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## ORIENT THEMSELVES WITH THE MOVEMENT

PERROTTA FRANCESCO\*

**ABSTRACT.** The child goes to the conquest of space through its basic schemes can do with more 'autonomy around in the sitting position can focus even more and the hands have a function to grab objects and then during its growth acquires its own autonomy stand in support of the feet to walk freely 's organization of a movement for human being to move and change with ease' position and orientation in space and time, and at the same time each position requires different organizations of self and the open to other possibilities. In its complexity 'movement and' represented by the language of the body composed of elements, physical, biological, socio-cultural and psychological knowledge which must be completed by different knowledge.

**Keywords:** *orientation, basic movement patterns, movement, body language, Psychomotor activity*

### Introduction

L 'organization of the movement enables human beings to move and change with ease' position and orientation in space and time, and at the same time each position requires different organizations of self and open to other possibilities. The child goes to the conquest of space through its basic schemes can do with more 'autonomy around in the sitting position can focus even more and the hands have a function to grab objects and then during its growth acquires its own autonomy stand in support of the feet to walk freely. In its complexity 'movement and' represented by the language of the body composed of elements, physical, biological, socio-cultural and psychological knowledge which must be completed by different knowledge. The function of the educator with its tools and educational projects must be able to tie together the different levels of knowledge and then using its autonomy and competence in the psychomotor education to enrich the mastery of motor behaviors with a system of rules related to the psycho-biological constraints (historical-natural) and its socio-historical changes. Psychomotor development

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appears as complex behavior of children from birth to the first years of life, progress resulted from the acquisition of behavior in which aspects of perceptual, motor and intellectual disabilities who can not be dissociated from each other.

### **The role of movement in the baby's growth**

Some authors such as Piaget and Wallon argued that the psychic activity motor activity are not two entities separated, one on the spirit, the other is concerned with the physical mechanisms of the body, but the expression of a single process uniqueness: the adaptation of the human being as a whole to its environment. Any motor act goes beyond a muscle contraction: it is also the result of a need, desire, will, in its entirety dynamic psychomotor. "Custom or actions are not any movement, but the systems of coordinated movements in terms of a or result of an interaction (Piaget). For these reasons, the movement education plays a key role. development and growth of the child 'psychomotor theories and studies and research that support the validity, comparing the assertion that physical education contributes with its own means and instruments to form the personality of the students, revealing the scientific this claim (based on the principle of unity of man psychophysical) and then stressing the urgency of putting into practice, through appropriate educational and teaching, the educational potential inherent in the activity engine. " In 'motion exercises are activated not only all the physiological aspects but also an active role of knowledge and the relationship between the self and the outside world. The child begins immediately to demand the need for movement and begins to communicate, understand and express themselves, because the man does not express itself only in the forms of thought but also through body language that occurs with the move. The motor action has a meaning of play, with whom the child interacts with others by accepting diversity, and sharing social norms. The sport must be understood as not merely an expression of movement, but it becomes an important part of education. it runs through values such as respect, spirit of sacrifice and solidarity ', a healthy competition where the winner prevail on but reinforces the alliance and cooperation in a team. Sport becomes a healthy sense of competition, where the importance of competing and deal with others helps to develop character and morality el 'altruism. Today, the need for movement and 'intrinsic to every child, little is reflected in everyday life at school, sometimes for lack of space and gyms. The child during his mental and physical development needs to know its potential and also their limits;

comes the need to control their own body and its expressions, right through the game and through *attività che* to develop its space-time capacity. A continuing physical education is not only 'necessary for the child *confidenziare* their own potential, but it also helps to define the educational principles for the care of your body that will accompany the cycle of life. Taking care of yourself is a moral duty that all respect and to pursue, and in its' infancy that we must build the foundations for a new understanding of the culture of the body. During this period, motor development and 'cohesive directly with the cognitive development that the term *psycho-motor*. Is reflected in two laws:

The Law cephalocaudal: ie 'neuromotor maturation that involves progressively from the head and extremities.

The Law proximodistal: the development starts from the central axis of the body, from most to those nearest to farthest.

### **Introduction to the sport**

The age of children starting to sport is still concerned not only scholars and researchers to define, but also in wanting to indicate the likely risks of the 'competitive spirit early, without taking into account the safest in the right against the "sedentary early. " The increasing spread of economic prosperity and mechanization are the historical and social causes, is now universally recognized, the syndrome of failure or insufficient exercise, which Kraus and Raab in 1961 entrusted to world culture with the term "hypokinetic disease". This syndrome is characterized by involvement of one or more of the large devices, until the onset of those paintings that, in boys, go under the name "paramorphism developmental." The concept of paramorphism induced by lack of exercise contrasts with that of "health dynamics, represented by the psycho-physical result not only from the absence of disease or malformations, but also characterized by good adaptability to the physical work. This may be achieved through sports training, that even in patients in children, requires continuity, rhythm and intensity appropriate that promote the appropriate adjustments to load the various organs and systems.

The sports training, therefore, is able to produce a range of benefits and advantages of involving the whole body, supported by the apparatus of the behavior and personality of the boy sportivo. Le muscles stimulated harmony and symmetry, without be overstretched, will support appropriate tone skeletal structures still fragile and evolving not always correct. The execution of rhythmic gestures increasingly fluid economic and foster

agility and ease, qualities which in particular allowed for a better mobility. The increased energy expenditure that occurs when implementing a program of sports training is the main factor preventing able to correct the overweight in children. Of course, the success of a difficult battle as one against obesity can not be considered separately after adoption of a diet compared to the actual metabolic needs of the subject to education and adequate food and also paid to the family. Recent acquisitions have inter alia shown that physical inactivity alters, at the central level, the sense of appetite and self-control, while on the contrary, the regular practice of sports training restores the feedback mechanism at diencephalic level, with result of bringing the feeling of hunger to adapt to the real energy expenditures compared with peers, emulation, interest in learning motor patterns are always different, the satisfaction of learning exercises, progressively increasing difficulty, approval and the praise of the instructor or, conversely, his rebuke, are only part of the endless psychological implications related to the environment and reasons of good sport. Improving self-esteem, control of emotions, the increase in the social and inclusion among their peers, increased frustration tolerance, a fair control of anxiety are among the most affected parts of the personality that benefit from practice and from the sports development and harmonious psychophysical full of children and adolescents need to move. Children generally tend to meet this need alone, thanks to their great impetus to move. In children, in fact, the nerve impulses in brain areas that control movements are mainly excitatory in nature, also, with the same relative intensity, there is a reduced subjective perception of stress than adults. The movement is therefore a real need for development, as it acts not only from the physical point of view, but also psychological and social area of the child. Unfortunately, the amount of movement that children today can make is greatly diminished by the habits of modern life, so constant and regular practice of a sport becomes extremely important in this age group as in all stages of life. Physical activity plays a key role in the development of body image. The body schema can be defined as "the mental representation of their body." Everyone develops this representation since the early years of life, being able to discriminate as the difference between him self and the world around them, to perceive themselves as a distinct entity in its totality and in the various constituent parts of the body. The distinction between members of the body serves as a starting point for all other distinctions, such as the mental construction of concepts of space and time and its application to reality (the concept of internal - external, forward-back, up-

down, left-right, before - after, etc..) Physical activity, in this sense, is the tool for the relationship between the child and the world in terms of knowledge of the environment, through action. 'With regard to the activities, are particularly important as focusing on so-called functional prerequisites (perception and structuring of space, perception and the temporal structure and rhythmic structure of the lateral, sensory-motor coordination, coordination, general dynamics, balance and postural control, psychosomatic relaxation , awareness of breathing) as factors for psychomotor order that can not or will never be dissociated from the body schema themselves contributing to its formation. "Closely related to the concept of the organization of space and time is the development of laterality. As you know, everyone has a hemispheric dominance, ie, a different localization of functions in the two cerebral hemispheres, of which one of them is called "dominant" (the left hemisphere for right-handed el'emisfero right for lefties). The lateralization is the development of the process of hemispheric dominance, so some gestures will be carried out preferably with either side of the body, depending on whether the subject is right-or left-handed. The lateralization influence many motor skills, orientation, language skills and school equipment, such as reading, writing, and drawing. It seems clear that a lack of development of this process may affect, among other things, the academic learning of the child, with difficulty in reading, writing, design and calculation. The personality, knowledge, motor skills are therefore linked to the development of the body schema. A poorly structured body scheme involves a deficit in the subject-world issues in the intellectual, emotional and motor, it is clear, therefore, as physical activity can bring benefits not only from the physical point of view, even the child's psychological development

### **The project orienteering**

In this regard a project sull'orienteering action learning becomes very interesting to improve the capacity 'Guidance Orienteering, or sports of the woods, was born and developed in Scandinavia since 1897, is to perform a nature trail but also in the city, default, characterized by control points called "lantern" (post with punch) and with the help of a unique compass and a topographical map very detailed small scale that contains details of the site from go. Venue shall be in the woods but can be used in the natural environment in general. A lantern set on the ground indicates the place to visit. All lanterns are numbered, to verify the accuracy of the point to find. Orienteering athletes have a description of the lantern (see picture) that says:



category competitor, path length (in distance), altitude, identification code and location. The discipline and practice on foot, mountain bike or ski trails. To mark the punch card is used. The lanterns can be found in numbered points in our topographical map previously prepared and then handed over to competitors (see image above topographic map). At school level will be enough to differentiate our punches to get the exact sequence of demarcation between what we need to get the right sequence and to verify that the competitors have you found all the lanterns but we have overcome in the right sequence. Project: get deeper into the matter and with the help of an expert you will organize 'a training and education designed for students of secondary schools. Mention this information and learn more about the rules and information to our students in middle schools (perhaps carried out in a previous meeting) there exist two pairs of boys or leave alone those who actually bring himself to face a process, however, is safe and easily retrievable in case of loss.

### **His is the map of where the activity takes place school:**

The red arrow indicates the soccer stadium, might hypothetically be the start of the path. The sequence is then given by the numbered red circles located at places along the green area of the park, meadows, small woods, rows of trees, slopes (includes golf and baseball, rugby, soccer, archery, cycling and basketball courts), the double circle indicates the arrival, in the picture below we see all the symbols that can be found on the map topography. Date and indicated the direction of the north, they get the guys with an interval of 3min.

One who will take the shortest travel time without skipping lanterns and then punched with the correct sequence will be the winner. A levels and educational purposes the project is directed to the development of cognition space-time, along with the skills of orientation and adaptation in different places where one can be found throughout the course of the journey. It is a favorite pair work and team, or cooperation and socialization, while for those who will travel alone will be an experience to develop one's self-confidence and their self-efficacy in a task different from usual. The activity can therefore be considered as a form of personal growth. Orienteering is an activity that aims to be a single and restricted recreational activity, but not only, we want our students to learn what it means to make a path not even really know. This project will seek to direct students to research the right way, the most effective way possible to get to the target, moving in time and

space by looking at the same point from different angles, see the sequence of the path compared to a kind of ladder their lives, to the point where 3 to get there only after finding, reached and passed the point 2 and so forth.

### **Conclusion**

It is essential to train our students physically in these ages, because in subsequent years are faced with life choices that distinguish them for their entire existence, how to choose the university to address their most appropriate according to their skills and passions, consolidation the world of work once you find your way. In conclusion we can say that Orienteering practiced in schools and adolescent leads in addition to the benefits of socialization and physical well-being, including the formation of character in individual decisions to be taken every day, then over time ensuring a sound and efficient self-esteem 'self-efficacy in the game, at work and in life in every child.

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## THE IMPACT OF THE NEW SCHOOL ACT ON THE CURRICULA IN PHYSICAL AND SPORT EDUCATION IN SLOVAK SCHOOLS

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**ABSTRACT.** The article deals with the current changes in the educational system in Slovakia with the focus on school Physical Education & Sport. The new Act on Education No. 245/2008 Coll. adopted in May 2008 has been implemented in Slovak schools. The major changes include reduction of the number of pupils in classes, changes in the curricula, implementation of a new philosophy of education which is more child-oriented compared to performance-oriented or contents-oriented education in the past. In the focus of teachers should be competences: motor, cognitive, communication, interpersonal and attitude ones. 3 obligatory P.E.& Sport lessons will be taught since the next September. The curriculum is divided into two parts: the state and the school curriculum – schools can add another lesson per week in addition.

**Keywords:** *School reform. Act on Education. Physical education. Sport. Child-oriented education. Competences.*

The new Act on Education No. 245/2008 Coll. was adopted in May 2008 and has been implemented in Slovak schools (in 1st form of elementary = ISCED 1 and secondary schools = ISCED 3, and 5th form of elementary schools = ISCED 2) since the last September. It replaced the old law from 1996. Nowadays, we are starting the second year of the reform, which is being implemented in 2nd form of ISCED 1, 6th form of ISCED 2 and 2nd form of ISCED 3). The reform will be finished within the next 3 years.

The new **School Act** brings along:

- Free last year in kindergartens
- Reducing the number of pupils in classrooms (1-4 r. max. 25, 5-9 r. max. 28)

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- Obligatory first foreign language started from year 3, obligatory second language started from year 6
- State published books only free
- Reducing the number of obligatory classes
- Change of the curricula
- 10-years of compulsory school attendance remains
- Free education at elementary and secondary schools remains.
- Education is provided in 5 levels according to the ISCED classification:

<b>ISCED</b>	<b>Level of Education</b>
ISCED 0	Pre-primary education
ISCED 1	Lower-primary education
ISCED 2	Upper-primary education
ISCED 3	Secondary education
ISCED 4	Post-secondary education
ISCED 5	Higher education

Based on the new act, school subjects were reorganized and grouped into 8 educational areas (tab. 1).

### **Characteristics of the educational area: Health & Movement**

The subject Physical Education & Sport provides basic information on biological, health and social elements of a healthy life style. Pupils develop abilities and acquires knowledge, skills and habits, which are a part of a healthy life style not only during the school attendance, but in adulthood as well. He will acquire skills and habits for effective spending of their leisure time and at the same time knowledge on health effect of the skills and habits adopted.

**Table 1.**

#### **Educational areas**

<b>Educational area</b>	<b>Subjects</b>
Language and Communication	Slovak language and literature
	First foreign language
	Second foreign language
Maths and Work with Information	Mathematics
	Informatics

Man and Nature	Physics
	Chemistry
	Biology
Man and Society	History
	Geography
	Civics
Man and Values	Ethics/Religion
Man and the World of Work	World of Work
	Technology
Art and Culture	Music
	Arts
	Art Education
Health and Movement	Physical Education and Sport

### **Contents of Education**

Provision of the aforementioned competences is realized through the contents, which is formed by elementary knowledge on the importance of movement activities for health, prevention of diseases, adequate way of living, sport activities and its organizing, motor performance and its assessment, and means of movement.

### **Aims of the subject Physical Education & Sport**

In the subject Physical Education & Sport a pupil obtains competences, which should allow him to use them in their own life style in everyday life with the aim of health support. They are as follows:

#### **Motor competences**

- To be able to perform motor activities, which help to prevent from civilization diseases,
  - To develop general motor performance with the focus on maintaining and improving health,
  - To acquire adequate number of motor activities in selected kinds of sport and to be able to apply them in their free time.

### **Cognitive competences**

- To be able to explain reasons for performing motor activities in the life style with the focus on health protection.
- To use terminology of acquired motor activities and knowledge.
- To be able to explain and use warm-up exercises prior to the activity.

### **Communication competences**

- To be able to express oneself clearly and comprehensibly.
- To use correct terminology.

### **Interpersonal competences**

- To show positive attitude to oneself and the others.
- To effectively work in a team.
- To solve conflict situations in a rational way, mainly in sport.

### **Attitude competences**

- To enjoy the activity being performed.
- To be able to win, but also to lose in a match and in life.
- To observe the principles of fair-play.

### **The curriculum of physical education and sport (tab. 2 and 3)**

The curriculum is divided into two parts:

a) state curriculum (state programme) – 2 lessons of P.E. per week

b) school curriculum (school programme) – schools can choose another one, two or more lessons per week as an addition to the 2 lessons of the state programme. It allows the schools to offer students P.E. lessons every day! However, in practical life this has not become yet. The reasons are understandable: lack of money to pay P.E. teachers in schools, old-fashioned material base, lack of sport facilities, expensive equipment, and last but not least, children are discouraged by the demandingness of the contents of P.E. lessons given in the past (Chebeň, 2006a, 2006b). Today, teachers prepared at universities are taught in a new way – to offer a wide variety of physical and sport activities with the focus not on top performance but on mass character of leisure activities to be used in the future life, and also on the social and non-cognitive aspects of the lessons.

Table 2.

