such as Muth Aurel, Lengyel Adalbert and others. The team's coach was Freud Emerich, a technician with extensive experience, a valuable coach who, in 1957, had led Dinamo Bucharest to winning the first national championship. As shown by the results of his years as the head coach, he proved to be the right person to lead Oradea's water polo future.

Under the leadership of the new coach, the water polo group started to improve decisively on the road to national prominence and began a tradition of high level performance. Through the changes made in the team's composition, the efforts in changing the players' mentality and the way in which the new coach



ruled and carried out the training processes and participation in competitions, the player began to consistently increase the level of performance. In the next few years, Oradea's players became more valuable, and the team became successful which placed the team among the best water polo teams of that time. In 1967, Crișul Oradea completed a decade in which it was successful at the national level. The consistent high level of performance developed a fan base who supported water polo. All of these efforts resulted in the rebound of the Oradea team into the first division. The team achieved two 2<sup>nd</sup> places, three bronze medals and three 4<sup>th</sup> places in division A. (Dezvoltarea, 1964; Dare seamă, 1969).

### **A tough period for Oradea's water polo**

After this series of positive results personnel at the club's management level and some players became complacent and issues that developed were not addressed appropriately. As a result of this attitude and management flaws, in the late 1960s the team had old players, many of whom lacked the necessary motivation and physical capacity to meet the requirements set for high-level performance (Documentele, 1973).

As the situation worsened the club's management realized that radical actions would be needed to rectify the situation. So, a massive rejuvenating campaign of the team was carried out. As a result of these actions, only some older players remained, Biró, Muth, Hegyessy. Some players who made history in Oradea's water polo left Ilea, Filip, Csordás. New players came: Lengyel, Kovács, Pécsi, Chirilă, Harabula, Bartovici, Pápai, Stănescu, Zacoianis, Moruzi, Rácz, Tomescu and Freud, who tried to bring the team back to its former level of play. Unfortunately, very few of the new players managed to match the successes of their predecessors. These results caused the team to lose much of its value, as the team's record deteriorated, ending with a 6<sup>th</sup> place in 1968, 9<sup>th</sup> place in 1969, 8<sup>th</sup> place in 1970 and 1971. In 1972, the low value of many players, the young age of others, and the lack of competitive experience of the players at this level forced the coach to realize that the reconstruction efforts of the team had led to a weak record and a move to Division B of the championship (Buletin informativ, 1972).

In 1973, the team was forced to participate in the second division of the championship and this came as a shock. The team also entered a lower group IX – XII. All of these culminated with the absence of Coach Freud Emerich and of one of the most valuable players, Freud Roland, who emigrated in the Federal Republic of Germany. During these difficult moments, the new coach, Rujinschi Nicolae, and his players believed in the chance they had; they put passion in

their work; they found the resources and the strength to overcome the difficulties, even if they had to pass through three tough years in the second division. With all the problems and inconveniences of those three years in which Crișul Oradea played in the second division, some good things happened. The perspective regarding the water polo's organization was rethought from the scratches; the basis of a new Centre for children and juniors was laid. The Center proved to be one of the best in the country. The management gave up the idea of bringing a large number of ready formed players and they encouraged the development of players from Oradea (Conferința, 1977).

The progress achieved by most of the players and the reentrance of the team into the A series of the championship in 1975 was a sign that Oradea's water polo team was on the right track. The team had valuable human resources, and, in a short time, Crișul Oradea would return among the strongest groups of water polo in Romania. The team obtained the following results: two 5<sup>th</sup> places in 1976 and 1977, and 6<sup>th</sup> place in 1978 in the first division (Participarea, 2011). This demonstrated that the organizational measures taken were working and that the human resources policy on selecting, promoting and training juniors proved viable. The process of preparation and participation in competitions was aligned with the requirements of the first division. The results of these years represented the beginning of a spectacular ascension which, in less than a decade, would bring Oradea's team on the top hierarchy of water polo in Romania.

### **A new period of glory**

At the end of the 1970s there had been several changes which led to an important change in the history of Oradea's water polo. The effects of Coach Rujinschi Nicolae's strategy and activity started to be felt. The coach trained and promoted valuable juniors that might be able to form the core of a competitive team. In order to strengthen the team, players such as Miron Cozma, Garofeanu Liviu, Ungureanu Vasile and Rusu Claudiu were brought in. These decisions made the team considerably more competitive. Another important ingredient in the success of team was its contract of collaboration with Progresul (Proces verbal, 1978) which resulted with combined forces joining in the structure's leadership representatives of some economic units, Hârcă Florian and Cosma Horia, which had the resources to support financially and materially the process of selecting, training and promoting players, to ensure the conditions for participation in national competitions and European clubs' cups (Proces verbal, 1979).

Combining these favorable factors with the appropriate financial backing and the professionalism of coaches Rujinschi Nicolae and Alexandrescu Ioan, who were now working with talented players, the team succeeded in those years to obtain the best results in its entire history. In 1979 and 1980, Crișul Oradea ranked fourth. In 1981, Oradea's team won bronze medals in the internal competition (Anuar, 1982), combined with a brilliant success at international level: 2<sup>nd</sup> place in Cup Winners' Cup (Poloul românesc, 2010).

In 1985, Crișul team's players – Rada Mihai, Csáki István, Kiss Francisc, Gordan Cornel, Costrăș Dorin, Garofeanu Liviu, Fejér Iván, Pantea Roberto, Illés Zoltán, Indig Gabor, Indig László, Boné Ladislau, were ranked first in the Republican Championship A Division, placing Oradea among the cities whose teams had won the title of national champions at water polo. (Raețchi, 1985). This performance was also repeated at the next edition of the championship (Anuar, 1987). These successes confirmed the value of Oradea's school of water polo and placed a generation of players in the fans' hearts and in the statistics as reference points in the history of sports of Oradea.

### **Years of transition and formation of a new competitive team**

Winning two championship titles, along with the joy of victory and celebrating success generated hopes, plans and ambitions. Launching on the road to great performances, every supporter of the team hoped that they would find resources so that the beautiful adventure of Oradea's water polo would continue at the highest level. But, in the next few years, the exchange of generations and shift of Alexandrescu Ioan into an administrative function made the team lack the necessary resources to return to its highest level of performance. Under these circumstances, Garofeanu Liviu, the newest coach of the team, launched a project that had as main objectives the efficient management of the restructuring and creation of a new competitive team (Dezvoltarea activității, 1988).

Even if the team was undergoing a tough period, with many and various problems, the coach's professionalism combined with the players' ambition and diligence led to good results. Between 1987 and 1990, Crișul Oradea, with two 2<sup>nd</sup> places and two bronze medals, was the best placed team of the province. Because the team was managed with competence and tactfulness the problems generated by the changes occurred in the sports movement after 1989, a generation of new players and the loss of players who left to play abroad did not negatively affect the team's results. Crișul succeeded to rank among the first four teams of the championship between 1990 – 1995 (Participarea, 2011).