## No. of lessons per week in the school curricula in Slovakia

	IInd grade of elementary school – ISCED 2					Secondary school – ISCED 3			
Grade	5th	6th	7th	8th	9th	1st	2nd	3rd	4th
State educational programme (No. of lessons per week)	21	23	24	24	24	24	25	23	22
School programme (lessons per week)	6	6	6	6	6	7	7	8	8
Sum of lessons per week	27	29	30	30	30	31	32	31	30

Table 3.

## Educational area: Health and Movement - ISCED 1 (years 1 through 4), ISCED 2 (years 5 through 9)

Health & Movement	SUBJECT	1st year	2nd	3rd	4th	5th	6th	7th	8th	9th
State Programme	Physical education & Sport	2 hrs.	2	2	2	2	2	2	2	2
School Programme	Eligible subjects	5	5	5	5	6	6	6	6	6

## ISCED 3 (years 1 through 4 at secondary school)

Health & Movement	SUBJECT	1st year	2nd	3rd	4th
State Programme	Physical education & Sport	2	2	2	2
School Programme	Eligible subjects	4	4	7	15

**Educational standards** define the contents of education to be acquired by each pupils in the given subject



Educational standards are divided into:

a/ performance standards

b/ contentual standards

Below are presented examples of educational standards:

## **S P O R T G A M E S**

### **COMPETENCE:**

Pupils reaches such level of acquisition of game skills, patterns and systems that he is able to play a game according to the rules of competition.

### **PERFORMANCE STANDARD:**

- to know how to correctly name, describe, practically show, and apply in a match the technique of basic skills, and to use game patterns and systems in a match,
- to know and describe players' functions in defense and offense,
- to know how to explain basic rules of competition of selected sport games,
- to know how to set up and do in practice the warm-up prior to a match,
- to know how to act as a referee (ancillary referee), recorder, time-keeper and to run a simple observation sheet on players' performance in a match,
- to know how to evaluate the real value of one's individual sport performance and the one of the team.

### **CONTENTUAL STANDARD:**

#### **Knowledge:**

- systematics of skills, basic terminology,
- technique of performing the skills,
- game patterns and systems,
- game performance in sport games, assessment of performance,
- players' functions,
- elementary rules of selected sport games,
- organization of a simple competition (referees, time-keepers, recorders, etc.),
- principles of fair-play.

Based on these and other knowledge teachers can develop the following abilities and skills in children:

### **Skills and Abilities:**

- conditioning, elementary conditional and coordination abilities,
- describe and practically show correct technique of individual skills:  
**basketball** – one-hand pass, dribbling, shooting, defending a player with and without ball.

- football** – passing, ball damping, shooting, dribbling, defending a player with and without a ball.

- handball** – one-hand pass, dribbling, shooting, jump shooting, defending a player with and without a ball.

- volleyball** – overhand pass, pass after a movement, underhand serve, passing to a setter under the net.

### **Other games:**

- to fulfil the functions connected with the game realization: players' functions, functions of referees, simple organization functions,
- effective fulfilment of tactical tasks of a team in a match,
- to know and perform motor activities, which effect fitness of players for the given sports.

Using these knowledge, skills and abilities during the lessons facilitates creation of the following attitudes of pupils:

### **Attitudes:**

- to show permanent positive attitude to sport games,
- to show positive attitude to motor activities,
- to have positive relationship with team-mates and opponent as well,
- to stick to the adopted norms and rules,
- to observe the principles of fair-play,
- to manifest the effort of self-improvement, perseverance and bravery,
- to enjoy the performed motor activity,
- to be able to win and also accept a loss in a sport match as well as in life, to acknowledge the opponent's qualities.

### **Contents of Education**

Provision of the given competences is realized through the contents of education. The contents of education is divided into the so called topics:

**Table 4.**

**Survey of topics  
a/ Basic topics**

General gymnastics
Athletics
Elements of gymnastic sports
Sport games
Swimming
Outdoor activities
Testing motor abilities
TOTAL: 66 hours

**b/ Eligible topics**

Non-traditional (for Slovakia) motor activities (badminton, table tennis, ringo, squash, etc.)
Ice-skating
Ice-hockey
Snowboarding
Bodybuilding
Aerobics, aquaaerobics
Martial arts and self-defence
In-line hockey
Dances (social dances, disco, folk dances)
Other activities

Initial surveys show (tab. 5) that there is the majority of schools which have not increased the number of compulsory 2 lessons of Physical Education and Sport for pupils at schools. This means that in spite of the proclamations of the Slovak Ministry of Education to support movement of pupils the real situation is opposite. The reasons for not increasing the number of compulsory lessons of P.E.S. per week are various: lack of financial means to pay for teachers, lack of expert teachers, poor material provision of the subject, lack of gyms and other facilities, etc.

## Conclusion

Prior to the implementation of the new School Act in 2008 children at the second grade of elementary schools had 2-3 lessons (according to conditions) of Physical Education & Sport per week. After September 2008, only 28% of headmasters added at least one lesson into the School educational programme. This means that the amount of motor activity of pupils in school has decreased again. One of the reasons is the lack of financial means to run and renew the equipment and facilities necessary for good quality P.E.S. process. Maintenance of objects also costs certain amount of means so headmasters chose „less expensive“ solution – subjects which are not so much costly (such as history, maths, etc.). One of the tasks of teachers of P.E.S. is to elaborate serious attractive, financially not demanding motor programmes for pupils and ask headmasters to incorporate these lessons into the curricula in the form of at least one lesson of P.E.S. for pupils per week. In order that the P.E.S. teachers were successful in this process, they have to be well prepared by the universities. That is the urgent task of faculties preparing teachers to educate flexible, modern teachers prepared to fulfil even the most difficult theoretical and practical tasks.

**Table 5.**

**Statistic data on P.E.S lessons obtained by questionnaires**

				Percent
Total no. of schools	132	No. of schools which <b>added</b> at least one lesson of P.E.S in the School programme	37	28%
		No. of schools which <b>have not added</b> any lessons of P.E.S in the School programme	95	72%
Headmaster <b>HAS got education in P.E.S.</b>	Number of schools			
	33	No. of schools which <b>added</b> at least one lesson of P.E.S in the School programme	11	31%
		No. of schools which <b>have not added</b> any lessons of P.E.S in the School programme	22	69%

				Percent
Headmaster <b>HAS NOT got education in P.E.S.</b>	99	No. of schools which <b>added</b> at least one lesson of P.E.S in the School programme	26	11%
		No. of schools which <b>have not added</b> any lessons of P.E.S in the School programme	73	89%

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## THE INFLUENCE OF ACUTE HYPOTHERMIC STRESS ON THE MOTILITY AND EMOTIVITY IN CARNITINE SUPPLEMENTED RATS

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**ABSTRACT.** *Background.* Hypothermia is a stressful agent used in order to induce experimental laboratory stress. *Aims.* The study evaluated the effects of acute hypothermic stress (5° C) on spontaneous motility and emotivity of the rats with and without carnitine supplementation. *Methods.* The study was made on four groups of male adult Wistar rats (n=10 animals/group) for 3 days long: group I – control, group II – exposed to hypothermic stress, group III – supplemented with carnitine, group IV – supplemented with carnitine and exposed to hypothermic stress. Spontaneous motility (movements and rearings) and emotivity (micturitions and defecations) were evaluated by Open Field Test. *Results.* The hypothermic stress determines significant decreases of the spontaneous motility and significant increases of the emotivity; carnitine supplementation in acute hypothermic stress exposed animals induces significant spontaneous motility decrease and significant emotivity increase as compared to the control animals. *Conclusions.* Acute hypothermic stress with and without carnitine supplementation induces hypomotility and hiperemotivity. Carnitine does not improve the spontaneous motility, but induces significant decreases of the emotivity in acute hypothermic conditions.

**Keywords:** acute hypothermic stress, carnitine, spontaneous motility, emotivity, Open Field

**REZUMAT.** *Influența stresului hipotermic acut asupra motilității și emotivității la șobolanii suplinimentați cu carnitină.* *Premize.* Hipotermia este un agent stresor care poate fi utilizat pentru provocarea stresului experimental. *Obiective.* S-au urmărit efectele stresului acut hipotermic (5° C) asupra motilității spontane și a emotivității la șobolanii, cu și fără suplimentare cu carnitină. *Material și metodă.* Cercetările au fost efectuate pe patru loturi de șobolani masculi, adulți (n=10 animale /lot) rasa Wistar, timp de 3 zile, lotul I –martor, lotul II supus stresului hipotermic, lotul III –suplimentat cu carnitină, lotul IV –suplimentat cu carnitină și supus stresului hipotermic. Motilitatea spontană (deplasări, cabrări) și emotivitatea

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(micțiuni și defecații) s-au apreciat prin testul Open Field. *Rezultate.* Față de martori, stresul hipotermic acut determină scăderi semnificative ale motilității spontane și creșteri semnificative ale emotivității; suplimentarea cu carnitină la animalele supuse stresului hipotermic acut produce scăderi semnificative ale motilității spontane și creșteri semnificative ale emotivității față de animalele martor. *Concluzii.* Stresul acut hipotermic, cu și fără suplimentare de carnitină, determină hipomotilitate și hiperemotivitate. Carnitina nu are efect protector asupra motilității spontane, dar produce scăderea semnificativă a emotivității în condiții de hipotermie acută.

*Cuvinte cheie:* stres acut hipotermic, carnitină, motilitate spontană, emotivitate, Open Field

## Introduction

Body's response to various stress agents (situations, events, objects or persons) determines the stress, which can be either beneficial, adaptive, energizing, positive - eustress or harmful disadaptive, destructive, negative - distress.

The stressors are different as nature (physical, chemical, psychological, social, biological), number (single, combined or multiple), time of action (acute, sub acute, chronic) and severity and can cause short or long term reactions of the body.

In experimental conditions, depending on the nature of the stress agents, several models of stress were studied, mainly in rodents:

- ambient noise level – phonic stress -; temperature – thermal stress - , vibrations, radiations, air pollution factors;
- gravity, by imponderability and acceleration stress;
- immobilisation – anakinetic stress or movement –hyperkinetic stress;
- atmospheric pressure – hypo or hyperbaric stress;
- partial pressure of oxygen - hypoxic and hyperoxic stress
- prooxidant factors – oxidative stress.

The thermal factor was used in order to induce stress to the animals at rest, during immobilisation and effort in ambient and aquatic conditions. (Harri 1984, Moran et al. 1986, Sudha and Pradhau 1995, Mäkinen et al. 1998, Christianson and Drugan 2005, Drugan et al. 2005, Imamura et al.2008).

Carrying out various sports activities *in vivo* hypothermic conditions – winter or aquatic sports, on one hand, and the benefits of carnitine on muscle and energetic metabolism (Brass 2000, Hoppel 2003, Brass 2004, Karlic and Lohninger, 2004, Virmani et al. 2005, Panjwani et al. 2007, Flanagan et al. 2010, Hathcock and Shao, 2010, Ho et al. 2010, Doboși,

2010), and the antioxidant role in effort (Calò et al 2006, Augustyniak et al 2009, 2010;), on the other, determined us to study the effect of carnitine supplementation on motor behavior in acute hypothermic stress.

### **Aims**

The study evaluated the effects of acute hypothermic stress on spontaneous motility and emotivity of the rats with and without carnitine supplementation.

### **Methods**

The study was performed at the Department of Physiology from UMF "Iuliu Hațieganu", Cluj-Napoca, on adult male Wistar rats, between 200-220 g body weight, maintained under adequate vivarium conditions, in the Laboratory of Experimental Physiology.

*a. Groups:* n= 10 animals/group:

group I –control exposed to standard laboratory temperature of 18-20°C;

group II – exposed to hypothermic stress 5° C;

group III – supplemented with carnitine and exposed to standard laboratory temperature of 18-20°C;

group IV – supplemented with carnitine and exposed to hypothermic stress 5°C

Acute hypothermia was induced for groups II and IV, by keeping the animals for 3 hours daily, 3 days long at 5°C, in the cold chamber.

The animals in groups III and IV were daily supplemented with L-Carnitine by oropharyngeal gavage (Carnil 100 mg/ml, provided by Anfarm Hellas H.C. Pharmaceutical Industry Factory, Athens, Greece). Each animal received 100 mg/kg c L-Carnitine.

*b. Methods*

Open Field Test (Denenberg and Whimby, 1963) was used to assess behavioral responses based on the following indicators, expressed as a numeric score:

- spontaneous motility- rearings and movements;
- emotivity –micturitions and defecations.

*c. Statistical analysis* was performed by using Microsoft Excel Software.



## Results

a. The descriptive statistical analysis is presented in table I for spontaneous motility and in table II for emotivity.

**Table 1.**

Statistical indicators for centrality, dispersion and localisation for spontaneous motility

Group	REARINGS						MOVEMENTS					
	Mean	Std Dev of Mean	Std Er of Mean	Med	Min	Max	Mean	Std Dev of Mean	Std Er of Mean	Med	Min	Max
I	14	2,538	0,802	15	10	17	23,6	8,221	2,6	22,5	13	44
II	10,4	2,412	0,763	10,5	5	13	15	3,197	1,011	14,5	10	20
III	12,9	1,852	0,585	12,5	10	16	25,7	4,398	1,390	25,5	17	33
IV	9,7	2,451	0,775	10,5	5	13	14,6	2,412	0,763	15	10	18

**Table 2.**

Statistical indicators for centrality, dispersion and localisation for emotivity

Group	DEFECATIONS						MICTURITIONS					
	Mean	Std Dev of Mean	Std Er of Mean	Med	Min	Max	Mean	Std Dev of Mean	Std Er of Mean	Med	Min	Max
I	2,7	1,494	0,472	3	0	4	1,4	0,699	0,221	1,5	0	2
II	5,6	1,264	0,4	5,5	4	8	2,7	0,674	0,213	3	2	4
III	2,1	1,100	0,348	2	1	4	1,3	0,823	0,260	1,5	0	2
IV	4,1	1,197	0,378	4	2	6	2,2	0,918	0,290	2	1	4

b. Comparative statistical analysis is presented in table III for spontaneous motility and in table IV for emotivity.

**Table 3.**

Comparative statistical analysis for spontaneous motility

GROUP	REARINGS				MOVEMENTS			
	GROUP I	GROUP II	GROUP III	GROUP IV	GROUP I	GROUP II	GROUP III	GROUP IV
GROUP I		<b>p&lt;0.001</b>	p=0.395	<b>p&lt;0.001</b>		<b>p&lt;0.02</b>	p=0,361	<b>p&lt;0.01</b>
GROUP II			<b>p&lt;0.04</b>	p=0,510			<b>p&lt;0.001</b>	p=0,685
GROUP III				<b>p&lt;0.02</b>				<b>p&lt;0.0001</b>

Spontaneous motility decreased significantly in group II (exposed to hypothermic stress) as compared to control group (I). Carnitine supplementation in group III induced insignificant lower values of the rearings as compared to group I and insignificant higher values of the movements as compared to group I. In group IV (supplemented with carnitine and exposed to hypothermic stress) there was a significant decrease of the motor behavior as compared to group III. Carnitine supplementation determined insignificant decreases of the spontaneous motility in group IV as compared to group II.

**Table 4.**

Comparative statistical analysis for emotivity

GROUP	DEFECATIONS				MICTURITIONS			
	GROUP I	GROUP II	GROUP III	GROUP IV	GROUP I	GROUP II	GROUP III	GROUP IV
GROUP I		<b>p&lt;0.001</b>	p=0,239	<b>p&lt;0.04</b>		<b>p&lt;0.001</b>	p=0,811	<b>p&lt;0.03</b>
GROUP II			<b>p&lt;0.0001</b>	<b>p=0.01</b>			<b>p&lt;0.001</b>	p=0.052
GROUP III				<b>p&lt;0.008</b>				<b>p&lt;0.04</b>

Emotivity increased significantly in group II (exposed to hypothermic stress), as compared to control group (I). Carnitine supplementation (group III) determined insignificant decreases of the emotivity as compared to group I. In group IV (supplemented with carnitine and exposed to hypothermic stress), there was a significant increase of the emotivity as compared to group III (supplemented with carnitine). Carnitine supplementation determined significantly lower values of the emotivity in group IV as compared to group II.

c. Correlation indicators for spontaneous motility and emotivity of the studied groups is presented in table V.

**Table 5.**

Correlation indicators for spontaneous motility and emotivity (n=40)

Parameters		Pearson Correlation Coefficient	p	Parameters		Pearson Correlation Coefficient	p
Micturi-tions	Defeca-tions	0.35**	<b>0.02</b>	rearing-s	Defeca-tions	-0.35**	<b>0.02</b>
rearing-s	Move-ments	0.50**	<b>&lt;0,001</b>	Move-ments	Micturi-tions	-0.55***	<b>&lt;0,001</b>
rearing-s	Micturi-tions	-0.52***	<b>&lt;0,001</b>	Move-ments	Defeca-tions	-0.35**	<b>0.02</b>
* weak correlation, ** acceptable correlation, ***good correlation, **** very good correlation							

Pearson correlation coefficient shows a significant positive correlation between micturitions and defecations; there is a significant positive correlation between the number of rearings and movements, and a significant negative correlation of the rearings with micturitions and defecations; a significant negative correlation of the movements with micturitions and defecations was also found.

## Discussions

Carnitine is a quaternary ammonium compound biosynthesized primarily in the liver and kidneys from the amino acids lysine and methionine. Carnitine exists in two stereoisomers: (*D-carnitine* and *L-carnitine*), whereas *L-carnitine* is biologically active.

*L-Carnitine* is a natural substance required in the energetic metabolism of the mammals. It has multiple roles in: energetic (Hoppel 2003; Flanagan et al. 2010), lipid (Brass 2004; Hathcock and Shao, 2010, Ho et al. 2010), glucose (Brass 2000, Panjwani et al. 2007), muscle metabolism, (Karlic and Lohninger 2004; Virmani et al. 2005, Doboși 2010) and as antioxidant (Calò et al. 2006, Augustyniak et al. 2009, 2010).

Exposure to low temperatures determines thermoregulation adaptive changes by preserving heat mechanisms.

Body's short adaptation periods to low temperatures is done due to: vegetative mechanism (preservation through countercurrent exchange system in the limbs, piloerector muscle contraction, sympathicotonia and secretion of adrenaline after 5-15 minutes, stimulation of thyroxin production), somatic mechanisms (squatting position, increased muscle tone, shivering), other mechanism (favorable microclimate conditions, clothing) (Gavhed, 2003; Staicu and Tache, 2011; Barrett et al. 2010).

Our results show that hypothermic stress, with and without carnitine supplementation, induces decreases of the spontaneous motility and increases of the emotivity, in group IV and II, as compared to control group (I). On the other hand, in group IV (exposed to hypothermic stress and supplemented with carnitine), there is a decrease of the motility and emotivity as compared to group II.

The influence of the acute stress on motor behavior requires hypothalamic complex neurohormonale mechanisms.

- direct changes in hypothalamic-pituitary-adrenal axis, with a role in modulating motor behavior (Metz et al. 2005, Metz 2007);
- indirect changes in hypothalamic-limbic axis involved in controlling emotional responses associated with stress (anxiety) (Metz et al. 2005, Metz 2007).

In acute hypothermic stress conditions, the hypothalamic thermoregulatory mechanism are involved through sympathoadrenal system. (Barrett et al. 2010, Staicu and Tache, 2011).

The present experimental design shows that exposure to hypothermia leads to activation of the direct and indirect hypothalamic mechanisms that reduce the motility and increase the emotivity, according to Metz and his colleagues' idea (2005), regarding motor functions modulation by stress. Open Field test can also induce stress reactions (Dulawa et al.1999).

The decrease of motor behavior in acute hypothermia conditions shows that the present experimental model is a suitable model of distress.

The decrease of the emotivity induced by the carnitine in experimental hypothermic acute conditions, should be cautiously accepted, regarding its use in untrained persons and sportives, in natural hypothermical conditions.

## **Conclusions**

1. Acute hypothermic stress significantly reduces the motor behavior and increases the emotivity.

2. Carnitine supplementation induces insignificant changes of the spontaneous motility and emotivity to the control animals.

3. Carnitine supplementation and acute hypothermic stress induces significant decreases of the spontaneous motility and increases the emotivity

4. Carnitine does not improve the spontaneous motility, but induces significant decreases of the emotivity in acute hypothermical conditions.

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## THE INFLUENCE OF ANTEPARTUM HYPOBARIC HYPOXIA ON THE MOTOR AND EMOTIONAL BEHAVIOR IN DESCENDING RATS

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**ABSTRACT. Background.** Hypobaric hypoxia was used by many authors as an experimental model for reproducing ADHD in rodents. **Aims.** The motor and emotional behavior were studied on male and female rats, descendants from pregnant females exposed to hypobaric hypoxia (Hh). **Materials and methods.** The study was made on 4 groups of males and females rats descendants from pregnant control females and from pregnant females exposed to hypoxia; hypoxia 12% 14 days long, before birth (23 h/d). The used tests were Elevated Plus Maze and Open Field Test. The studied moments were T21, T42, T 90 – days after birth corresponding to human age: childhood, puberty, adult. **Results:** Antepartum Hh induces changes of the spontaneous behavior (movements, rearings) and of the emotivity (micturitions, defecations and the time spent in open field) at the male and female descending rats. **Conclusions:** Antepartum Hh induces ADHD like behavior at the male descendings with hyperkinesia, hiperemotivity and hypoanxiety.

**Keywords:** *hypobaric hypoxia, Elevated Plus Maze, Open Field Test, spontaneous motility, emotivity, anxiety, rats.*

**REZUMAT. Influența hipoxiei prenatale asupra comportamentului motor și emoțional la șobolani descendenți. Premize:** Hipoxia hipobară (Hh) a fost utilizată de numeroși autori ca model experimental pentru reproducerea ADHD la rozătoare. **Obiective:** S-au studiat modificările comportamentului motor și emoțional la animale, șobolani masculi și femele, descendenți din femele gestante supuse hipoxiei hipobare (Hh). **Material și metodă:** Cercetările au fost efectuate pe 4 loturi de șobolani masculi și femele, descendenți din gestante mator și din gestante supuse la hipoxie; hipoxie 12% O<sub>2</sub> timp de 14 zile prenatal (23 ore/zi). Testele utilizate au fost Elevated Plus Maze și Open Field Test. Momentele luate în studiu au fost T21, T42, T90 - zilele după naștere, corespunzătoare vârstei umane: copilărie, pubertate, adult. **Rezultate:** Hh prenatală determină modificări ale comportamentului motor spontan (treceți și cabrări) și ale emotivității (micțiuni, defecații și a timpului în spațiu deschis) la șobolani descendenți masculi și femele. **Concluzii:** Hh prenatală determină modificări comportamentale de tip ADHD la descendenții masculi cu hiperkinezie și hiperemotivitate și hipoanxietate.

**Cuvinte cheie:** *hipoxie hipobară, Elevated Plus Maze, Open-Field Test, motilitate spontană, emotivitate, anxietate, șobolani*

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## **Background**

Attention Deficit Hyperactivity Disorder (ADHD) is a heterogeneous neurobehavioral development disorder, characterized by three main symptoms: inattention, hyperactivity and impulsivity, in different degrees. ADHD affects 5-20% of schoolchildren, mainly masculine gender.

Extensive research has attempted to decipher the nature of the disease, behavioral subtypes, comorbidity, risk factors and appropriate treatment (Froehlich ş.c. 2007, Molina şi Pelham 2003, Miikhopadhyay ş.c. 2003. Blazquez-Almeira ş.c., 2005 Polanczyk ş.c. 2007).

Numerous studies have investigated rodent animal models of ADHD. There were used:

- genetic models, on spontaneously hypertensive rat and genetically hypertensive rats, Naples rats and DAT *knock out* mice, SNAP-25 mutant mice, mice with mutant thyroid receptors, Coloboma mice. (Kohlert şi Bloch 1993, Paute ş.c. 2000, Sagvolden ş.c. 2005, Russell 2007, Williams 2009, Sutherland ş.c. 2009).

- animals that underwent central nervous system lesions in early stages of development by genetic, electrical, chemical, pharmacological manipulation, hypoxia and anoxia, ultrasound (Viggiano ş.c. 2003, Puumala ş.c. 1996, Russell 2007, Johansen şi Sagvolden 2005).

- methods associated with genetic and environmental (Mill şi Petronis 2008).

Hypobaric hypoxia (Hh) induced to antepartum rodents, to pregnant females (Mc Cullough 1976, Maslova ş.c. 2003) and postpartum to descendants (Oorschot ş.c. 2007, Decker ş.c. 2005, Maslova ş.c. 2003) and postpartum anoxia to descendants (Casolini ş.c. 2005, Dell'Anna ş.c. 1993, Speiser ş.c. 1983) were used as ADHS inducing models. Although no model is truly representative of ADHD that occurs naturally, we chose the pattern induced by antepartum Hh.

## **Aims**

Were studied in an experimental model of pregnant females descendants rats` subjected to Hh:

- spontaneous motor behavior and emotional changes longitudinally, according to childhood, puberty and adulthood;

- spontaneous motor behavior and emotional changes daccording to gender.

## **Materials and methods**

The study was performed at the Department of Physiology from UMF "Iuliu Hațieganu", Cluj-Napoca, on Wistar breed rats.

Rats were chosen for the study of both types of female descendants maintained during gestation period under normobaric normoxia- control animals (n = 5) and descendants of pregnant females subjected to hypobaric hypoxia during gestation (n = 5) 12% O<sub>2</sub>, in a barochamber from the Department of Physiology.

Hh was chosen as animal model for ADHD to early induction of brain damage in rodents prenatally. Exposure was in the 14 days of gestation (from day 7 to day 21) for 23 hours / day at 12% O<sub>2</sub>.

### **Groups**

Offspring rats were divided into four groups as follows:

- group I: descendant females of pregnant controls (n = 10)
- group II: descendant males of pregnant controls (n = 14)
- group III: descendant females of pregnant females exposed prenatally to Hh (n = 14)
- group IV descendant males of pregnant females exposed prenatally to Hh (n = 18)

#### **a. Studied moments**

Descendant rats were tested in 3 moments:

- T1-day 21, corresponding to childhood
- T2- day 42, corresponding to puberty
- T3-day 90, corresponding to adulthood.

Moments were chosen depending on rats age, corresponding to human age. (<http://www.ratbehaviour.org>)

### **Used tests**

Elevated Plus Maze (EPM), recommended for testing the anxiety in rodents. (Hogg 1996, Menard și Treit 1999. Carobrez și Bertoglio 2005), was used for assessing the behavioral answers on some indicators: time spent in open field (TSD), expressed in second and the rearing number, micturitions and defecations, as score. The animals were evaluated in the Department of Experimental Pharmacology, University of Medicine and Pharmacy "Iuliu Hațieganu", Cluj-Napoca.

Open Field Test (OFT) used for testing the spontaneous motility and emotivity (după Denenberg 1963) was used in order to evaluate the behavioral answers by the following scores: sponataneous motility (movements and rearings), and the emotivity (defecations and micturutions). The animals were evaluated in the Department of Experimental Physiology, University of Medicine and Pharmacy "Iuliu Hațieganu", Cluj-Napoca.

The increase of the behavior was analyzed due to the increase of the movement and rearings. The increase of the emotivity was analyzed due to the increase of the micturition, defecations and the decrease of the time spent in open field area.

Statistical analysis was performed by using SPSS 13.0, Statisces 8.0 and Microsoft Excel Software.

## Results

a. Comparative statistical analysis for EPM is presented in table I, II, III and IV.

**Table 1.**

A. Comparison of TSD between groups I – IV at the moments  $T_{21}$ ,  $T_{42}$ ,  $T_{90}$

B. The statistical semnificance of the used test for the comparison of TSD of two by two groups on the moments

Parameter/ Moment	Group I		Group II		Group III		Group IV		
	MA	±DS	MA	±DS	MA	±DS	MA	±DS	
TSD	$T_{21}$	<b>118,5</b>	7,68	<b>115,57</b>	7,45	<b>54,31</b>	11,88	<b>133,69</b>	17,87
	$T_{42}$	<b>120,4</b>	5,27	<b>122,14</b>	14,86	<b>66,92</b>	19,64	<b>118,13</b>	15,51
	$T_{90}$	<b>124,4</b>	4,86	<b>125,29</b>	8,97	<b>83,85</b>	15,2	<b>93,5</b>	13,61
<b>Table 1 B.</b>									
	p	Lot I-II	Lot I-III	Lot I-IV	Lot II-III	Lot II-IV	Lot III-IV		
TSD	$T_{21}$	0,94	< <b>0,0001</b>	<b>0,02</b>	< <b>0,0001</b>	<b>0,001</b>	< <b>0,0001</b>		
	$T_{42}$	0,99	< <b>0,0001</b>	0,98	< <b>0,0001</b>	0,89	< <b>0,0001</b>		
	$T_{90}$	1,00	< <b>0,0001</b>	< <b>0,0001</b>	< <b>0,0001</b>	< <b>0,0001</b>	0,14		

**Table 2.**

- A. Comparison of the rearing number between groups I – IV at the moments  $T_{21}$ ,  $T_{42}$ ,  $T_{90}$  (MA – arithmetic mean, DS – standard deviation)
- B. The statistical significance of the used test for the comparison of rearings of two by two groups on the moments

Parameter/ Moment		Group I		Group II		Group III		Group IV	
		MA	±DS	MA	±DS	MA	±DS	MA	±DS
Rearings	$T_{21}$	<b>10,50</b>	2,55	<b>11,07</b>	4,62	<b>1,62</b>	1,12	<b>3,25</b>	1,24
	$T_{42}$	<b>12,00</b>	2,62	<b>14,29</b>	3,79	<b>3,08</b>	0,95	<b>4,25</b>	1,34
	$T_{90}$	<b>12,20</b>	3,08	<b>18,29</b>	3,10	<b>3,92</b>	1,19	<b>5,19</b>	1,60
<b>Table 2 B.</b>									
	p	<b>Lot I-II</b>	<b>Lot I-III</b>	<b>Lot I-IV</b>	<b>Lot II-III</b>	<b>Lot II-IV</b>	<b>Lot III-IV</b>		
Rearings	$T_{21}$	0,96	< <b>0,0001</b>	< <b>0,0001</b>	< <b>0,0001</b>	< <b>0,0001</b>	<b>0,002</b>		
	$T_{42}$	0,10	< <b>0,0001</b>	< <b>0,0001</b>	< <b>0,0001</b>	< <b>0,0001</b>	0,57		
	$T_{90}$	< <b>0,0001</b>	< <b>0,0001</b>	< <b>0,0001</b>	< <b>0,0001</b>	< <b>0,0001</b>	0,47		

**Table 3.**

- A. Comparison of the micturition number between groups I – IV at the moments  $T_{21}$ ,  $T_{42}$ ,  $T_{90}$  (MA – arithmetic mean, DS – standard deviation)
- B. The statistical significance of the used test for the comparison of micturitions of two by two groups on the moments

Parameter/ Moment		Group I		Group II		Group III		Group IV	
		MA	±DS	MA	±DS	MA	±DS	MA	±DS
Mictions	$T_{21}$	<b>2,10</b>	1,20	<b>1,71</b>	0,83	<b>4,00</b>	1,22	<b>5,73</b>	1,49
	$T_{42}$	<b>2,20</b>	0,79	<b>2,07</b>	1,00	<b>4,00</b>	1,00	<b>7,67</b>	1,68
	$T_{90}$	<b>3,40</b>	0,52	<b>1,86</b>	1,03	<b>4,15</b>	1,28	<b>7,87</b>	2,75
<b>Table 3 B.</b>									
	p	<b>Lot I-II</b>	<b>Lot I-III</b>	<b>Lot I-IV</b>	<b>Lot II-III</b>	<b>Lot II-IV</b>	<b>Lot III-IV</b>		
Micturition	$T_{21}$	0,34	<b>0,003</b>	< <b>0,0001</b>	< <b>0,0001</b>	< <b>0,0001</b>	<b>0,004</b>		
	$T_{42}$	0,67	< <b>0,0001</b>	< <b>0,0001</b>	< <b>0,0001</b>	< <b>0,0001</b>	< <b>0,0001</b>		
	$T_{90}$	<b>0,001</b>	0,11	< <b>0,0001</b>	< <b>0,0001</b>	< <b>0,0001</b>	< <b>0,0001</b>		

**Table 4.**

- A.** Comparison of the defecation number between groups I – IV at the moments  $T_{21}$ ,  $T_{42}$ ,  $T_{90}$  (MA – arithmetic mean, DS – standard deviation)
- B.** The statistical significance of the used test for the comparison of rearings of two by two groups on the moments