After issues with team players, repeated changes of coaches and team's results led Alexandrescu Ioan, the president of the Crișul Club, to make some decisions regarding the strategy of reestablishing the prominence of water polo

in Oradea. The appointment of Gordan Cornel as the head coach of the A Division team led to a reorganization of the team. Once again players from junior teams from Oradea, Crişul and Dinamo were promoted to play along with old team players: Rada Mihai, Andrasoni Nicolae and Cîmpianu Ciprian (Proces verbal, 1996). Even though the players started with enthusiasm and worked hard, their youth and lack of experience at this competition level resulted in 6<sup>th</sup> place and 4<sup>th</sup> place finish in the championship (Participarea, 2011).

As a result in 2004, the A Division team was transferred from Crişul to the Municipal Sports Club, a sports unit of performance financed by Oradea Town Hall. This move contributed to the improvement of conditions of training and participation in competitions. As a result, in 2006, after seven seasons in a row in which the team was ranked third (Anuar, 2007) the team won the silver medal which allowed the team to reach a new psychological threshold which effects were soon to be seen.

### **Successes in a row**

Starting with 2006, the advantages of transferring the team to the Municipal Sports Club began to show with better financing and improved conditions of training which led to better results for the team. Exceeding that psychological threshold by ranking in second place in the National Super League had a positive effect not only on the players and coach, but also among the team's supporters. The business environment became more interested in sponsorship agreements with the best image from Oradea's sports.

With the team's increase in value, support from Leonardo Company, better conditions of training, and financial incentives for players, the coach and water polo section's management considered that they had set the conditions for a real chance for earning the title of national champion. At the end of the 2006/2007 edition of the National Super League, as a result of its development in the 36 stages, Oradea's team conquered, after 21 years, the third title of national champion. The successes continued, rewarding the Town Hall, Oradea's Local Council, sponsors, the thousands of supporters with six other 1<sup>st</sup> place finishes in the Water Polo National Super League (Anuarintern, 2014). With these great results, the water polo team of the Municipal Sports Club Oradea brought glory and pride to the club, the city, the fans and all of those who supported the team.

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## CONSIDERATIONS CONCERNING PRACTICING SPORTS ACTIVITIES IN CLUJ-NAPOCA - BETWEEN THE EUROPEAN UNION AND ROMANIA

ÁLMOS ANDRÁS<sup>1</sup>

**ABSTRACT.** The beneficial influences of practicing sports activities are well known. However, benefiting from these influences requires time, continuity, and not least the guidance of a sports specialist. So, whoever wishes to enjoy such benefits has to be aware that a training session per month is not enough. Therefore, in this paper we intend to present what the situation of sport activities is in the European Union and Romania, focusing on the following aspects: how active citizens are, which the organizational form of practice is and the reasons for which they engage in sports. Our objective is to compare data from the European Union and Romania with data from the research conducted in high schools in Cluj-Napoca.

**Key words:** Sports activities, organizational form, motivation

**REZUMAT.** *Considerații privind practicarea activităților sportive în Cluj-Napoca – între Uniunea Europeană și România.* Este bine cunoscută influențele benefice ale practicării activităților sportive. Totodată accesarea la această influență benefică necesită timp, continuitate și nu în ultimul rând de dirijarea de către un specialist în domeniul sportului. Astfel, cei care doresc acest lucru trebuie să fie conștienți că o lecție de antrenament pe lună nu este îndeajuns. Așadar, în această lucrare ne propunem să prezentăm concret care este situația activităților sportive în Uniunea Europeană și România, axându-ne pe criteriile: cât de activi sunt cetățenii, care este forma organizatorică de practicare și care sunt motivele pentru care se angrenează în activități sportive. Obiectivul nostru este de compara datele de la nivelul Uniunii Europene și România cu datele obținute din cercetarea efectuată în cadrul liceelor din Cluj-Napoca.

**Cuvinte cheie:** activități sportive, forma organizatorică, motivație

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## Introduction

Sport is one of the most dynamic social activities aiming to improve of the human being in all its aspects. In a world of political change and socio-economic transformations, different religions, multiple cultures and ethnicities, sports can be perceived as a universal communication language understood by the whole world. From this point of view, it is part of a common culture (regardless of cultural or ethnic affiliation). Although today it is found in very diverse forms- performance sport, high performance sport, school and university sport, sport for all, etc.- sport, through the last decades, has proved to be a consistently and increasingly popular social phenomenon. (Dragnea & Teodorescu 2002; Teodorescu 2009)

In the White Paper on Sports the term “sports” is used under the definition established by the Council of Europe: “all forms of physical activity which, through casual or organized participation, aim at expressing or improving physical fitness and mental well-being, forming social relationships or obtaining results in competition at all levels.” (Comisia Europeană 2007 p. 7).

We believe that although sports can be practiced almost anywhere whether in an organized manner or individually, the most important element related to its form of organization is the organized setting, namely in associations, clubs and other institutions with activity in the field of sports.

From the perspective of the European Union, sport is an area of human activity that greatly interests its citizens and has enormous potential for bringing them together, reaching out to all, regardless of age or social origin. Sport is a growing social and economic phenomenon that makes an important contribution to the European Union's strategic objectives of solidarity and prosperity. Moreover, the Olympic ideal of developing sport promotes peace and understanding among nations and cultures as well as the education of young people, including teenagers. The values conveyed through sport help develop knowledge, motivation, skills and preparation for personal effort. Time spent in organized sport activities (but not only) at school and at university (in sports associations, sports clubs, school sports activities) produces health and education benefits that need to be enhanced. Sport makes an important contribution to the economic and social cohesion and to the creation of more integrated societies. Therefore, all residents of EU should have access to sport, which can support intercultural and interethnic dialogue. (Comisia Europeană 2007)

With the ratification of the Lisbon Treaty at the end of 2009, the sports phenomenon has become one of the jurisdictions of supporting, coordinating and complementary of European Union by establishing a process of proposals for the individual Member States with which they should be encouraged to

implement evidence-based policies, in order to improve the provision of facilities and sporting opportunities. This means that for the first time, the European Union is actively involved in promoting sport and physical activity at the level of politics - not only to improve health and physical well-being throughout the European Union, but also to enhance the role that the sports phenomenon can play in increasing social cohesion and its educational value. Thus, in 2009 the Directorate General for Education and Culture of the European Commission has commissioned a special Eurobarometer survey related to sports and physical activity in the European Union on a sample of 26 788 Europeans subjects of which 1010 were from Romania. The respondents were aged between 15 and 70. (Special Eurobarometer 334, wave 72.3-Sport and Physical activity, 2009)

This research reveals that the majority of EU citizens (60 %) say that they rarely or never practice sport. However, a minority of respondents - 40 % of those surveyed – are participating in sports activities regularly or with some regularity (once a week or more), 9% of them (who practice sports 5 times per week or more) may be considered as athletes. Regarding Romania, the level is very low, namely 77 % of the people surveyed say that they don't practice sports or less than once a month, and only 8% of them can be considered as athletes. It is shown that 71% of the respondents aged between 15 and 24, practice sport regularly or with some regularity (once a week or more), and only 14 % can be consider athletes practicing sport 5 times a week or more.