Parameter/ Moment		Group I		Group II		Group III		Group IV	
		MA	±DS	MA	±DS	MA	±DS	MA	±DS
defecations	$T_{21}$	<b>2,70</b>	0,95	<b>2,14</b>	0,95	<b>3,54</b>	0,97	<b>4,75</b>	1,34
	$T_{42}$	<b>3,40</b>	0,84	<b>2,07</b>	1,14	<b>4,00</b>	1,08	<b>4,56</b>	1,36
	$T_{90}$	<b>3,70</b>	0,95	<b>2,14</b>	1,10	<b>3,62</b>	1,26	<b>5,63</b>	1,54
<b>Table 4 B.</b>									
	p	<b>Lot I-II</b>	<b>Lot I-III</b>	<b>Lot I-IV</b>	<b>Lot II-III</b>	<b>Lot II-IV</b>	<b>Lot III-IV</b>		
defecations	$T_{21}$	0,61	0,27	<b>&lt;0,0001</b>	<b>0,01</b>	<b>&lt;0,0001</b>	<b>0,02</b>		
	$T_{42}$	<b>0,04</b>	0,61	0,07	<b>&lt;0,0001</b>	<b>&lt;0,0001</b>	0,56		
	$T_{90}$	<b>0,003</b>	0,90	<b>&lt;0,0001</b>	<b>0,01</b>	<b>&lt;0,0001</b>	<b>0,002</b>		

**b.** Comparative analysis of the results for OFT is presented in tables V, VI, VII and VIII.

**Table 5.**

- A.** Comparison of the movements number between groups I – IV at the moments  $T_{21}$ ,  $T_{42}$ ,  $T_{90}$  (MA – arithmetic mean, DS – standard deviation)
- B.** The statistical significance of the used test for the comparison of rearings of two by two groups on the moments

Parameter/ Moment		Group I		Group II		Group III		Group IV	
		MA	±DS	MA	±DS	MA	±DS	MA	±DS
Movements	$T_{21}$	11,00	3,02	9,36	2,31	10,07	4,03	21,38	5,70
	$T_{42}$	17,00	3,46	12,86	4,42	13,07	4,18	24,06	6,06
	$T_{90}$	20,60	2,67	13,14	1,70	18,00	4,35	30,38	5,68
<b>Table 5 B.</b>									
	p	<b>Lot I-II</b>	<b>Lot I-III</b>	<b>Lot I-IV</b>	<b>Lot II-III</b>	<b>Lot II-IV</b>	<b>Lot III-IV</b>		
Movements	$T_{21}$	0,77	0,95	<b>&lt;0,0001</b>	0,97	<b>&lt;0,0001</b>	<b>&lt;0,0001</b>		
	$T_{42}$	0,17	0,21	<b>0,003</b>	1,00	<b>&lt;0,0001</b>	<b>&lt;0,0001</b>		
	$T_{90}$	<b>&lt;0,0001</b>	0,42	<b>&lt;0,0001</b>	<b>0,01</b>	<b>&lt;0,0001</b>	<b>&lt;0,0001</b>		

**Table 6.**

- A. Comparison of the rearings number between groups I – IV at the moments  $T_{21}$ ,  $T_{42}$ ,  $T_{90}$  (MA – arithmetic mean, DS – standard deviation)
- B. The statistical significance of the used test for the comparison of rearings of two by two groups on the moments

Parameter/ Moment		Group I		Group II		Group III		Group IV	
		MA	±DS	MA	±DS	MA	±DS	MA	±DS
Rearings	$T_{21}$	3,30	1,34	3,21	1,31	7,36	1,78	7,56	2,39
	$T_{42}$	6,30	2,21	5,93	1,59	8,43	2,38	11,88	2,33
	$T_{90}$	6,80	2,15	4,29	1,68	10,71	2,70	14,56	2,97
<b>Table 6 B.</b>									
	p	Lot I-II	Lot I-III	Lot I-IV	Lot II-III	Lot II-IV	Lot III-IV		
Rearings	$T_{21}$	1,00	<0,0001	<0,0001	<0,0001	<0,0001	0,99		
	$T_{42}$	0,98	0,09	<0,0001	0,02	<0,0001	<0,0001		
	$T_{90}$	0,08	0,002	<0,0001	<0,0001	<0,0001	<0,0001		

**Table 7.**

- A. Comparison of the defecations number between groups I – IV at the moments  $T_{21}$ ,  $T_{42}$ ,  $T_{90}$  (MA – arithmetic mean, DS – standard deviation)
- B. The statistical significance of the used test for the comparison of rearings of two by two groups on the moments

Parameter/ Moment		Group I		Group II		Group III		Group IV	
		MA	±DS	MA	±DS	MA	±DS	MA	±DS
Defecations	$T_{21}$	2,00	1,49	2,14	1,35	4,93	1,44	6,38	1,93
	$T_{42}$	4,90	1,97	3,86	1,79	5,86	1,35	7,31	1,74
	$T_{90}$	4,90	1,20	3,71	1,27	6,71	1,44	7,25	1,61
<b>Table 7 B.</b>									
	p	Lot I-II	Lot I-III	Lot I-IV	Lot II-III	Lot II-IV	Lot III-IV		
Defecations	$T_{21}$	1,00	<0,0001	<0,0001	<0,0001	<0,0001	0,07		
	$T_{42}$	0,47	0,53	0,21	0,02	<0,0001	0,02		
	$T_{90}$	0,20	0,02	<0,0001	<0,0001	<0,0001	0,72		

**Table 8.**

- A. Comparison of the micturitions number between groups I – IV at the moments  $T_{21}$ ,  $T_{42}$ ,  $T_{90}$  (MA – arithmetic mean, DS – standard deviation)  
 B. The statistical significance of the used test for the comparison of rearings of two by two groups on the moments

Parameter/ Moment		Group I		Group II		Group III		Group IV	
		MA	±DS	MA	±DS	MA	±DS	MA	±DS
Micturitions	$T_{21}$	2,40	1,26	2,14	1,29	4,00	1,57	4,06	1,44
	$T_{42}$	5,40	1,65	3,79	1,53	5,21	1,37	5,44	2,39
	$T_{90}$	5,20	2,04	2,79	1,05	5,14	1,35	5,94	2,08

Table 8 B.							
		Lot I-II	Lot I-III	Lot I-IV	Lot II-III	Lot II-IV	Lot III-IV
Micturitions	p	0,97	<b>0,04</b>	<b>0,03</b>	<b>0,01</b>	<b>0,003</b>	1,00
	$T_{21}$	0,97	<b>0,04</b>	<b>0,03</b>	<b>0,01</b>	<b>0,003</b>	1,00
	$T_{42}$	0,16	0,99	1,00	0,17	0,08	0,99
	$T_{90}$	<b>0,006</b>	1,00	0,70	<b>0,003</b>	<b>&lt;0,0001</b>	0,57

c. Correlations between the scores of the EPM on moments, are presented in the tables IX A, B and C.

**Table 9.**

- A. Correlation of the parameters measured at the moment  $T_{21}$  (n=53)  
 B. Correlation of the parameters measured at the moment  $T_{42}$  (n=53) (n=53)  
 C. Correlation of the parameters measured at the moment (n=53)

Parameters		Pearson Correlation Coefficient	p	Parameters		Pearson Correlation Coefficient	P
TSD	rearings	0,30**	<b>0,03</b>	rearings	micturitions	-0,63***	<b>&lt;0,0001</b>
TSD	micturitions	0,08*	0,60	rearings	defecations	-0,54***	<b>&lt;0,0001</b>
TSD	defecations	0,15*	0,30	micturitions	defecations	0,63***	<b>&lt;0,0001</b>

**Tabel 9 B.**

Parameters		Pearson Correlation Coefficient	p	Parameters		Pearson Correlation Coefficient	p
TSD	rearings	0,44**	<b>0,001</b>	rearings	micturitions	-0,64***	<b>&lt;0,0001</b>
TSD	micturitions	-0,09*	0,54	rearings	defecations	-0,59***	<b>&lt;0,0001</b>
TSD	defecations	-0,15*	0,27	micturitions	defecations	0,45**	<b>&lt;0,0001</b>

**Table 9 C.**

Parameters		Pearson Correlation Coefficient	p	Parameters		Pearson Correlation Coefficient	p
TSD	rearrings	0,71***	<0,0001	rearrings	micturitions	-0,61***	<0,0001
TSD	micturitions	-0,39**	<b>0,004</b>	rearrings	defecations	-0,54***	<0,0001
TSD	defecations	-0,46**	<0,0001	micturitions	defecations	0,57***	<0,0001
* weak correlation, ** acceptable correlation, ***good correlation, **** very good correlation							

d. Correlations between the scores of the OFT on moments, are presented in the tables X A, B and C.

**Table 10.**

- A. Correlation of the parameters measured at the moment  $T_{21}$  (n=53)
- B. Correlation of the parameters measured at the moment  $T_{42}$  (n=53)
- Corelația dintre parametrii măsurăți la momentul  $T_{90}$  (n=53)

Parameters		Pearson Correlation Coefficient	p	Parameters		Pearson Correlation Coefficient	P
defecations	micturitions	0,50***	<0,0001	micturitions	movement	0,32**	<b>0,02</b>
defecations	movements	0,58***	<0,0001	micturitions	rearrings	0,44**	<0,0001
defecations	rearrings	0,61***	<0,0001	movements	rearrings	0,41**	<b>0,002</b>

**Table 10 B.**

Parameters		Pearson Correlation Coefficient	p	Parameters		Pearson Correlation Coefficient	P
defecations	micturitions	0,39**	<b>0,004</b>	micturitions	movement	0,42**	<b>0,001</b>
defecations	movements	0,50***	<0,0001	micturitions	rearrings	0,32**	<b>0,02</b>
defecations	rearrings	0,47**	<0,0001	movements	rearrings	0,70***	<0,0001

**Tabel 10 C.**

Parameters		Pearson Correlation Coefficient	p	Parameters		Pearson Correlation Coefficient	P
defecations	micturitions	0,34**	<b>0,01</b>	micturitions	movements	0,49**	<0,0001
defecations	movements	0,50***	<0,0001	micturitions	rearrings	0,58***	<0,0001
defecations	rearrings	0,60***	<0,0001	movements	rearrings	0,72***	<0,0001
* weak correlation, ** acceptable correlation, ***good correlation, **** very good correlation							



## Discussions

There were no significant differences at the descendant control animals (group I and II) between motor behavior and emotional at the moments T1 and T2. For the descendant control females at T3 on EPM test there were significant decreases in the number of rearings and significant increases in the number of micturitions and defecations in comparison with the descendant control males. On OFT in the moment T3 there were significant increases of the number of movements and micturitions compared to control males.

For the descendants females ADHD model (group III), based on EMP test compared with controls (group I) there were significant decreases in TSD and the number of rearings for all moments and significant increases of the micturitions for T1 and T2 moments. For the descendants males ADHD model (group IV) based on EMP test compared with descendant female ADHD model (group III) there were significant increases of the TSD, number of rearings, micturitions and defecations on the moment T1, significant increases of the TSD and number of micturitions at the moment T2 and significant increases of the micturitions and defecation at T3 moment.

For the descendant females, ADHD model (group III), based on OFT, compared to control animals (group I), there were significant increases of the number of rearings, defecations and micturitions on the moment T1, significant increases of the number of rearings and defecations on moment T3 and significant decreases of the movements on all the moments. For the descendant males, ADHD model (group IV) based on OFT, compared to control animals (group II), there were significant increases of the number of the movements, rearings and defecations in all the moments and significant increases of the micturitions in the moments T1 and T3.

Our results on the ADHD experimental model induced on rodents, underline the significant differences between the descendant males and females. The motor and emotional behavior is significantly increased for the descendant males (group IV) compared to descendant females (group III) and compared to the control (group II).

The stress induced by Hh to the pregnant animals can be considered a favorable factor for inducing a hyperactive motor behavior to the descendant male rats.

The anxiety behavior is assessed on the decrease of TSD significantly increased to the descendant female ADHD model (group III) compared to the control (group I) and compared to descendant males ADHD model (group IV). OFT we used, induces a moderate anxiety status to the animals, by leaving them in a new space, open field, but limited as total area (Dulawa s.c. 1999).

In all the studied moments, there were positive correlations between the indicators, fact that sustains for the hiperkinetic status associated to the hiperemotivity, on the experimental model we used

The influence of physical effort upon the sponatenous motor behavior colud be used as therapeutical method of the ADHD, but also for understanding the differnces of the behavior depending on gender. (Hopkins ş.c. 2009).

### **Conclusions**

1. Hh induced antepartum to pregnant rat femals determines motor and emotional behavior changes to the dencendants.

2. Descendant males from pregnant females exposed to antepartum Hh characterize themselves by hiperkinezia and hypoemotivity, with hipoanxiety that increases due to the age.

3. The descendant females from pregnant females which were exposed to antepartum Hh characterize themselves by hipokinezia and hypoemotivity, with hiperanxiety.

4. Anxiety changes can be consideres as disorders associated to motor hiperkinetic behavior experimentally induced by antepartum Hh for the ADHD model.

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## THE HISTORY OF SPORTS IN CLUJ BEFORE THE FIRST WORLD WAR (1868-1914)

KILLYÉNI ANDRÁS

**ABSTRACT.** The sport-life in Cluj between 1868-1914 was defined by diversity regarding the number of the sporting unions and the types of sports played. The founding of the sport unions started in 1869 and by 1873 the city already had three sporting unions (gymnastics and fencing, shooting and skating) working in parallel. Their ranks got enriched by the athletic and cycling unions, and by the 1890s the football union also joined in. The Hungarian state didn't give any financial support to the unions, so they were forced to provide for themselves and create this financial background on their own. The events organized were meant to popularize the union's activity. Among other things the unions also had to see the completion of the sporting establishments through.

*Keywords:* Cluj, sportlife, fencing, ice-skating athletics, cycling, football

**REZUMAT. Istoria sportului în Cluj înaintea primului război mondial (1868-1914).** Viața sportivă clujeană din perioada 1868-1914 este caracterizată de o diversitate a numărului de asociații sportive precum și a sporturilor practicate. Înființarea primelor cluburi sportive a început în 1869 iar în 1873 funcționau deja trei cluburi (gimnastică și scrimă, tir, patinaj). În următorii ani s-au înființat cluburile de atletism și ciclism, iar la sfârșitul anilor 1890 au luat ființă primele cluburi de fotbal. Cluburile nu au fost susținute material de către stat, fondurile necesare funcționării fiind asigurate la nivel local pe cheltuiala proprie a celor implicați. Activitățile sportive aveau menirea de a populariza sportul și activitatea clubului respectiv. Nu în ultimul rând, cluburile au reușit constuirea și întreținerea facilităților și bazelor sportive.

*Cuvinte cheie:* Cluj, viața sportivă, scrimă, patinaj, atletism, ciclism, fotbal

The rapid development of Cluj started after 1870, when it got connected to the national railway grid. The cities that had been connected to this grid became transportation centers, where the industrialization started to evolve rapidly, and the number of city-dwellers grew ever increasingly. Due to urbanization and to the effects of industrialization, Cluj started expanding, its territory grew in size and its inhabitants grew in numbers. This growth can be explained primarily with the branches of industry established in the city as well as by the workplaces created by the factories that chose to settle here.

In 1910 the ethnic construction of the city was made up of a majority of 84% Hungarians. From a religious point of view, we have to mention that the number of Roman-Catholics and Protestants (Reformed) was roughly equal. Alongside these two major denominations, there was a strong Greek-Catholic and Israelite presence. Although the number of their followers was small, the Unitarian Church had its center in Cluj. This meant that the Unitarian bishopric, the theological institute and prestigious high-school all worked in the city. From the point of view of a religious framework, Cluj showed some differences to the national characteristics and that of the capital. Here the largest religious group was the reformed, whereas on a national level as well as in the case of the capital, Roman-Catholics represent the majority. The ratio of the Israelite denomination showed the same tendencies as in other Hungarian great cities.

The city development was possible mainly through the purposeful work of the mayors. The modern infrastructure of the city was created under their leadership. The mayor's office subsidized this huge project with more than two million crowns. They continued building and renovating university buildings, clinics, schools and state-owned administrative buildings. The city center became one of the most beautiful centers belonging to the Hungarian Crown, when they unveiled the statue of the great Hungarian king, Mátyás, in 1902.

After the conciliatory period following 1867, the middle class and the intelligentsia became the driving force behind the modernization process in Hungary. In Cluj a series of educational institutions, together with the university founded in 1872 represented proper learning facilities for several thousand students, who were organized in 52 learning institutions. Almost a quarter of the city's inhabitants were either students or teachers. Many internationally renowned scholars taught here, and the university's library was the second-largest in Hungary.

At the turn of the century there was an extraordinary union life in the city. The number of the members belonging to literary-, educational-, artistic-, economic-, youth-, women's-, charity- and sports clubs made up a fifth of the city's inhabitants. Starting with 1868 we continuously find the sporting associations amongst the social unions. The love for sports was cultivated at an early age in the desks of the local schools. Thus the number of sport enthusiasts grew year by year. Athletes, sportsmen, or even simply those, who liked staying in shape founded Hungary's third university sporting union at the turn of the century. This union played a determinative role in the local and Hungarian sport-life.

Following the conciliatory period after 1868, they adopted a new law of education that introduced physical education into the high-schools. After 1883 this measure was adopted by the elementary schools as well. The implementing of these laws encountered several difficulties at the end of the 19th century. Namely there were not enough adequate gyms, sport yards or playing fields, the teachers weren't well enough prepared, and there was a huge lack in equipment. In an early stage schools signed contracts with the local sporting unions in order to ensure the necessary conditions for physical education. Then, after the turn of the century, high-schools started building private gyms and hiring professional teachers. In many cases the building of the new school centers made it possible to realize the construction of the gyms.



**Lajos Vermes (right of the photo), sport teacher of the local university**

In the same time with the development of the school's sport-life, similar activities on a union level grew into becoming regional and national competitions. These competitions made the development of such a sport-life possible that on its turn meant the basis for the university sport-life. Those sportsmen, who achieved significant results during high-school, went on to achieving even greater results during their time spent at the university, and many of them even excelled on an international level becoming well-known



sports figures. On a regional level, István Somodi was one of the figures that emerged with his performance in high-school. He went on to win a series of competitions as a university student, then in 1908 he won an Olympic silver medal for high-jumping at the Olympic Games held at London.

The modern union sport-life evolved to the same level as that present in the capital due to the work of some enthusiastic leaders and union founders. In fencing, gymnastics, target shooting, athletics, cycling or other unions similar to these ones, work was done on a high professional level. Thus the competitions of Cluj became known on a national level, and sportsmen from all around the country visited them.

The organizing of the first sporting associations was made possible by the weakening political pressure and the demand for sports. Thus the teaching of fencing was instituted, and the sporting opportunities of university students ensured. These movements got intertwined after 1867 and after a period of five years the Physical Education and Fencing Union was founded. This union built the first modern gym in Cluj later known as the Fencing-Gym. High-school students had the opportunity to train here. Many fencing classes were organized and it became possible to organize sporting events in the yard, because of the equipment that could be used.

The city's rifle-club was founded in 1870. The shooting movement became very popular among the local bourgeois, and the rifle-club established a shooting range (garden) on the West side of the promenade for the members of the club. Sports enthusiasts had the opportunity to use this shooting range at that time's safety standards, but the garden may have been used as a venue for dance evenings and spring celebrations as well. The rifle-club kept up tight relationships with the surrounding country's shooting masters, mainly with sportsmen from Romania.

The sport-life of the 1870s organized itself from spring till fall around these two unions. After athletics came into picture, the work and activity of the rifle-club and fencing union weakened and gradually started to dissolve. Although the athletics club rented the Fencing-Gym for its private training sessions, and the rifle-club leased the shooting range in order for others to organize competitions, the income made proved to be too little to make any kind of renovation possible. Because they couldn't keep up their sporting establishments, the shooting range got in the custody of the city as early as 1890.

Following the conciliatory period and due to influences coming from Vienna and Budapest, skating became very popular in the ranks of the bourgeoisie. The period after 1872 was characterized by rudimentary events,

competitions, balls, which aimed at making this sport popular. The promenade and the lake gave an exquisite venue for this winter sport, and for nearly a century it remained the heart of the skating life of Cluj.



**Ice skating on the lake of the Central Park (1913)**

Music was the determinative factor of the first events. By inviting local bands, the skating union created an attractive mood, and resulted in the fact that the number of participants on these events grew each day. The first late-night events were also organized in this period. The lighting was done by the standards of that time.

Starting with the 1880s the Skating Association of Cluj strived for every citizen to find his/her favorite past-time activity among the events organized by this union. Skating became an important social interaction venue, because the ladies and mistresses of Cluj all found this activity the most luring of all winter sports. The skaters were proud that on these events members of aristocratic families, university professors, wives and daughters of clerks were able to skate on the same rink.

Competitions also became acclimatized at about roughly the same period. The organizers advertised such events that were easy to complete. These events were speed tests, hurdle competitions and later on artistic competitions. The union published competition guidelines, nominated referees,

who had to organize the field, conduct the events, enounce the winners and hand out the medals. Usually the president of the skating union led the competition committee.

The 1890s brought financial upheaval for the skating union, and thus it assured the necessary grounds for developing a new infrastructure and modernizing the old one. The latest development was the building of the modern skating pavilion, which assured European conditions for the skaters, viewers and escorts as well.

Near the lake adjacent to the promenade, they managed to establish rinks for the winter period mainly on the courtyards of the schools, and thus the children who weren't well-off, also had the opportunity to access this sport. The skating rinks established on the school courtyards made it possible for the children to play sports on a regular basis in times when these institutions had no gyms of their own.

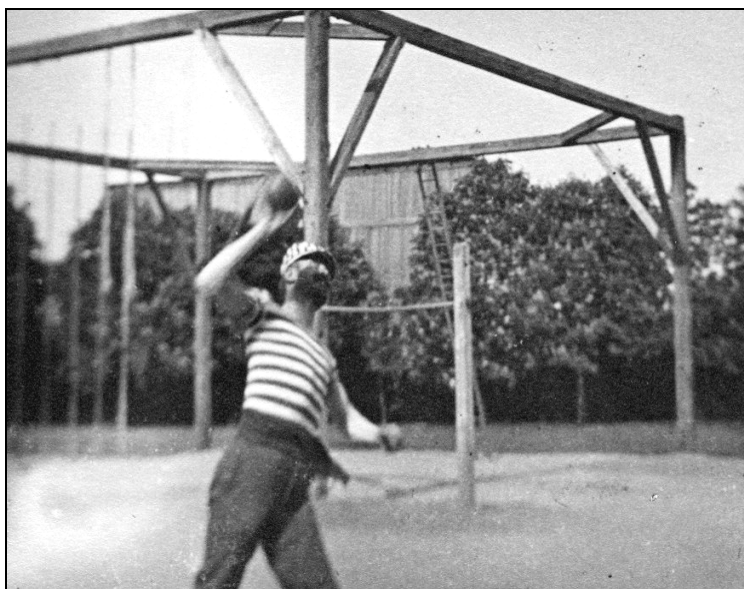
In the 20th century skating became a part of the lives of those who had a liking or taste for sports. Advertising made no sense for those who trained regularly, but it was that the more important to organize competitions and see them through. This was the turning point between social sports and competition sports in Cluj. The bourgeois skated regularly, and the union made the modern conditions possible, but the thing that stood out most was the organizing of the competitions. This activity was running on a level that would meet the standards of any time regarding timekeeping, competitions rules and other organizing aspects.

After the turn of the century a tight relationship evolved between the skaters of Cluj and Budapest. The unions of Cluj organized several national competitions, and the best sportsmen of the unions from the capital took part on them. Many well-known competitors signed up for the competitions in Cluj, and world champions gave presentations for the public in Cluj. This relationship had a good effect on the local competitors, who by the 1910s got renowned on a national level and overcame their counterparts from the capital on several occasions.

During the First World War they didn't organize any competitions, and the changing of the local government made the activity of the union extremely difficult. One such aggravating factor was the dissolution of the contract with the skating union regarding the use of the lake adjacent to the promenade. Practically the union couldn't organize any more competitions in that venue. Despite all this, they managed to establish new skating rinks, and the competitors of the union gained several national champions' titles. They managed to keep the acquisitions and values of the skating life preceding the First World War alive, even in the following decades.

In Hungary the first athletic union was the Hungarian Athletics Club (HAC), founded in 1875. After the founding of the union, athletics got very popular in the capital and the greater cities of the country, including Cluj.

Despite the fact that after the founding of the Hungarian Athletics Club (HAC), they started advertising ideals of athletics since 1875, but they made the first steps towards the founding of the union only in 1883. After Hugó Baintner, the secretary of HAC, moved to Cluj, he gathered the athletics devotees and within a year he organized competitions, drafted basic rules, thus on the 15<sup>th</sup> of January 1885 the Athletic Club of Cluj (ACC) was born.



**Athletic contest in 1890**

This was an important moment for the Hungarian history of athletics, because from now on the sport would not be focused only around HAC. Even though for almost five years the two clubs haven't interacted, their sports activities affected each other. In the 1880s the fall of HAC and the rise of ACC happened simultaneously. The best example for this is between 1884-1889, when ACC organized 24 competitions with 84 athletic numbers, while MAC organized only 8 competitions with 69 numbers.

Structurally ACC looked to HAC all the way, concerning organized competitions and also their conduct. Without a field for athletics, it first organized walking competitions, and these later became known as the „Transylvania’s champion walker” competition. Twice a year it organized public competitions, where one or two were championships: if someone won the competition three times in a row, he became the club champion. Just like on the first HAC competitions, ACC also designated the 2 mile flat race as its first championship. As a severity, ACC specified that in case of only one contestant, there will be no competition and no award will be handed out.

ACC aligned itself to the contemporary sports policy. As many founding members, regular members and patron members signed up in Cluj as they had done ten years earlier in the capital. Members of both unions were mostly university students, but there were also a few more mature men who had an important position in the union and also competed regularly (for example Károly Albert sports teacher, Ferenc Dunky photographer).

The ACC’s work was focused around the important personalities of public life (mayors, university and high-school teachers, the representatives of the local aristocracy). Even though the union did not benefit from any kind of state aid, still its events were popular and they meant financial support. The lack of a race track and gym did not stop them to fight for the right and opportunity to organize the competitions. At these occasions, the association insuring the track made sure they gained more than ACC. By 1889 they managed to build an athletics track in the promenade, but it was used for only two years.

István Kuszkó, union secretary, played an important part in the smooth work of ACC. He organized, competed, wrote, edited, he published the three ACC yearbooks; he advertised with his writings, he encouraged and criticized. He regularly wrote to the *Herkules* sports magazine in Budapest, he relayed news about ACC and followed the work of the country’s athletics unions.

ACC played an important part of the acclimatization of athletics in Transylvania. The distance-walking competitions meant opportunities to present athletic exercises, and they organized two competitions in Dés, and one in Marosvásárhely, with great interest. Many Transylvanian small towns were the target of these walking competitions.

In 1889 they switched the distances from British miles to meters. Putting the weight was still performed with an 8 kilogram ball. The 220 yard hurdle race kept its form, they used 6 obstacles of 95 centimeters each, also the half yard steeplechase with 3 1 meter tall obstacles, 7 90 centimeter tall obstacles and two water barriers 3.25 meters wide.

In 1890, the ACC's heyday, it began to weaken due to internal issues. The cyclists stepped out and founded their own union, and in 1891 the athletics union ceased to exist. The main cause of this was the leaving of baron Lajos Jósika, and his successor failing to organize the members and employees of the union. But the tradition of athletics lived on, and the university's Athletics Club of Cluj a decade later gave the city a silver medal in high jumping at the 1908 London Olympics in the person of István Somodi.

After the appearance of the bicycle in Budapest (1879), it slowly made its way to Cluj. The general public received this new form of transportation with a sense of antipathy, and this is why only after a few years were there more than ten bicycle owners mentioned in records. They decided to organize a

bicycle group within the local athletic union in 1887. From this point forward started the rapid development of the sport in Cluj.

The bicycle owners signed up to the group with their private bicycles and chose team leaders and managers. The representatives of the bicycle group had the duty of popularizing the sport, of protecting the members, organizing the training sessions and leading the competitions. Amongst the sportsmen and spectators, the competitions were the most liked. They organized many types of competitions, among which long-range competitions, short-range competitions conducted on the athletic field and bicycle tourism, where they measured the distance cycled during the course of a year. Bicycle tourism didn't put the emphasis solely on the distance cycled, but also on the road memoirs and logs written during this course. Moreover the cyclists organized parades in order to raise public awareness on the advantages bicycles offer.

The competitions evolved alongside the athletics. In the early stages of this development the cyclists followed the distance walkers and later on they organized their own competitions on a national track. After the inauguration of the athletics field, the course competitions, the 1000 meter and 5000 meter dashes started in the same place.



**István Somodi**

By 1890 the popularity of cycling surpassed that of athletics. Due to the conflicts within the athletics union and between the cyclists and athletes, the cyclists formed a separate union and had separate activities from those of the athletics union.



**György Borbély (1894)**

The new union continued the work of its precursor. It recruited new members and organized competitions. The union was led by Mayor Dr. Károly Haller, the renowned sportsman, who was famous both on a local and a national level. With his contribution, the cyclist union was able to take into custody the athletics field, and with a substantial financial aid, it created one of the most modern cycling courses in Hungary.

After the inauguration of the new course (1894), a series of national competitions were organized in Cluj. The best competitors from Budapest signed up for the competitions organized at Cluj mainly because of the substantial prizes put up by the union. In the majority of cases they grabbed the medals from the local competitors. The members of the union were against the participation of professional competitors, emphasizing that their bicycles were far more modern than what the local members had. The professionals enjoyed

the support of major tire factories or distributors.

The same question was raised by the unions of Budapest as well, because the competitions awarded with a cash prize were all won by foreigners in the majority of the cases. The organizers in Cluj decided that in order to raise the standards, they had to lure the famous competitors from outside, but in order to protect the competitors of the local union, they decided to organize closed circuit competitions as well. As a result of this sport-politics, many prestigious competitions were organized in the later half of the 19th century, and the local cycling life grew into being the second largest in the country.

The popular sport was impeded by bicycle-tax set on a national level. The political leadership hoped to obtain a material gain from this tax, but what it had done is that it actually destroyed the Hungarian amateur cycling life. Unions started being dissolved on a national level, and the tracks also started being broken down. Unfortunately Cluj was also a part of this destruction trend, and thus the union ceased to exist on the turn of the century.

Ball-games enjoyed international fame, and its development happened at a fast pace. Tennis and football were among the most liked ones. They still fascinate sportsmen and spectators all around the world.

In 1880 the first ball-game circle was founded, the members of which played the ball-games known at that time. Among these sports was tennis, which developed and gradually got acclimatized. The city managed tennis courts in several sporting institutions for those sports which were liked by the bourgeois. During the construction of the city's sports grounds in 1911, alongside the athletic and football fields, the city managed six tennis courts, which still fulfill their original function.

Football got acclimatized fairly rapidly in Hungarian sport-life in the 1880s and started spreading at a fast pace. The first ball was brought to Cluj in 1895 and the sport became very popular in the educational institutions. Firstly it was played by the university students. They were later joined by the pupils of the catholic and Unitarian high-schools. The students of the commercial and economic educational institutions followed short after.

Playing football required a large field, so the matches were played on the outskirts of the city. These fields were not organized according to a unified regulation. They were delimited according to the conditions available, and the ground was consequently uneven. The first football field was set up according to expectations of size, having permanent goalposts was established in 1905. The sport field near the promenade was established in 1911. In its case the city's leadership managed to found and sustain a European-level field.

After the acclimatization of football, the teams of the educational institutions appeared on the stage and started playing against each other. They managed to conduct the first training session with the aid of students and teachers who were versed in the game. During these sessions the players practiced simple tactical notions and consequently by the turn of the century, the educational institutions' outstanding selected teams played an exceptional game. The first competitions with substantial prizes followed shortly.





**The football team of the Commerce Academy (1912)**

In 1904 the teams and players underwent a general reorganizing. By this time many youngsters had graduated from high-school or the local university, and they couldn't be a part of any team. These youngsters organized the first professional team, whose activity truly resembled that of a real sporting union, association or club. Several institutional teams got dissolved, because the more talented generation had already graduated. As a result two greater teams continued their activity, namely that of the Academy of Commerce (on an institutional level) and that of the Athletic Club of Cluj.

Róbert Kunter organized a system in order to make individual and team selections at the Academy of Commerce. As a result he managed to create a football team that got renewed every year although the determinative students changed every summer. The teams organized on a class level gave the selected team its players, the ranks of which were always completed by the freshmen enrolled at the institution.

The two teams played friendly matches for a period of three years. In 1907 the third team of the city was born. It was called the Vasas. Later the unions of Cluj entered the Hungarian Football League (HFL), which organized the first Transylvanian championship. This was an important step toward the high-level football, because the championship title motivated the

players. In the same time the training of the local referees began. The number of the competitions grew, and starting with 1908 more and more teams from the capital evolved at Cluj. The new regime helped the team of the Academy of Commerce, because it was able to contract the graduating students who chose to stay at Cluj.

In 1910 the first international matches were played. The national team from Bucharest played at Cluj, the Academy of Commerce got invited to Istanbul, and the team from Istanbul came to Cluj as well. The unions of Cluj managed to achieve glorious victories, and played ever tighter matches with the teams from Budapest. The matches ending with huge score differences started to be a thing of the past.