Also, according to this research, there are different contexts in which the sport and physical activity is practiced. Thus, among the respondents in the EU who state that they practice sports or exercise, most of the time, the activity is conducted in informal settings such as parks and other outdoor environments (48 %) and in Romania is 29 %. The data concerning practicing physical activities in formal and organized settings reveals the followings: practicing in fitness centers the European average is 11%, and only 4 % in Romania; practicing in sport clubs EU average is 11%, and Romania 3%; in sports centers EU average is 8%, and in Romania around 3 %. It is shown that 17 % of the respondents aged between 15 and 24 practices in sports in clubs and 13% in fitness centers.

Regarding individual motivation for practicing sport and physical activities, it can be inferred that in a world becoming more and more health conscious, it is probably not surprising that 61% of EU citizens who practice sports or other forms of physical exercise do this to improve their health, while in Romania only 43 % of people have pointed this reason. The most frequently mentioned reasons for practicing sport are: “to improve their fitness”, European average being 41 % and only 10 % in Romania; “to relax” European average was

39 % and in Romania 30 %; “to have fun” European average was 31 % and in Romania only 11 %. Improving personal image is less inspiring, but still a significant reason for the 24% of people practicing the in the European Union to improve their physical appearance while in Romania the percentage is 15 %. Considering exercise as a way to spend time with friends is relatively common in some Member States, but the EU average is 22 % and 11% in Romania. It is shown that 51% of the respondents aged between 15 and 24 practice sport to improve their health, 47 % “to improve their fitness”, 57 % “to have fun”, 34 % “to relax” and 43 % to be with friends.

The study of the research data reveals certain impediments that prevent people from practicing sports and physical activities. One such obstacle is time or the lack of it. This is the main reason why 45% of the people in the EU and 57% in Romania don't practice sport.

### **The purpose and objectives of the research**

The purpose of the research was to create a clear picture of the phenomenon of sport among high school students in a multicultural and multiethnic environment, but also to highlight the level of practicing organized sports activities and students' motivation for practicing sports activities.

The main objective of the research was to compare the general data collected in the European Union and in Romania, concerning practicing sports activities, organizational form and motivation for practicing with the data obtained through a research conducted by us into these issues among high school students in a multicultural and multiethnic environment.

### **Materials and methods**

The first method used in this research was the study of scientific documents related to the sporting phenomenon, organizational and motivational problems of practicing sport.

The second method used in this research was the questionnaire survey method. The questionnaire consisted of 12 closed and open questions that were elaborated both in Romanian and Hungarian. Among these questions were selected question no.1, no.1.2 and no. 4. The questionnaire was applied from October 1<sup>st</sup> to November 15<sup>th</sup> 2010 and it was processed and analyzed from November 15<sup>th</sup> to December 5<sup>th</sup> 2010.

A third method was the statistical method. Thus, data processing was performed using Microsoft Excel statistical software from Microsoft Office programs package by showing the percentage of the results.

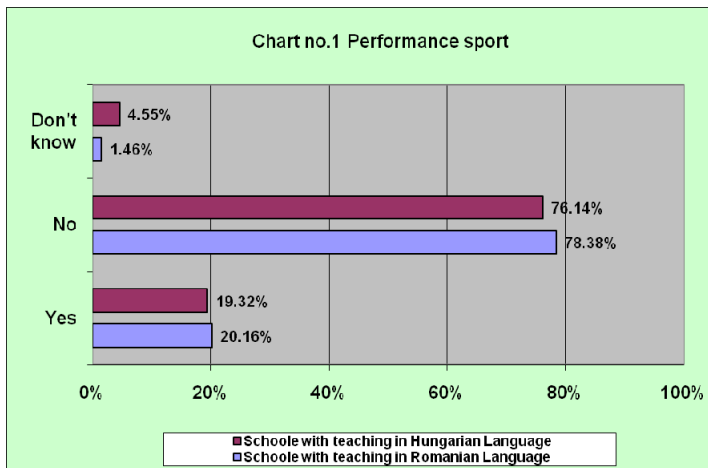
The research was carried out in nine high schools in Cluj-Napoca, namely Liceul Teoretic Gheorghe Șincai Theoretical High School, Nicolae Bălcescu Theoretical High School, Mihai Eminescu Theoretical High School (schools where Romanian is the language of instruction); Brassai Samuel High School, Báthory István High School, Apáczai Csere János High School, János Zsigmond Unitarian College, Reformed High School (schools where Hungarian is the language of instruction) and Onisifor Ghibu High School (school where Hungarian and Romanian are the languages of instruction).

The research subjects were high school students in educational institutions where Romanian and Hungarian are the languages of instruction, on a sample of 1574 subjects (762 subjects in schools where Romanian is the language of instruction and 812 subjects in schools where Hungarian is the language of instruction). The respondents were aged between 14 and 20, the average age being 16.3 years (in schools where Romanian is the language of instruction) and 16.5 years (in schools where Hungarian is the language of instruction).

## Results

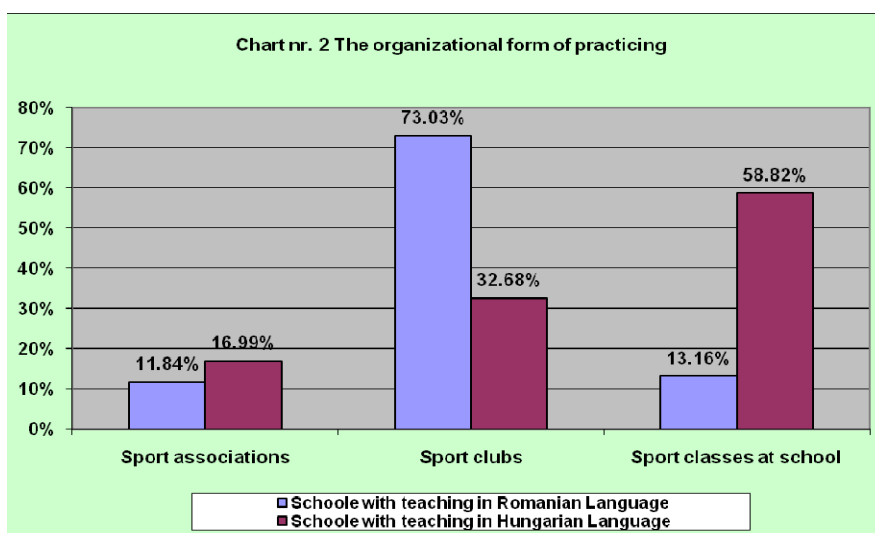
The data are presented in the following format: type of institution - teaching in Hungarian respectively in Romanian language.

When the subjects had to answer the question - "Do you practice sport at a competition level?", it can be highlighted the following: only 20.16% (in schools where Romanian is the language) and 19.23% (in schools where Hungarian is the language of instruction) practice a sport at competition level, and 78.38% and 76.14% don't and 1.46% and 4.55% didn't know. (Chart no.1 Performance Sport)



**Chart no. 1.** Performance sport

Regarding the organizational form of practicing sports, the results are: the students who practice sports at competition level in a proportion of 11.84% - 16.99 practice it in sports associations, 73.03% -32.68% in sports clubs and 13.16% -58.82% in the sports classes in school. (Chart no.2 - The organizational form of practicing)



**Chart no. 2.** The organizational form of practicing

Subjects asked “Why do you practice/would you practice your favorite sport?”, the results are: 80.65% -76.49% of respondents believe that sport is healthy, 45.60% -56.57% believe that sport is a way to spend time, 62.42% of the subjects in schools where Hungarian is the language of instruction believe that sport is a way to relax, while those in schools where Romanian is the language of instruction only 24.62% thought the same thing; 38 57% -48.47% of respondents believe that by practicing sports you can meet other people.

## Conclusion

We can conclude that in the case of practicing organized sports activities, only 9% of EU citizens practice them at a level to make us believe that they are athletes, likewise in Romania where the percentage is 8%. As the sample of 15-24 percentage increases to 14% and the research conducted by us reveals that almost 20% of students falling in the 15-24 age group, practice sports at competitive level that involves at least 5 workout lessons per week. In

these circumstances we conclude that, although it seems an increase in the percentage of EU to the level of Cluj-Napoca, it is worrying that so few young people practice sports daily.

Regarding the practice of sports activities in an organized setting, only 11% of the EU population practices them in sports clubs and in Romania only 3%. In the 15-24 age group the percentage rises to 17% but almost 20% of the students surveyed in Cluj-Napoca practice sport in an organized setting, the difference being that in this case the organizational setting is a sports club, sports association and sports classes in schools, characteristic to Romania.

The motivation to practice sports activities reveals that 61% of EU citizens practice to improve their health, 51% of the respondents aged between 15 and 24 years consider the same, and 80% of the students from Cluj-Napoca also believe that practicing sport activities is healthy.

As a final conclusion we can state that, although there are differences between the percentages in the EU, Romania and local level, in terms of daily sports activities, as well as regarding the organizational settings and motivation to practice, we consider the trend shown in the data at EU level is found at the local level too, in our case Cluj-Napoca.

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## AGGRESSIVENESS IN RUGBY

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**ABSTRACT.** In the present study we analyse the phenomenon of aggressiveness in rugby, of violence and aggressiveness in sport and we conclude with some suggestions. In rugby, aggressiveness and violence are permitted by regulations. They are considered to be educational and training purposes and they involve a fundamental contradiction: playing, fighting to the finish without becoming destructive. From an amateur sport rugby has become a professional one. It is not surprising that aggressiveness and violence are sometimes witnessed in rugby like in any sport. The suppression of violence, which stems from the environment, does not happen without influencing the environment. Perhaps today's society is the framework that supports sport. On the rugby pitch, battle is the art of producing aggressive energy. The key is to know how to use it. How spontaneous one should be? To what degree? How to play smart? Being a fighter in rugby means to harness aggressive energy only within the limits of regulations. Coaches, tutors, teachers, players and spectators should all be aware of these factors.

**Key Words:** rugby, aggressiveness, violence, fighting, destructive.

**REZUMAT. Agresivitatea în jocul de rugby.** Studiul care îl prezentăm, continuă acest obiectiv al analizei fenomenului, agresivitate în jocul de rugby, violența și agresivitatea în mediul sportiv, conducându-l la propuneri. În rugby, agresivitatea și violența este legalizată de regulamente fiind dorită în scop educativ și formativ, conținând o contradicție fundamentală: a juca, a lupta până la limita maximă, dar fără a atinge actul destructiv. Rugby-ul de la un joc de amatori actualmente a devenit un sport profesionist. Nu este surprinzător că asistăm uneori la agresivități și violențe ca și în celelalte sporturi. Suprimarea violenței, a cărei factori predispuși se află în mediu, nu are loc fără a atinge acest mediu. Sau aceasta este, în cele din urmă societatea de astăzi, este cadrul care sprijină sportul. În rugby lupta care se dă în teren este arta de a produce energia agresivă. Problema este de a ști cum să o utilizezi. Cu ce spontaneitate ? În ce limite ? În serviciul unui joc inteligent ? A fi luptător în rugby înseamnă să mobilizezi energia agresivă doar în cadrul regulamentar permis. Conștientizarea de către antrenori, preparatori, profesori și a jucătorilor de a câștiga, agresivitatea și ostilitatea publicului.

**Cuvinte cheie:** rugby, agresivitate, violență, luptător, destructive.

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## **Introduction**

### ***Is sport a destructive aggression generating activity?***

“Th. Arnold admits that sport promotes redirection. Aggressive energy generally derives from the relationship between the individual and the environment and the destructive aggression results, according to Freud's theory of the unmet need, from the unsatisfied need of this relationship (individual-environment).”(Conquet P., *Les Fundamentaus dex rugby*, p. 132, Edition Vigot)

Sport can produce destructive aggression only when the individual becomes frustrated. Or by its very nature, sport unleashes energy even when one is frustrated. Energy may thus be redirected outwards or inwards as part of an activity and it leads to the pursued objective.

Sport does not generate destructive aggression and the individual should not be denied a vital necessity. Individuals cannot stop the production and the release of aggressive and destructive energy unless they channel it into an activity.

However, we admit that sport generates destructive intropunitive aggression. A typical example of this kind is the individual alone who makes statements about his/her colleague. This aspect of domination should not be allowed to be satisfied unless it is felt as a last resort to the individual's need.

“Th. Arnold says: “Violence is the bitter fruit of human temptation to be aggressive.” In our view, this disposition may finally replace the bitter fruit with a sweet and pleasant one.” (Conquet P., *Les Fundamentaus dex rugby*, p. 132, Edition Vigot)

Interestingly, K. E. Moyer shows that aggressive behaviour originates in the amygdala (a gland located in the limbic system of the brain) and he emphasizes that an external specific stimulus (a qualitative aspect) is required for the individual to actively express aggression.

## **Fundamental Aspects**

### ***Problems concerning aggression in rugby***

Rugby was born among British intellectuals in 1823 of a natural impulse to protest against the Puritan rigours and established order which were embodied by the rigid football referee who was himself the epitome of the harsh, powdered-haired judges, stern as pharaohs. It was born of “spleen” and of the need to break and renew the old-fashioned and absurd rules of a game played with “feet only”, thus being a youthful and normal impulse to catch the ball instead of backing off and hitting it.

Reviewing the aggression issues that are studied nowadays by biologists, psychologists, psycho-sociologists is of great interest: it is the first phase to be presented. But this is not enough. The sports activity is a specific autonomous activity, which induces particular behaviours. We are not interested only in all we can say about aggression. In sport, particularly in rugby, coaches and specialist teachers should show interest in this phenomenon. They should analyse and understand it. They should also study behaviours related to the activity and the environment surrounding it.

In what follows, we continue to analyse the phenomenon of aggression in rugby and we offer some suggestions.