The sporting field became the center of local football. This was the point on which a reorganizing took place in the local team's player arsenal. The weaker teams slowly faded from the scenery and new teams were founded. Teams from Marosvásárhely, Nagyszeben and Piski also joined the Transylvanian championship, and this led to the sport becoming ever more popular in Transylvania. In the light of the achievements of the unions, namely the high-level the sport was played on, and the significant results obtained, a question arose: How could the football championship be reorganized in a fashion that allows for the regional teams to join in? This was unfortunately made impossible by the break-out of the First World War. Because of the war, the union football of Cluj had a sporadic activity, but after the war was over, the football-life started in a new social context.

## **Conclusions**

The professional sportsmen had an important role in the acclimatization of the different sport branches. Among those who started the upheaval of the new sport branches we find the first leaders who by their financial effort made it possible to operate the specific clubs.

The sports in Cluj underwent a qualitative change, and thus lost their social aspect turning into competition sports. Sportsmen from Budapest and Transylvania signed up for the athletic competitions organized in Cluj since as early as 1880. As a result the competitions became ever tighter, the results got better and the competitors marked numerous local records. By the 1890s the same tendency was noticeable in the field of cycling competitions and a few years later in the field of skating as well. This qualitative change is emphasized by the reduction of the number of events meant to popularize the sport-life

of Cluj, as well as by the appearance of national competitions. We find it important to mention that following the 1900s, the sportsmen of Cluj didn't only take part on competitions organized locally, but rather on an international level to the extent that in a few years a nationally renowned competition squad was formed.

The sport-life of the high-schools around the 1890s greatly influenced the sport-life of the universities and that of the sporting unions. After the 1890s the institutional, local and regional competitions started, leading to a growth in popularity for the gymnastics in educational institutions. We find the names of the pupils who won institutional competitions among those of the members belonging to university sporting clubs and competitors taking part in a union's sport-life. Football had a great role in aiding the formation of this tight bond. First it was played at the level of educational institutions, then on an inter-institutional level. By the 1910s the athletics club of the university became determinative for the sport-life of Cluj, and thus the bond became even stronger.

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## AN EMPIRICAL STUDY OF RELIGIOUS AFFILIATION PSYCHOLOGICAL DIFFERENCES IN SPORTS MANAGERS FROM TRANSYLVANIA

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SABĂU GHEORGHE<sup>1</sup>

**ABSTRACT. Introduction:** Generally managers have specific psychological characteristics. Among the social and psychological factors that differentiate the psychological profile of sports managers we can include the religious affiliation. Religious spirituality has a certain contribution to the differentiation of psychological profile of sports managers, by the way of positive and negative psychological traits. These characteristics can be evaluated by using a validated personality test. **Objectives:** Our study tried to show the presence of some specific psychological in sports managers by theirs declared religious affiliation. Specifically we proposed to test the hypothesis of the existence of some differences concerning the psychological traits of sports managers with different religious beliefs and practices. **Subjects and methods:** In our study we surveyed a sample of 200 sport managers from North-Western Region of Transylvania, Romania. On this sample we applied the Swedish personality instrument- Karolinska Scales of Personality (KSP) comprising 135 items and 15 scales. In the survey we distributed 310 questionnaires and only 200 were returned. **Results.** Orthodox and Reformed Christian managers reported a higher level of socialization, in contrast with subjects of Catholic faith. Muscular tension was also higher in catholic managers, and much more reduced in Reformed subjects. The highest level of aggressiveness was reported by Greek-catholic and Orthodox managers, and educational attainment was higher in reformed and Greek-catholic, and the last were the orthodox managers. **Conclusions:** The psychological profile of sports managers shows some differences concerning the level of socialization, muscular tension, verbal aggressiveness and educational level. In the same time, to the majority of other 15 scales of Karolinska Scales of Personality (KSP) we don't observed any statistical differences in function of religious affiliation of sport managers.

**Keywords:** *Sports manager, religious affiliation, personality traits, KSP, socialization, muscular tension.*

**REZUMAT. Un studiu empiric asupra diferențelor psihologice în funcție de afilierea religioasă la managerii sportivi din Transilvania. Introducere.** Managerii în general se diferențiază prin trăsături psihice distincte. Printre factorii sociali și psihici care diferențiază profilul managerilor sportivi se află și apartenența religioasă.

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Spiritualitatea religioasă contribuie la diferențierea profilului psihologic al managerilor sportivi prin prisma trăsăturilor de personalitate pozitive și negative ce pot fi evaluate cu ajutorului unui test de personalitate validat. **Obiective.** Am urmărit prezența unor trăsături psihice distincte la managerii sportivi în funcție de afilierea lor religioasă declarată. În mod specific am propus ipoteza existenței unor diferențe cu privire la trăsăturile psihice ale managerilor de diferite convingeri și practici religioase. **Subiecți și metode.** Am investigat un eșantion de 200 manageri sportivi din șase județe din Transilvania, Regiunea Nord-Vest. Au fost distribuite 310 chestionare, din care au fost returnate 250, din acestea 50 chestionare erau cu date incomplete ce le făceau inutilizabile în cadrul studiului. Au rămas 200 chestionare valide care au fost cotate și introduse în baza de date a studiului. Aceste date au fost grupate pe cele 15 scale ale chestionarului de personalitate Karolinska Scales of Personality (KSP). **Rezultate.** Managerii de religie ortodoxă și reformată au raportat un nivel superior de socializare în comparație cu cei de religie catolică. Tensiunea musculară este mai pronunțată la catolici și mai redusă la reformați. Cei mai tari la agresivitate verbală sunt greco-catolicii și ortodocșii, iar performanța școlară mai ridicată este înregistrată de reformați și greco-catolici, pe ultimul loc situându-se cei de religie ortodoxă. **Concluzii.** În profilul psihologic al managerilor sportivi se evidențiază unele diferențe privitoare la gradul de sociabilitate, tensiunea musculară, agresivitatea verbală și anii de școală terminați. La majoritatea scalelor chestionarului nu am obținut diferențe semnificative în funcție de variabila afiliere religioasă declarată.

*Cuvinte cheie: manager sportiv, afiliere religioasă, trăsături de personalitate, KSP, sociabilitate, tensiune musculară.*

## Introduction

Generally, sports managers are characterized by specific psychological traits. Generally, sport activity has some established connections with religion as spirituality.

Sports psychologists have established a positive correlation between experiencing spirituality (beliefs and feelings) and being in “the zone” of optimal athletic performance in team sports (Dillon and Tait 2000, 91). Although spiritual and transcendental experiences during sports and exercise are an area of interest among some contemporary sport psychologists, the area is not new among psychologists. Various thinkers, including William James, Sigmund Freud, Carl Jung, and Abraham Maslow, have interpreted mystical experiences. Jung, for example, postulated that behind the ego - the fragile and limited center of consciousness lies the unconscious subject of the entire psyche, called the “Self.” The Self most frequently remains in its

latent state, but under extreme circumstances, when the ego does not hold its function any more, the Self emerges and provides superior mind-body integrity. The emergence of the Self explains the sudden increase in mental alertness and physical speed in subjects who make extreme physical efforts under risk and deprivation. Indeed, the Self is in charge of the entire psycho-physical wholeness, which is vaster and far more powerful than the limited area of the individual ego consciousness.

### **Is sports a religion? Is religion a sport?**

After organized worship, athletic competition is perhaps the oldest communal impulse known to mankind, and today sports and religion mirror each other as never before, experts say. Religion seems to be becoming more prominent than ever in the sporting world, and arenas are a virtual pulpit. Athletes routinely thank God for their victory or use their post-game interviews as a opportunity to witness to their faith. Post--game prayer circles are regular features, and athletes wear expressions of their faith on sweatbands and protective gear.

NASCAR races, heavyweight boxing bouts, professional golf tournaments and even poker games have become forums for faith. But more than ever before, scholars, religious leaders, and the general public are wondering whether the intimate connections between religion and sports are such a good thing. Does invoking God on behalf of one's team cheapen the tradition of prayer?

Is religion in contemporary societies taking on the uglier aspects of hypercompetitive sports in a race for converts? Experts say the symbiosis between religion and sports shows how deeply religion is embedded in contemporary culture, and vice versa.

Intense feelings of awe and unity with nature and the experience of nature as sublime are often integral to the spirituality of sports, especially of extreme sports. More extreme sports are practiced on mountains than anywhere else, and certain spiritual phenomena occur there more frequently or in a particularly strong way. Mountains were also important to the founders of the three major monotheistic religions - Jesus, Abraham and Mohammed.

Researchers have conducted several studies in an attempt to provide biochemical explanations for spiritual experiences in extreme sports. These experiences, also called "peak" (by Abraham Maslow) or altered (by today's psychologists), can be defined as feelings of intense happiness, connected with feelings of ultimate truth and interconnectedness of all things.



## Objectives

We tried to show the presence of some differences in psychological characteristics between sport managers by religious affiliation. Specifically we proposed the hypothesis of some differences in psychological traits of sport managers by their declared religious status.

Specifically we proposed to test by empirical research the following hypothesis:

H1: The personality profile of managers is different by their declared religious affiliation.

## Subjects and methods

In our study we surveyed a sample of 200 sport managers from North-Western Region of Transylvania, Romania. Their socio-demographic characteristics are presented in the following tables and diagrams.

**Table no.1.**

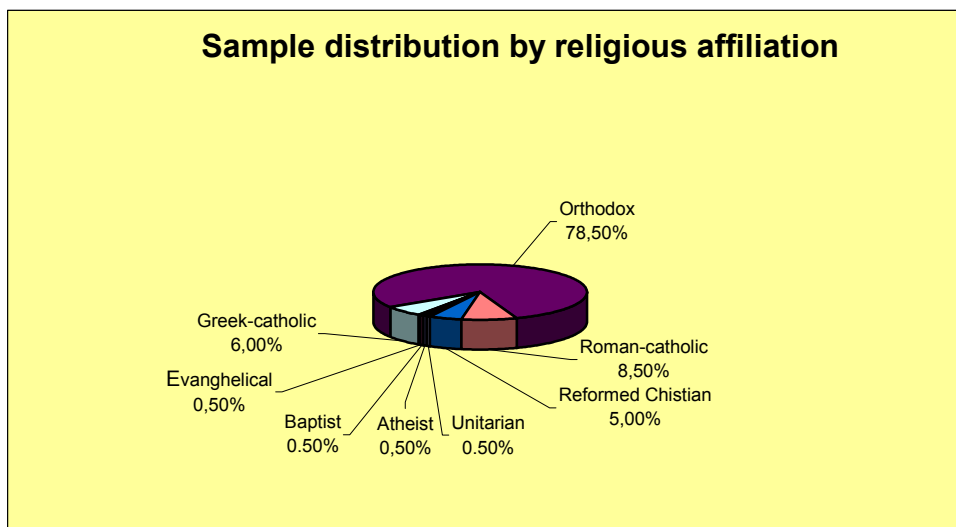
Sample structure of sport managers by occupation.

Occupation	Number of cases	Percent (%)
Main coach	55	27,5
Sport director	38	19
Adjunct coach	30	15
President	21	10,5
Middle level manager	18	9
Professor of physical education and sport	14	7
General manager	9	4,5
Manager	4	2
Vice-president	4	2
Sport instructor	2	1
Secretary	2	1
Coach	1	0,5
Bookkeeper	1	0,5
Inspector	1	0,5

**Table no. 2.**

Sample structure by sports

Sport branches	Number of cases	Percent (%)
Basketball	16	30
Football	34	17
Handball	23	11,5
Volleyball	15	7,5
Athletics	8	4
Judo	6	3
Free style wrestling	6	3
Rugby	4	2
Polo	3	1,5
Box	3	1,5
Table tennis	2	1
Weight lifting	1	0,5
Taekwondo	1	0,5



**Fig. no. 1.** Pie chart showing sample distribution of study participants by declared religious affiliation

On this sample we applied the Swedish personality instrument-Karolinska Scales of Personality (KSP) comprising 135 items and 15 scales. Personality traits were measured by the 135 questions Karolinska Scales of Personality (KSP) (Ortet & Torrubia, 1992), an inventory for assessing temperament traits associated with vulnerability for psychological deviance (Klinterberg et al., 1986). The 15 KSP scales are classified into five groups (Schalling, Asberg, Edman & Oreland, 1987, Vraști, 1990, 2001): impulsivity, psychopathy versus conformism, anxiety, hostility and aggressiveness.

The KSP comprises 135 items (with four-point Likert scale, from 1 Does not apply at all to 4 Applies completely) grouped into 15 scales (Schalling et al., 1987):

1. *Psychic anxiety* (10 items). Worry, insecurity, and anticipatory and social anxiety. Sample item: It takes me an unusually long time to get over unpleasant events.

2. *Somatic anxiety* (10 items). His content refers to autonomic symptoms, concentration difficulties, vague distress, and panic. Sample item: My heart sometimes beats hard or irregularly for no real reason.

3. *Muscular tension* (10 items): Tenseness in the muscles, trembling, feeling stiff, and gnashing jaws. Sample item: My hands usually tremble.

4. *Psychasthenia (lack of energy)* (10 items). Being easily fatigued, and feeling uneasy when urged to speed up and face new tasks. Sample item: I think I get fatigued more easily than most people I know.

5. *Inhibition of aggression (lack of assertiveness)* (10 items): Nonassertive, sad rather than angry when scolded, and cannot speak up. Sample item: I find it difficult going back to a store to ask if I can exchange an item I have bought.

6. *Detachment (distance)* (10 items): Avoiding involvement in others, withdrawn, and schizoid. Sample item: I consider myself reserved and a little cold rather than kind and warm.

7. *Impulsiveness* (10 items): Acting on the spur of the moment, nonplanning, preference for speed rather than accuracy, and care-freeness. Sample item: I usually talk before I think'.

8. *Monotony avoidance (sensation seeking)* (10 items). Avoiding routine, thrill seeking, and need for change and action. Sample item: I am always keen on trying out things that are all new.

9. *Socialization* (20 items). Positive childhood experiences, good school and family adjustment, and general satisfaction. Sample item: My home life was always happy.

10. *Indirect aggression* (5 items). Sulking, and slamming doors when angry. Sample item: When I am mad, I sometimes slam doors.

11. *Verbal aggression* (5 items). Getting into arguments and telling people off when annoyed. Sample item: I can't get into arguments when people disagree with me (reverse scored).

12. *Irritability* (5 items): Irritable and lacking of patience. Sample item: I am irritated a great deal more than people are aware of.

13. *Suspicion* (5 items): Suspicious and distrusting people's motives. Sample item: I sometimes have the feeling that others are laughing at me.

14. *Guilt* (5 items): Remorseful, and ashamed for bad thoughts. Sample item: The few times I have cheated, I have suffered unbearable feelings of remorse.

15. *Social desirability* (10 items). Responding in a socially approved way, socially conforming, friendly, helpful, faking good. Sample item: I have never deliberately said something that has hurt someone's feelings.

## Results

**Table no. 3.**

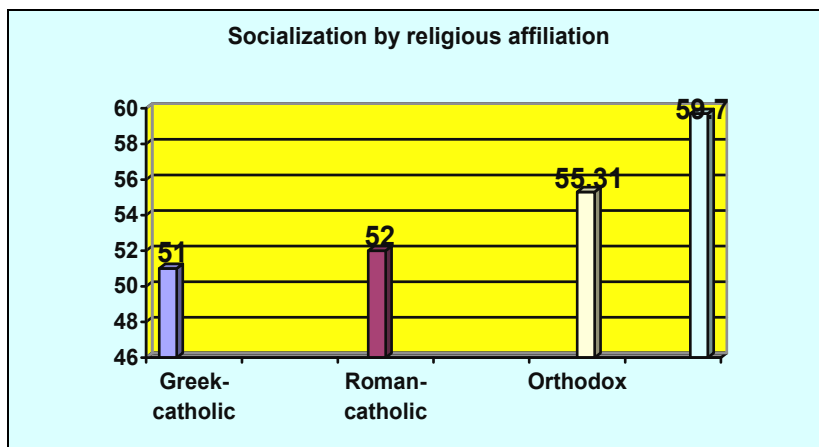
Descriptive statistics values for study variables for sport managers (N = 200)

<i>Variables KSP</i>	<i>Mean</i>	<i>Standard deviation</i>	<i>Mean per item</i>	<i>Normality test q</i>
1. Indirect aggression	10,72	2,77	2,14	4,69 N
2. Verbal aggression	13,21	2,70	2,64	4,81 N
3. Irritability	11,03	2,66	2,21	4,51 ?
4. Psychic anxiety	24,72	4,73	2,47	5,71 N
5. Somatic anxiety	19,23	5,98	1,92	4,35 ?
6. Detachment (distance)	22,32	3,54	2,23	5,38 N
7. Social desirability	30,30	4,18	3,03	5,50 N
8. Monotony avoidance	25,83	4,02	2,58	5,22 N
9. Impulsiveness	22,17	5,17	2,22	5,22 N
10. Inhibition of aggression (lack of assertiveness)	25,66	3,49	2,57	4,87 N
11. Psychasthenia (lack of energy)	23,26	3,65	2,33	5,19 N
12. Socialization	54,91	6,45	2,75	5,12 N
13. Suspicion	11,41	2,38	2,28	5,04 N
14. Muscular tension	16,75	4,96	1,68	4,84 N
15. Guilt	13,88	2,38	2,78	5,04 N
16. Years of education completed	16,12	2,28	-	4,82 N
17. Age	44,63	8,85	-	4,41 ?