### ***The notions of violence and aggression in rugby***

In sport as in life, the notion of violence exists only in relation to a given rule. While some practices are tolerated by societies, some are not.

If we consider different sports, we can make the following general remark: the regulations of all the sports involve violence.

For example, what is considered to be violent in football it is not violent in rugby (to catch, to tackle an opponent). What is considered to be violent in rugby is not violent in American football (to tackle an opponent who does not carry the ball).

Violence is not only a physically brutal act, it can also be verbal and some players are good at producing those events you do not see, but which are penalized by the referees.

Aggression and violence do not happen only in rugby. All sports are equally subject to acts of aggression (the everyday life as well), even if for many of us this is not dangerous. On the contrary, in rugby, violence has different effects that can be destructive because intentional contact is allowed by the rules of the game as long as it is painless.

In rugby, aggressiveness and violence are permitted by regulations. They are considered to be educational and training purposes and they involve a fundamental contradiction: playing, fighting to the finish without becoming destructive.

In our opinion, this feature of the game has positive effects because overload can lead to:

- rejection due to frustration, which in turn brings about a brutal reaction;
- loss of self-control and thus brutality.

In other combat sports excesses of aggression and violence are minimal in the presence of one or more referees. But in rugby, one person must control the action of 30 players.

### ***The sports environment in rugby in relation to aggression and violence***

In all the sports there are factors related to the environment and rugby is no exception. Sports leaders, coaches, supporters and sports journalists make up the player's immediate entourage. It is among these people that he/she usually lives and finds appropriate support in the sports act. Victory brings supporters to the social environment of the team. The impact on players is not always positive. Playing for pleasure and the desire to fight are replaced by the wish to win at all costs or to play to win something (high status, social advancement, national benefits).

Victory has become an imperative and defeat has grown more and more unbearable. From an amateur sport rugby has become a professional one and, similarly, the game from leisure has grown into a profession. It is not surprising that nowadays we witness shameful activities, which are unanimously criticized even though everybody shares the blame for them.

This explains why, in victory-driven environments, people have recourse to local, national or racial chauvinism (the situation of the national team of South Africa, "Sprinbock", under apartheid is a case in point). Such an approach focuses exclusively on the psychological preparation without taking into account the adversary (seen as an enemy) and it promotes violence.

In the psychological preparation one can notice the intention to increase the players' self-confidence, to minimize the devaluation of the opponents, to decrease the importance of the commando mentality. These must be replaced with the essential notion of struggle and the respect for the opponent. Consideration, knowledge, respect for the team and the human being in general could prevent rivalries. Access to these values should be suggested and the repressive measures envisaged should be considered as well.

### **Proposals**

Youth rugby activity should be well organized so that there is little violence. A link should be established between rugby's fundamental contraindications, the need to be aggressive and the type of behaviour to adopt so that aggression never loses the sense of violence.

This pedagogical aspect should primarily draw the attention of those working in this field. They should use it in teaching (in and out of the game). Teachers' statements should be consistent with this principle. An important suggestion is to give special attention to the elements that influence relationships within the team and to similar behaviour by simple imitation.

The suppression of violence, which stems from the environment, does not happen without influencing the environment. Perhaps today's society is the framework that supports sport. The importance of the notion of playing for fun or for victory should be associated with the frustrations caused by defeat. This involves incurring criticism, disapproval, briefly, an individual or collective devaluation. As shown, the game is not mere play, but a serious business, and it means much more than a job. So what should be done so that the consequences of a defeat do not involve the social value of the individual or of the team?

The team staff must be able to bear defeat. There are always good reasons to win "at any cost". "Must win" and "have no right to lose" are expressions that show some people's inability to accept the consequences of defeat (there are moral and material reasons).

On the rugby pitch, battle is the art of producing aggressive energy. The key is to know how to use it. How spontaneous one should be? To what degree? How to play smart?

Being a fighter in rugby means to harness aggressive energy only within the limits of regulations. This also means that aggressive energy must not be allowed to reach a level of intensity that is harmful to the opponent's health.

Coaches, tutors, teachers, players and spectators should all be aware of these factors. The audience's yelling is an inappropriate act of aggression. Aggressiveness and hostility are unwarranted and unnecessary and the players have the right to express their contempt by showing indifference. They must make it clear that aggressive events are useless. The only way to prevent this is victory over the home team.

Rugby regulations are very lax because it is a game based on combative spirit and aggressiveness, which takes place within the limits of regulations. The relationship between the players and their attitude towards the referees are founded on respect.

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## BIOMECHANIC CLASSIFICATION OF NAGE-WAZA THROWING TECHNIQUES (II)

IOAN-NELU POP<sup>1,\*</sup>, LEON GOMBOS<sup>1</sup> & COSMIN PRODEA<sup>1</sup>

**ABSTRACT.** At the first glimpse all throwing techniques can seem different as regarding their form, but a scientific analysis reveals that every throwing technique is a combination of general and particular characteristics. General characteristics are those main actions, which can be found in a large number of techniques, while particular characteristics stop at data level. A bio-mechanic analysis of throwing techniques cannot ignore the problem of rational classification for successive stages: simplification first; generalization and elevating to a principle for all throwing categories. For the principle of simplification of the force class problem, which we are dealing with, the KANO differentiating model will be used, i.e. the subdivision of the throwing motion in three stages. TUKURI - all preparatory movements, meant to prepare the loss of balance of UKE and the positioning of the body of TORI for the throwing. KUZUSHI – the action of the balance loss forces and the direction and final orientation. KAKE – final execution of the movement in order to perform the throwing and UKE analysis, by simplifying the secondary forces, then moving towards generalizing the categories of forces the KAKE phase is subject to. This method used by Attilio Sacripanti in his paper “Biomechanica del JUDO” allowed that the throwing techniques be grouped from a bio-mechanical point of view in two groups based on two execution mechanisms of the technical procedures:

- a) Techniques where TORI uses a FORCE COUPLE in order to throw UKE,
- b) Techniques where TORI uses the force moment (lever) in order to throw UKE.

The classification of the NAGE-WAZA throwing techniques based on the force couple and lever principle is the classification based on scientific support, which analyses the directions of the forces, static analysis, and the pathway of UKE's body during the throwing phase (flying phase), dynamic analysis, as well as the symmetries of the bio-dynamic group of the athlete couple TORI and UKE.