As we can see in the content of table no. 3, all the values for the normality test q (I. Lupu, 1999), that are marked by N show that these variables had a normal distribution, but the ones marked by ? don't have a normal distribution. In a few cases marked by ? it is impossible to apply parametric tests, which are more robust. In the case of normal distributed variables, it is possible to use parametric tests like Student and ANOVA (Analysis of Variance).

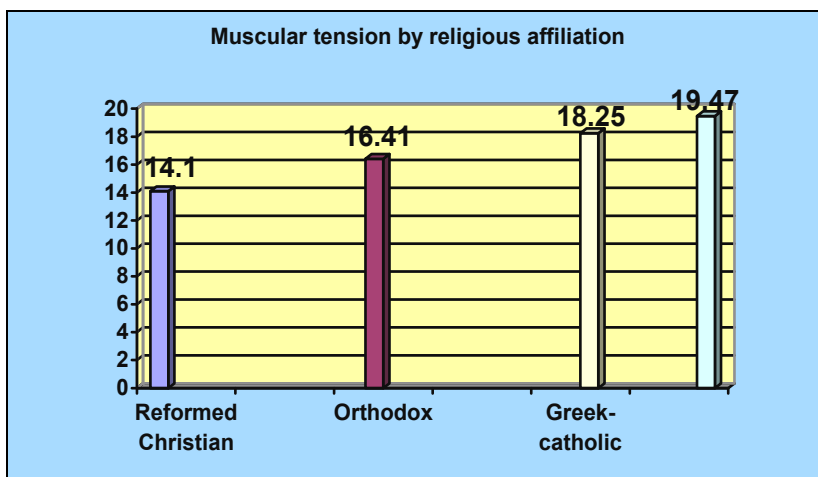
The highest mean values per items to the KSP scales were obtained for: social desirability, guilt, socialization, verbal aggression, and monotony avoidance. By contrast, the lowest values were obtained for the following scales: muscular tension, somatic anxiety, indirect aggression, irritability, and impulsiveness, all being negatives aspect of sport managers' personality.

The subject of Reformed Christian religious affiliation had a level of socialization superior in comparison with Roman-catholic, as we can see in the bar chart diagram presented in the fig. no. 2.



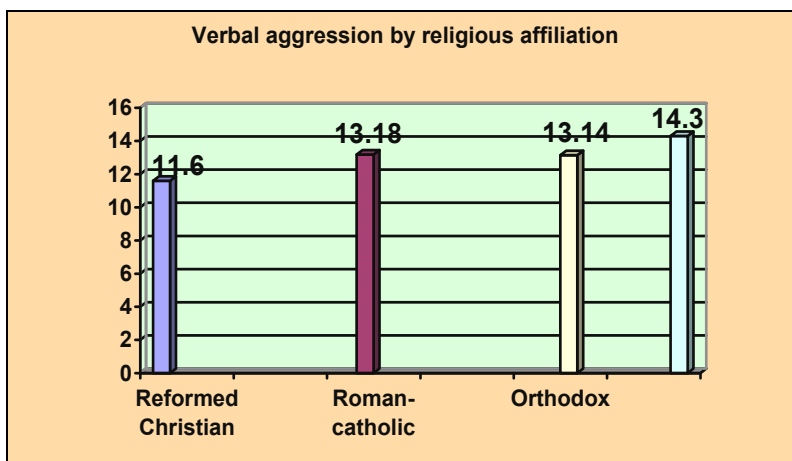
**Fig. no. 2.** Bar chart of mean scores to the scale of socialization of the questionnaire KSP, by declared religious affiliation ( $p = 0, 01$ ).

Study participants of catholic religion had a higher level of muscular tension, in contrast with persons of reformed Christians and orthodox Christians declared religious affiliation, situation visible in the fig. no. 3



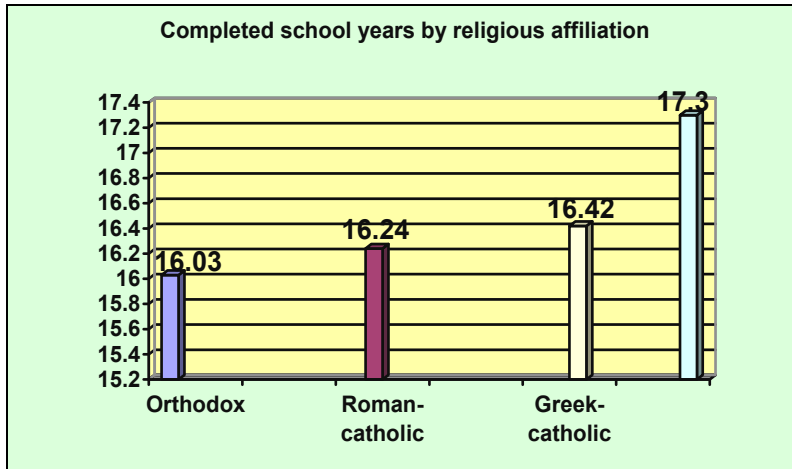
**Fig. no. 3.** Bar chart of mean scores to the scale of muscular tension of the questionnaire KSP, by sports managers declared religious affiliation ( $p = 0, 05$ ).

Verbal aggression is higher in sports managers of Greek-catholic and orthodox religion, in contrast with Reformed Christians and Roman-catholic, as you can observe in the image from the fig. no. 4.



**Fig. no. 4.** Bar chart of mean scores to the scale of verbal aggression of the questionnaire KSP, by sports managers declared religious affiliation ( $p = 0,12$ ).

Reformed Christians and Greek-catholic subjects have a higher educational performance, compared to the Orthodox Christians and Roman-Catholics. That's the significance of the diagram from the fig. no. 5.



**Fig. no. 5.** Bar chart of mean scores for completed school years by sports managers declared religious affiliation ( $p = 0,03$ ).

## Discusions and conclusions

Generally, in previous studies, the differences by religious affiliation are small or inexistent. In our study we found some statistical significant differences between three scales of the Swedish personality questionnaire KSP, concerning socialization, verbal aggression, and muscular tension. The most significant differences concern the psychological trait of socialization, followed by a physiological characteristic – muscular tension, and finally the scores at the scale of verbal aggression. We shall mention, that the level of statistical significance  $p$ , is not very high, that's means the fact of reduced impact of religious affiliation on psychological characteristics of Romanian sport managers.

Also, we find out, some significant differences by religious affiliation concerning the completed years of education, with highest educational performances attained by Reformed Christians, and lowest, by Orthodox sport manager participating in our study.

The scales of KSP that measure positive aspects of sport manager's personality had the highest values, and to the scales dedicated to measure negative aspects of managers personality were obtained lower values. That's means the Romanian sports manager had predominantly positive psychological characteristics.

May be, in a future study dedicated to the investigation of the influence of religion on psychological characteristics of sport participants, a change in the study design will be needed, by using questions concerning the frequency and intensity of religious beliefs and practices. We speculate that in this case, the results will be more meaningful.

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## THE OPTIMIZATION OF SELECTION AND TRAINING PROCESSES OF BASKETBALL PLAYERS ON FORMATIVE STAGES

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**ABSTRACT.** The aim of the operational side of our research is to plan and to program basketball players' processes of orientation, selection, training and taking part in competitions during training and formative stages. Each formative stage follows an analytic schedule which accurately defines instructional objectives, contents, operational strategies, evaluation tests, high exigency normative steps, which make it possible only for the most talented and well trained players to pass from an inferior group to a superior one.

*Keywords:* formative stages, selection, training

**REZUMAT.** Optimizarea activităților de selecție și instruire a baschetbaliștilor pe stadii formative. Partea operațională a cercetării vizează proiectarea și programarea proceselor de orientare, de selecție, de instruire și de participare în competiții a jucătorilor de baschet, pe parcursul stadiilor de pregătire și formare sportivă. Fiecare stadiu formativ în parte dispune de o programă analitică în cadrul căruia sunt precizate, obiective instrucționale distincte – conținuturi – strategiile operaționale – testele de evaluare, trepte normative de exigență crescută, care permit doar elementelor talentate și foarte bine pregătite să promoveze dintr-o treaptă inferioară în una superioară

*Cuvinte cheie:* stadii formative, selecție, instruire

### Goals, objectives and reasons for the selection

The following arguments justify the project:

- Experience over 25 years as a performance basketball player, coach and teacher of the Faculty of Physical Education and Sport Cluj.
- Which are dispersed in the preparation and content requirements in the formative stages.

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Replacing the old concepts of initial selection, interim and final (obsolete) with guidance and selection on formative stages.

Their activities targeting methodology, selection and training of athletes to be caught by objectives praxiological thoughtful and indestructible route:

Instructional-content objectives - strategies - tools for evaluating the quality and efficiency of training in these formative stages:

- Children (3-12 years) micro - mini basketball baby and II, I
- Junior III (12/13-14)
- Junior II (15-16 years)
- Junior I (17-18 years)
- Youth (18-20 years)

In our work we will for now only the first two stages of training (I and II), since we can not deliver high requirements for the other stages (III, IV, V), if the past were not covered.

Also of interest to fit and can justify the importance of aspects of the project promoted by us through the following arguments:

- strategic value - is a document that provides strategic insight of a long-term horizon (12 years) with guidance, purpose and clear objectives for each process addressed formative stage in question.

- multiple determination - having regard to: strategic targets of the optimization process orientation, selection, training and participation in the competition, the concrete conditions of carrying out these activities, the development of international sports industry, the resources available or likely to be purchased, etc.

- character is situational - that is developed from the comparative analysis of these processes carried out nationally and internationally.

*Structure is aimed at three distinct components:*

*Strategic* - setting out the aims, mission, goals and objectives of each process and the long formative stage;

*Tactics* - short-term scheduling micro cycle, diurnal cycles, the types of lessons, the means and methods of recovery, etc..

*Operational*, consisting of operational projects, unit, training programs, operational structure

- The main beneficiary: all U-CS subordinate structures Mobitelco sports or interested in increasing capacity and performance teams Romanian basketball players;

- Can is part of the ANS and the FRB, the recovery work performance sports games in general and basketball in particular.

### **Study aim**

Rethinking and restructuring of the selection and training in the formative stages specifying standards and demanding requirements for each stage format in part.

### **Research objectives**

Mainly include an overview on the current state of knowledge and research base to identify issues and less erected to modernize teaching - learning - assessment of the game of basketball.

Analysis and identification of the fundamental problems of training processes used until now can be presented as follows:

- Age features and their implications for the training process;
- Guidelines and training objectives and content of programs;
- Competitive cargo and training process;
- Preliminary study on the potential bio-psycho-social training and the level of groups of children and juniors III;
  - Develop curricula for the two formative stages dealt with (children and juniors III) indicating the following distinct elements: instructional objectives, content, instructional strategies, assessment tools developed quality and efficiency of processes;
  - The implementation of the curricula developed for ensuring scientific management of all activities;
  - Final measurements on the potential bio-motor and level of training for each formative stage;
  - Development of methodological material which we will entrust to generalize in practice the Romanian Basketball Federation.

### **Assertions and assumptions working interrogation**

Given that the value of our basketball players and teams is poor logically ourselves the following questions:

- Why, lately appearing in Romanian basketball very few distinct values, as published in Lithuania, Spain, Argerntina, Greece, Turkey etc.?

- How should I proceed for the selection and training activities to identify and produce a higher quality human material and internationally competitive?

The answer to these questions suggests the following *assumptions or hypotheses*:

1. Romanian basketball can be recovered and integrated into the international hierarchy of values, if all activities targeting specific methods, selection, training and participation in the competition will take place after a long-term strategic project to capture and monitor all the players sporting career basketball.

2. If each formative stage of the basketball players receive a syllabus DISTINCT, then it will be possible to integrate the methodological approach of continually rising level of preparedness and performance.

3. If the methodology of teaching-learning-training-evaluation will be restructured and rethought in terms of circuit praxiological: objectives-content-strategy-assessment tools, the quality and efficiency of training will improve substantially.

### **Research organization**

They discussed all club teams C.S. U-Mobitelco Cluj-Napoca, falling in the two formative stages addressed:

- biddy, baby-basketball (children 3 - 7 years)
- mini basketball II and I (children 8-12 years)
- Junior III (12-14 years)
- Junior II (15-16 years)
- Junior I (17-18)
- Project Team

*Coordinators:* Colibaba-Evuleț Dumitru, Ildiko Manasses.

*Staff:* coaches of junior teams and club kids Mobitelco U-Cluj: Aurora Dragos, Dorin Pinteau, Marcel Tenter, Iurian Mioara, Razvan Cenean, Delia Love, Emil Huiculescu, Ionut Mocanu, Horia Pascu, Mihai Popa, Simona Musat, Covaciu Florin.

*Technical Manager:* Mircea Cristescu.

### **Methodology of intervention**

During the research we intend to apply the following methodology of intervention:

- To specify formative stages and their purpose;
- Strategy to implementing the long-term projects and tactics of intervention in the formative stages;
  - Establishing training curricula for each stage format in hand with clear record the following items: instructional objectives, thematic content, training strategies - samples and tests to assess the quality and efficient selection and training process
  - Setting performance objectives necessary resources (material, financial, informational, human and time for teachers)
  - Establishing operational strategies training on formative stages, namely the methods, teaching materials, resources (exercises), principles, rules, forms of organization, training and permissive style of teaching - learning the game of basketball.
  - Establish requirements and standards requirements for each stage band.

### **Preliminary research findings**

Starting from the main purpose of this part, namely, identifying milestones needed to develop products in the formative stage curriculum for each part.

In this respect, make the following partial conclusions:

1. First, we need to explicit the notion of understanding through these benchmarks, key milestones that reinforce activities targeting methodology, selection and formative stages formed players on. So, the main landmarks that have guided the development of analytical programs were:
  - Age of initiation into basketball practice (3-6 years). The introduction of this age has been made of the need to further improve overall driving ability as a support that would build capacity for long-term performance in basketball.
  - Formative stages on two or three complete Olympics (8 -12 years).
  - Age peculiarities that must be taken into account in the process of training and especially to facilitate compliance principle motor learning and teaching the principles of sports training.
  - The potential of the players on stage biometrics formative.
  - Critical periods of ontogenesis and optimal development and growth of the organism.

Based on these guidelines can be developed curriculums for each formative stage and each stage will be final-well-defined objectives and content.

2. Secondly, it is necessary to note that we have established a strategic long-term project (12 years/three Olympic cycles) for the selection and training of basketball players (and therefore capacity performance basketball players and our teams). The manner in which it was developed this strategic project implements the following methodology, which do not meet the previously developed programs:

a) Capture a long selection and training that is three cycles Olympics, the child enters the age of 3 years and comes to the age of 22, you can achieve maximum performance capacity.

b) The period of 8-12 years needed to achieve maximum performance can be so systematized:

4-6 years-basic training;

2-4 years - building high performance; as long a period of great performance.

c). 12-year period is divided into cycles Olympic macro-cycles, mezzo-cycles with well-defined finality.

d). achieved harmony between the load capacity performance and optimal age periods / critical ontogenesis body growth and development.

e). harmony between long and short periods in the dynamics of effort and continued growth in the level of preparedness and performance.

f). Software allows accurate preparation periods, requests for training and competition, and recovery periods strictly necessary.

e). design strategy preparation and competition in the long term, has two specific goals:

- continuous increase performance capacity;
- full exploitation of knowledge acquired in the contest.

1. It is necessary to develop syllabi for the following formative stages and steps:

- To micro-mini basket (3-6 years)
- To biddy basketball (6-7 years)
- To mini-basket II and I (8-12 years)
- For the formative stages of the actual capacity of performance:
  - 12 - 14 years Junior III;
  - 15 - 16 years Jr. II;
  - 17 - 18 Jun I;
  - 19 - 22 years young

### **Notes on the steps and stages organization formatia**

Organization of work on stage and formative stages is made in view of critical periods and / or positive phenomena that occur in ontogenesis body development. These are laws of growth and physical development, increasing aerobic strength, VO 2 max, enzyme lactation threshold, anaerobic threshold and so. Then all the work the students should be closely linked to activities of institutions dealing with education and training for children and students (kindergarten, school, cultural organizations, interest groups, etc..