**Keywords:** judo, biomechanics classification.

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**REZUMAT. Clasificarea biomecanică a tehnicilor de proiectare din picioare nage-waza.** La o primă abordare toate tehnicile de aruncare pot apărea diferite în forma lor, dar o analiză științifică ne permite a spune că fiecare tehnică de aruncare are în ea caracteristici generale și caracteristici particulare. Caracteristicile generale sunt acele acțiuni principale care se regăsesc la un număr mare de tehnici, în timp ce caracteristicile particulare se opresc asupra datelor. O analiză biomecanică a proiectărilor nu poate face abstracții, de înfruntarea problemei clasificării raționale pentru stadii succesive: simplificare mai întâi ; generalizare și ridicare la nivel principiu pentru toate categoriile de proiectări. Principiul de simplificare a problemei claselor de forță în joc se utilizează metodica diferențială a lui KANO, subdivizarea mișcării de aruncare în trei faze. TUKURI - toate mișcările pregătitoare menite să pregătească dezechilibrarea corpului lui UKE și poziționarea corpului lui TORI pentru aruncare. KUZUSHI - acțiunea forțelor de dezechilibrare și direcția și sensul final. KAKE - execuția finală a mișcărilor pentru efectuarea aruncării și analiza apoi a lui UKE simplificând efectele forțelor secundare, trecând apoi la generalizarea categoriilor de forțe căruia este supus faza de KAKE. Această metodă aplicată de Attilio Sacripanti în lucrarea sa „Biomecanica del JUDO” a permis gruparea tehnicilor de proiectare din punct de vedere biomecanic în două grupe având la baza două mecanisme de execuție a procedeele tehnice:

- a) Tehnici în care TORI folosește un CUPLU DE FORȚE pentru proiectarea lui UKER;
- b) Tehnici în care TORI folosește momentul forței (pârghie fizică) pentru proiectarea lui UKE.

Clasificarea procedeele tehnice de aruncare NAGE - WAZA având ca principiu de execuție cuplu de forțe și pârghia fizică este clasificarea care are un suport științific care face analiza asupra direcțiilor forțelor, analiză statică, cât și o analiză a traiectoriilor corpului lui UKE în faza de aruncare (de zbor), analiza dinamica, precum și simetriile grupării biodinamice a cuplului de sportivi TORI și UKE.

**Cuvinte Cheie:** Judo, Clasificarea Biomecanica.

### **Bio-mechanic classification of Nage-Waza – force couple techniques**

The classification of these techniques is presented in table no. 1; the techniques are grouped according to TORI's body parts, which create the force couple.

- a) – Couple formed by arm – arm +
- b) – Couple formed by arm – calf
- c) – Couple formed by torso – calf +

- d) – Couple formed by torso – arm
- e) – Couple formed by calf – calf

The NAGE-WAZA techniques analyzed within this paragraph are those where throwing (KAKE) occurs as a result of TORI applying a FORCE COUPLE upon UKE’s body. After a physical analysis it can be claimed that the techniques of the FORCE COUPLE group will be the more efficient the more TORI’s action resembles a physical force couple applied to UKE.

**Table no. 1**

Couple techniques

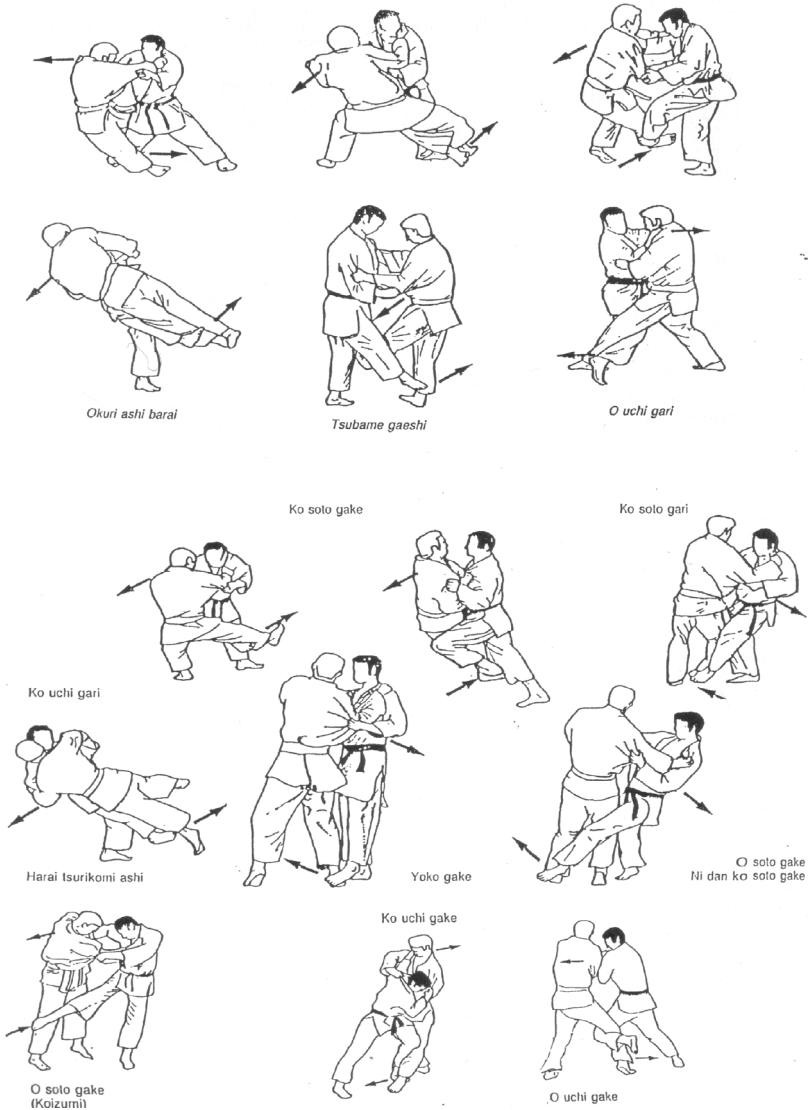
<b>Couple techniques</b>	<b>Applied by the arms</b>	Kuchiki daoshi Kibisu gaeshi Kakato gaeshi Te guruma	
	<b>Applied by the torso to the claf</b>	O soto gari O stoto giruma Uchi mata Okurikomi uchi mata Harai goshi Hane goshi Hane makikomi Yama arashi	O tsubushi O soto otoshi Kou chi makikomi
	<b>Applied by the arms of claves</b>	De ashi barai Okuri ashi barai Ko uchi barai O uchi barai T subame gaeshi Ko uchi gari Ko soto gari	O uchi gari Ko uchi gake Ko soto gake Harai tsuri komi ashi Yoko gake O soto gake O uchi gake
	<b>Applied by the torso (back) and arms</b>	Morote gari	
	<b>Applied by the two claves</b>	Kani basami	

The couple momentum  $M = F \times d$  is what characterizes the force couple, where F are the two parallel, but opposite direction, d is the distance between the points, where the forces are applied. The momentum M can be amplified by amplifying the force F, which also implies amplified energy consumption or by amplifying the distance d between the points, where the force is applied, i.e. the grasping points. In throwing techniques by force couple amplifying the duration d as much as the grasping points allow and amplifying the force F is to be presented only in situations, when extra force is needed in order to throw UKE. The extent of the couple momentum of TORI needs to defeat the momentum created by UKE while trying to resist the throw.



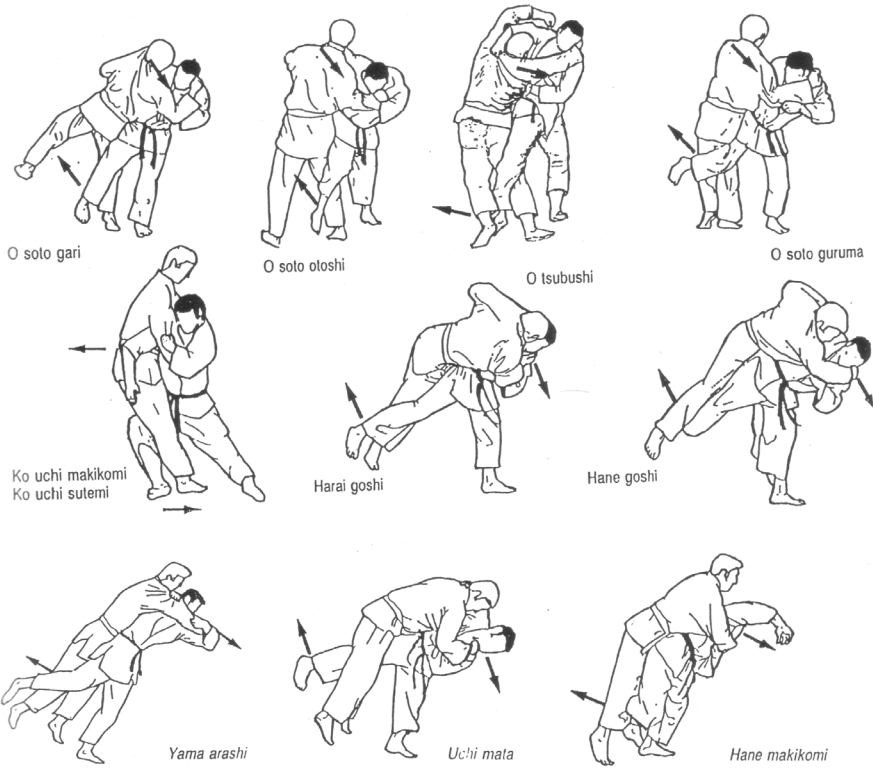
$$M_{TORI} > M_{UKE}$$

In order for UKE to resist the force couple moment applied by Tori, they need to block the simultaneity of applying the two forces of the couple by diverging the single direction between the two forces. If the two forces are no longer equal, parallel and with opposite direction, they do not represent a force couple any longer, and thus the rotating momentum is not obtained any longer.

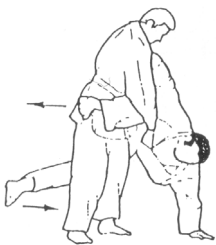


**Fig. 1.** The arms of claws

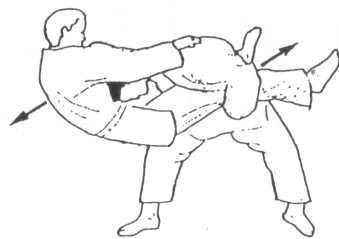
BIOMECHANIC CLASSIFICATION OF NAGE-WAZA THROWING TECHNIQUES (II)



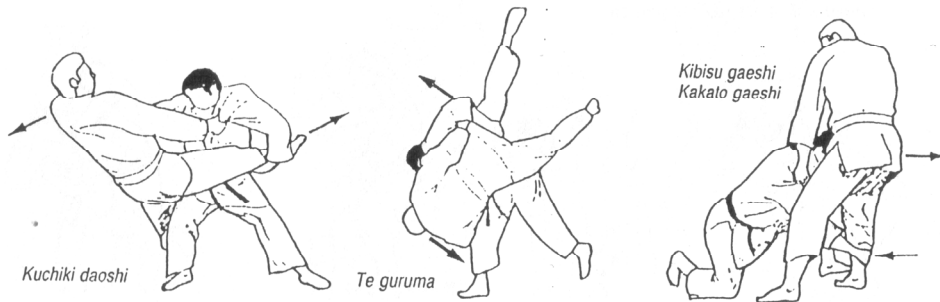
**Fig. 2.** The torso to the claf



**Fig. 3.** Claves- claves



**Fig. 4.** Couple applied by torso-arms



**Fig. 5.** Couple applied by the two arms

In the case of performing throws by applying force couples the performance symmetry: O SOTO – GARI and UCHI – MATA, HARAI – GOSI and O SOTO GURUMPA is retrieved.

Another symmetry which appears in some throwing techniques using force couple is performance symmetry in the three planes frontal, horizontal and sagittal.

### **Fundamentals for the PHYSICAL LEVER group**

The Nage-Waza techniques analyzed in this paragraph are those where throwing occurs by applying the lever principle on UKE's body.

In the preceding paragraphs we presented the elements of a lever, the type of lever and the amplifying degree of the lever. This paragraph we will present a bone lever, which constitutes the basis of performing the techniques in this category.

We remind the components of a lever:

R – resistant force; F – active force; d – arm of the resistant force; d<sub>2</sub> – arm of the active force; s – supporting point. The two momentums of the two forces according to the supporting point:

$$M_1 = M_2; \quad M_1 = \text{momentum of the active force}$$

$$M_2 = \text{momentum of the resistant force}$$

$$M_1 = F \times d_2; \quad M_2 = R \times d_1 \Rightarrow M_1 = M_2 \Rightarrow F \times d_2 = R \times d_1$$

the balance relation of a lever.

In order for TORI to be able to defeat UKE's resistance they need to break the balance by amplifying the momentum M<sub>1</sub>.

$$M_1 > M_2 \Rightarrow F \times d_2 > R \times d_1$$

In order for M<sub>1</sub> > M<sub>2</sub> either the force F needs to be amplified, which means energy consumption, or the force of the arm d<sub>2</sub> needs be amplified, without energy consumption, only by modifying the support point s.

Throwing techniques, which are based on the lever principle, are classified according to the length of the arm of the force  $d_2$  and the supporting point s.

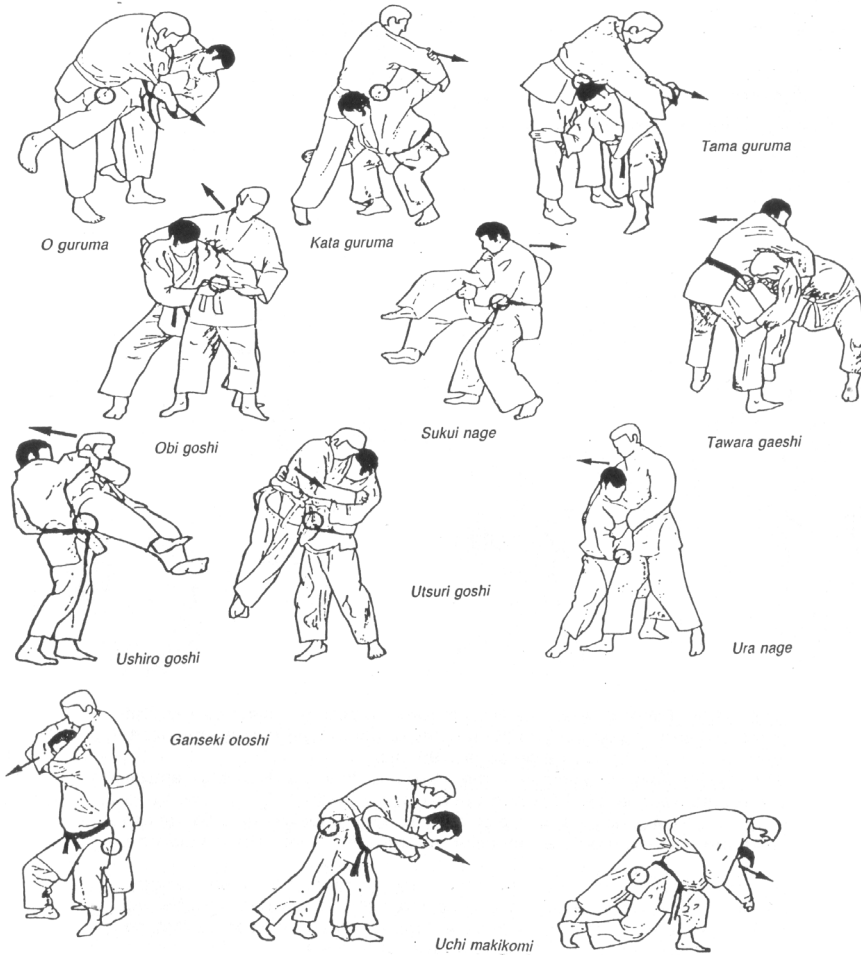
- a) Minimum arm  $d_2$  – supporting point under UKE’s belt
- b) Medium arm  $d_2$  – supporting point under UKE’s knees
- c) Maximum arm  $d_2$  – supporting point under UKE’s ankle
- d) Minimum arm  $d_2$  – supporting point under UKE’s belt
- e) Variable arm  $d_2$  – variable supporting point from UKE’s belt to under UKE’s knee.

**Bio-mechanic classification of NAGE-WAZA - force momentum techniques**

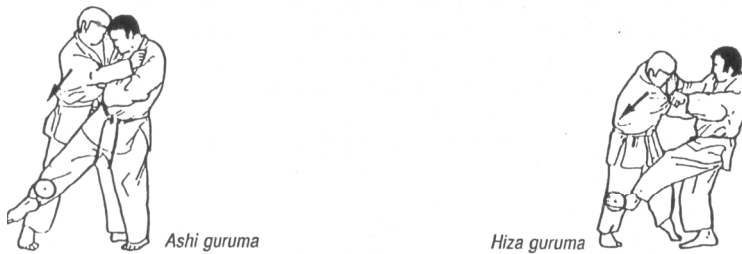
**Table no. 2**

Force momentum techniques

<b>Force momentum techniques</b>	Minimum arm (supporting point under the belt)	O guruma Kata guruma Tama guruma Maki komi	Sukui nage Ushiro Goshi Utsuri goshi Obi Otoshi	Tawara gaeshi Ura nage Ganseki otoshi Uchi makikomi	Soto makikomi
	Medium arm (supporting point under the knee)	Ashi guruma	Hiza guruma		
	Maximum arm (supporting point under the ankle)	Uki otoshi Yoko otoshi Sumi otoshi Ura otoshi Waki otoshi Tani otoshi	Tai otoshi Dai sharin Tomoe nage Sumi gaeshi Uki waza Yoko guruma	Yoko Wakare Seoi Otoshi Hiza seoi Obi seoi Suso seoi Ikkomi gaeshi	Sasae Tsurimoki Ashi
	Variable arm (variable supporting point from the belt to under the knee)	Tsuri komi goshi Sasae tsurikomi goshi Ko tsurikomi goshi O tsurikomi goshi	Sode tsurikomi goshi Uki goshi O goshi Koshi guruma	Kubi nage Seoi nage Eri seoi nage Morote seoi nage	



**Fig. 6.** Minimum arm (supporting point under the belt)

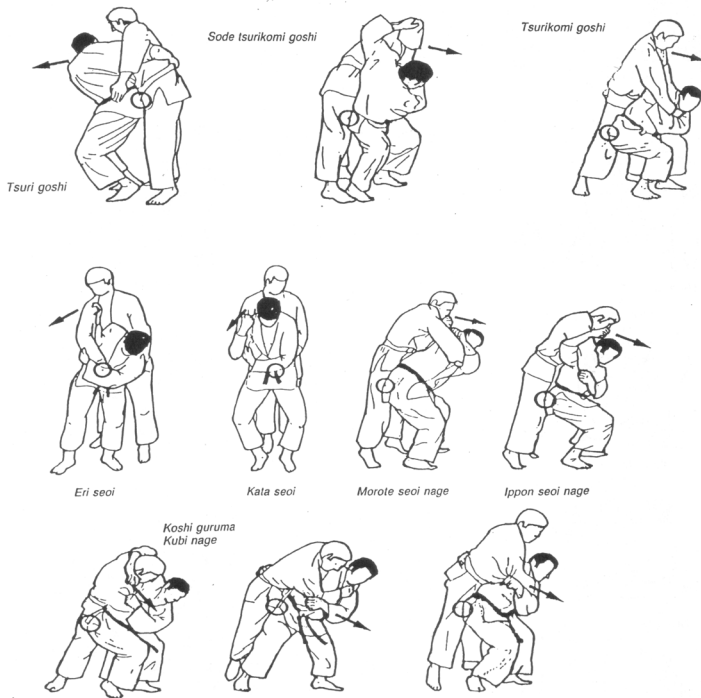


**Fig. 7.** Medium arm (supporting point under the knee)

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**Fig. 8.** Maximum arm (supporting point under the ankle)



**Fig. 9.** Variable arm (variable supporting point from the belt to under the knee)

### **Conclusions regarding the classification of NAGE-WAZA throwing techniques using FORCE COUPLE and PHYSICAL LEVER**

After a comparative analysis between the classification of the techniques according to Kardokan and the classification of the techniques from a bio-mechanical point of view based on the FORCE COUPLE and the PHYSICAL LEVER, a number of conclusions can be drawn:

1. The classification of the techniques according to Kardokan arises from the necessity to satisfy a double didactic request.
  - a) To group techniques according to logical criteria in order to facilitate an easier understanding and a rational, systematic study.
  - b) To group the techniques in an appropriate sequence in order to allow a gradual learning by the beginners, with the result that they master JUDO as whole.
2. The classification of the techniques from a bio-mechanical point of view, based on the two principles FORCE COUPLE and PHYSICAL LEVER are based on a scientific approach, using concepts from physics applied to JUDO, as the bio-mechanics of the human body.

3. Although the two approaches differ with respect to their quality, they add to one another as follows:
  - a) Within the classification of the techniques in KYU (groups), which aim at learning the techniques from a point of view of the accessibility of the athlete to learning the technique, the bio-mechanic classification presents the basic mechanisms, which enable that technique to be performed.
  - b) The bio-mechanic classification needs didactic means and methods in order to assimilate the technique from a bio-mechanical point of view as a completion.

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