According to these phenomena, we believe that critical periods / body's optimal development in ontogenesis formation basketball player, must take place in five stages formative, with the following objectives:

#### **Stage I (3-7 years)**

- Ensuring a high driving training support multilateral able to provide capacity building for long-term performance.

#### **Stage II (8-12 years)**

- further preparation stage of multilateral previous
- attract a larger number of children;
- initial orientation and selection of high-performance basketball.

#### **Stage III (12-16 years)**

- basis for specific performance capacity game of basketball;
- specialized training toward constructive learning and perfecting technique and tactics rigorous play in driving and psychomotor skills regime specific
- finality: the U14 and U16 of the game.

#### **Stage IV (17-20 years)**

- maximize the ability of specific performance basketball;
- model U18 and U20 game.

#### **Stage V (over 20 years)**

- maximize capacity and maintaining it during the performance as long;
- parameter model addresses the international game.

As you can see, our work takes on the dimensions of a strategic long-term project, with general instructional objectives (final) and operational, which assures precision and rigor of content development, instructional strategies, assessment tools, etc.



**Table no. 1 - SELECTION AND TRAINING STAGES basketball player (D. Colibaba-Evuleț, I. Manasses, F. Cojanu 2010)**

STAGES FORMATIVE	PREPARATION FUNDAMENTAL				HIGH PERFORMANCE		PROFESSIONALISM		EXTENSION ACTIVITY
OBJECTIVES	TRAINING MULTILATERAL	INITIAL TRAINING	SPECIALIZED TRAINING	DEEPENING SPECIALIZATION	PERFORMANCE CAPACITY		MAXIMUM PERFORMANCE		KEEP CAPACITY PERFORMANCE
STEPS	1	2	3	4	5	6	7	8	9
CATEGORY	MICROMINIBASCHET	MINI. II	MINI. I	JUN. III	J. II	JUN. I	TINERET/ SENIORI		
Age	4- 6/7	8-9-10	11-12	13-14	15-16	17-18	19/20 – 30/35 YEARS		OLDBOYS

Given the highly developed content (large) the game of basketball to be acquired during the formative stages five, we counted and then ordered the contents of the following components: comprehensive and specific physical training.

- *Technical Training.*
- *Tactical training.*
- *Psychological training.*
- *Training through the game.*
- *Theoretical.*

### **Programs - microminibaschet 3-6 years (preschool)**

#### **Stage I - first stage**

##### *Objectives*

- involvement of a large number of children (groups, classes) in educational activities, organized sports, and exercise that provides the full manifestation of the entire body potential (bio-psycho social) (hereditary, acquired, latent) in order to strengthen a solid platform to base capacity building long-term performance;

- sanogenetic and moral values at stake: the health, growth and harmonious physical development, exercise capacity, motor ability, skills and motor skills, coordination skills, etc.

<i>3-6 years - MICROMINIBASCHE (preschool)</i>	
<b>FIRST STAGE</b>	
<b>OBJECTIVES</b>	
<ul style="list-style-type: none"> <li>❖ involvement of a large number of children (groups, classes) in educational activities, organized sports, and exercise that provides the full manifestation of the entire body potential (bio-psycho social) (hereditary, acquired, latent) in order to strengthen a solid base platform to build capacity for long-term performance;</li> <li>❖ moral values at stake: the health, growth and physical development, exercise capacity, motor ability, skills and motor skills, coordination skills</li> </ul>	
<b>PARTICULARS</b>	<b>IMPLICATIONS</b>

*Particulars*

- Height (90-116 cm) weight (14-22kg);
- The law of uneven growth and development of body parts, organs and tissues;
  - Bone is malleable and elastic warp easily; shape curvature of the spine; points of ossification in the carpal bones only;
  - Muscles develop more long than short muscles of the hands;
  - Motor and sensory exuberance: spontaneity and harmony, delicate movements differential expression with high emotional charge;
  - SNC immature cortical motor area;
  - Development of complex mental processes;
  - Motivation is an important factor supporting acts of will and volition;
  - Constitute the basis of personality;
  - Socialization of conduct determined by the relational context and social context;
  - Disorders of sociability: behavioral instability, shyness, isolation, aggression;
  - Prefigured weak and confused cooperation;
  - Infantile negativism crisis.

### *Implications*

- Identifying the highest average, overweight, underweight;
- Explains the instability of skills, precision, coordination, static and dynamic balance;
- Attention to types of claims and charges used;
- Children's preference for large movements than for short precision;
- Mainly driven activity through play and activities take place at attractive, play, exercise games and activities as attractive acquires exceptional motivational value;
- Optimal time for proper training skills and driving skills, makes adjustments;
- Limited driving performance;
- When the first traits;
- Is made the leap from solitary to the social behavior because norms, conventions and rules that discipline the behavior;
- Generated by their personal conflicts, competition partner and its perception as a rival;
- Installation of positive character traits (self confidence, civilized behavior, etc.) and negative (arrogance, carelessness, presumption).

### **General conclusions**

To check or confirm assumptions were first made following scientific activities:

- Preliminary study on the current state of activities of selection, training and competing participation basketball teams of different categories of our country;
- Identify the defining features of selection activities, training and participation in the basketball competition held in developed countries (USA, Lithuania, Spain, Argentina, Serbia, Russia, etc.);
- Identify behavior game advanced teams / players in the positions for the four age categories (U14, U16, U18 and U20);
- Measurement of potential players involved biometric each formative stage to establish the foundations to be built basketball specific performance ability;
- Establish availability of driving tests assessing general and specific to establish performance standards;

- Establish age peculiarities that must be taken into account during training of basketball players;
- Establish training objectives for each stage format in part based on the ordered contents of the training (component) and have developed training curricula;
- Rethinking Training praxiological chain model: instructional and restructuring activities objectives - content - strategy - performance standards (evaluation). All scientific investigations, testing and practical applications have been made with the next group of technicians: Razvan Cenean, Emil Huiculescu, Horia Pascu, Ionut Mocanu, Mihai Popa, Simona Musat and Covaciu Florin, a sample of nine teams and 138 players different age groups.

### **Conclusions from experiment**

1. It confirms first case of scientific endeavor which states that the presumption can be recovered Romanian basketball and integrated into the international hierarchy of values, if all activities targeting specific methods, selection, training and participation in the competition will take place after a long strategic project time to capture and monitor entire career basketball sports players.

Sporting career is marked by the entry into work and time to achieve maximum performance capacity. This finding is subsidized by the following conclusive:

1.1. Design strategy training basketball players expected new term covers a Giga-cycle amplitude (3 megacycles Olympic cycles or 3). Under the scheme developed, "sporting career" is between 4 and 35 years of distinguished five stages and 10 steps formative.

1.2. By practicing basketball since the age of 4 years (micro-mini-basket) and extension activities performance till 35 years, increases the amplitude of sports career (about 8 megacycles). Therefore we proposed that each formative stage to target a clearly defined purpose and issued in accordance with features optimal motricity periods regardless of age. Therefore we support the project achieved the harmony of our strategic long-term results and development organism in ontogenesis and also harmony (agreement) between different processes and / or systems.

1.3. Formative stages five and ten degrees designed some finality on the one hand, marks the foundation and capacity building performance, and on the other hand guides the activities of selection, training and participation in the competition. Thus, the main steps and stages formative finality are:

**Table no. 2 – PURPOSE OF FORMATIVE STAGES**

STAGE	LEVEL	CATEGORY	PURPOSE
I	4-5 year	Microminibaschet	➤ Introduction to basketball practice; ➤ large number of players and teams ➤ Potential multilateral biometric
	6-7 year	Byddibaschet	
II	8-10 year	Minibaschet I	❖ Biometric and psychosocial potential bias; ❖ Begin specialized training; ❖ Selection of initial performance. ➤
	11-12 year	Minibaschet II	
III	13-14 year	Juniori III - U <sub>14</sub>	➤ Behavior performanțial team and player (the post); ➤ Steps to performance standards ➤ Basic performance capacity (6 years);
	15-16 year	Juniori II - U <sub>16</sub>	
	17-18 year	Juniori I - U <sub>18</sub>	
IV	19-20 year	Young – U <sub>20</sub>	➤ Maximising performance capability
	19-35 year	Adults – profesionism	
V	After 35 year	Old boys	➤ Maintaining performance capacity

### Methodological requirements

At the end of the work I want to give a number of useful prescriptions coaches and specialists in the field, drawn from the findings observed during the course of our study, as follows:

- international basketball has reached the maximum value as a consistent rationalization of selection activities, training and participation of all players and team competition;

- To extend the period of initiation and training of players. Thus arose the following age categories: micro-mini-basket (6 / 7 years) mini-basket (8-12 years), Junior III (13-14 years), Junior II (15-16 years), Junior I (17-18), Youth (19-20 years), seniors, professionals (19-35 years) and veterans (over 35 years). These age groups are currently formative stages with well-defined purpose and objectives;

- Route "sporting career" (delimited by the start of training activity and when abandoned basketball performance), is marked by "demanding standards" (performance) that must be met to move from a lower to a higher stage.

These milestones are the following location:

At 12/13 years of initial selection standards for high performance;

Models of behavior advanced U1 4, U16, U18 and U20 (route to high performance).

In the context of these specifications, the current methodology for conducting the activities of initiation, selection, training and participation in the competition used in our country is totally obsolete, even though in 2001 the Romanian Basketball Federation and A. Moanta, D. Berceanu have developed a work intended to streamline the activities mentioned above.

Therefore, in light of these issues need rethinking and restructuring felt selection activities, participation in training and competition in long-term vision or strategy covering a succession of megacycles (3 Olympic cycles) or megacycle.

The purpose of our research was determining the formative stages and steps, development of training curricula by age, setting performance standards on which made the initial selection and formative stages and behavior expected at the end of stage advanced important (U14, U16, U18 and U20).

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## DANCE AS PHYSICAL ACTIVITY FOR PRESCHOOL EDUCATIONAL LEVEL - PROSPECTIVE ARTICLE

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**ABSTRACT.** The dance blends music and movement, allowing children to discover the magic of both and to develop harmoniously. It is important for this activity not to be considered only a simple entertainment. Dance is a good way to exercise, to stimulate imagination and to help the children to have a good social life as well. Dance provides children a harmonious development of their body, elegance and grace of movement, shape their character and stimulate attention, patience and discipline. The present research aimed to verify the effectiveness of a physical activity program designed with the specific means of dance, adapted to the particularities of children aged between 4 and 6 years. We assumed that the deployment of an organized program of physical activity among preschool children between 4 and 6 year olds, using exercises specific for dance will improve the motor memory of children and also the children's ability to reproduce structures having a complexity closed to the future requirements of a dancer. This research was conducted between 15.XI.2010 - 10.XII.2010 on actual children from three kindergartens in the Cluj-Napoca. Subjects participating in this research were initially evaluated, before the implementation of specific designed program and finally, at the end of research. Following analysis of data we found that the program proposed by us improved the motor memory and the children's ability to reproduce structures having a complexity closed to the future requirements of a dancer. We are satisfied with improvements in motor ability of children that participated at our program. We hope that this research is an aid to other researchers in the field of physical activities with preschoolers, and an incentive for practitioners who work daily with children between 4-6 years.

**Keywords:** *dance, physical activity, preschool, kindergarten, development.*

**REZUMAT. Dansul ca activitate fizică la nivelul învățământului preșcolar - articol prospectiv.** Prin dans se îmbină muzica și mișcarea, permițându-i copilului să descopere magia amândurora și să se dezvolte armonios. Este important faptul că dansul nu este considerat numai o distracție. El este o bună modalitate de a face efort fizic, de a stimula imaginația copilului și de a-l ajuta să aibă o viață socială cât mai bună. Dansul asigură copiilor o dezvoltare armonioasă a corpului, eleganță și grație în mișcări, le modelează caracterul și le stimulează atenția, răbdarea și disciplina. Prin

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cercetarea de față ne-am propus să verificăm eficiența unui program de activitate fizică construit cu mijloace de acționare specifice dansului, adaptat la particularitățile copiilor cu vârste cuprinse între 4 și 6 ani. Am presupus că desfășurarea organizată a unui program de activitate fizică, în rândul preșcolariilor de 4-6 ani, folosind mijloace de acționare specifice dansului va îmbunătăți memoria motrică și capacitatea copiilor de a realiza structuri cât mai apropiate ca și complexitate de cerințele unui viitor dansator. Prezenta cercetare a fost realizată în perioada 15.XI.2010 - 10.XII.2010, pe efective de copii de la trei grădinițe din localitatea Cluj-Napoca. Subiecții participanți la această cercetare au fost evaluați inițial, înainte de implementarea programului specific și final, la sfârșitul perioadei de cercetare. În urma analizei datelor obținute am constatat că programul propus de noi a îmbunătățit memoria motrică și capacitatea copiilor de a realiza structuri apropiate ca și complexitate de cerințele unui viitor dansator. Ne declarăm mulțumiți de îmbunătățirile aduse capacității motrice ale copiilor implicați în programul nostru. Sperăm ca această cercetare să fie un ajutor pentru alți cercetători în domeniu activităților fizice cu preșcolari, precum și o motivație pentru practicienii care lucrează zilnic cu copiii de 4-6 ani.

**Cuvinte cheie:** dans, activitate fizică, preșcolar, grădiniță, dezvoltare.

“Dancing is the loftiest, the most moving, the most beautiful of the arts. For it is no mere translation or abstraction of life. It is life itself” (Ellis, 1923).

Dance has appeared before music as an animated representation of performance in art of hunting and fight of first primitive tribes. For this reason, the dance is primarily a complex "school", where the child learns to control impulses by harmony and rhythm.

The dance blends music and movement, allowing children to discover the magic of both and to develop harmoniously. Preschooler will learn to love music, rhythm, movement, to speak otherwise than with words, to share his joy of dancing with other children of similar age, among who will be able to give show their own personalities, letting alone the stiffness required, sometimes imposed by formal environments.

It is important that the dance is not considered entertainment only. This activity is a good way to exercise, to stimulate imagination and to help children to have a better social life. Dance provides children a harmonious development of body, elegance and grace of movement; it shapes their character and stimulates attention, patience and discipline.

Dance offers preschool another way of expression, it helps them to lose of shyness, makes them more communicative and sociable, it uses energy

in a pleasant and useful mode for the future. Dance stimulates ambition, competitive spirit and ability to make effort in order to get the best results and to become the best.

Dancing in organized groups involves routine, pre-dance steps and many other rules that excite the child's memory. Children need to remember a series of movements to achieve a coordinated dance, and through continuous repetition, memory are stimulated.

A child who moves a lot is a healthy child, a lively child, with efficiency in everything he does throughout the day. This amazing energy of children should be channeled, used creatively, and the desire of movement, dynamism, characteristics of children need to become tools in the hands of those who educate them, through which has to work towards formation of healthy and vigorous children.

By their nature, activities in kindergarten develop a sense of observation and investigation, cultivate imagination, creative thinking, orient mental activity, and, finally, contribute efficient at fast forming of mental mechanisms that facilitate learning and work, which are necessary to prepare the preschool for life.

### **Research goals**

The present research aimed to verify the effectiveness of a physical activity program designed with structures specific for dance, adapted to the particularities of children aged between 4 and 6 years.

The objectives were to improve motor memory, to develop space orientation and to educate coordination of all participants working in extended formation.

The assumption of the research: we assumed that the deployment of an organized program of physical activity among preschool children aged between 4 and 6 year olds, using structures specific for dance will improve motor memory and the ability of children to perform structures as close as the complexity of the requirements of a future dancer.

### **Method**

This research was conducted between 15.XI.2010 - 10.XII.2010, with children from three kindergartens in the Cluj-Napoca.

It was built a program with specific elements of dance for preschool level. This program was applied once a week for 30 minutes, throughout the aforementioned period.

During the program it has been worked with children using a gymnastics formation. Motor structures were divided into four time signatures.

Subjects participating in this research were initially evaluated, before the implementation of a specific program, and final, at the end of the research.

For data collection we used worksheets for the initial and final assessments and we used the Microsoft Excel to analyze and interpret the collected data.

### **Participants**

Participants in this research are the children from three kindergarten (N = 73), aged between 4 and 6 years.

There were 32 children from kindergarten "Căsuța Poveștilor", 18 children from kindergarten "Zâna Zorilor" and 23 children from kindergarten "Licurici - structure I".

### **Structures used**

Battery of tests used to assess the effectiveness of the intervention program includes five tests:

- Execution of two steps added to the right followed by an emphasis
- Execution of two steps added to the left followed by an emphasis
- Execution of three steps forward followed by a return of 180° to the right, arms closed to the body
- Execution of three steps backwards followed by a return of 180° to the right, arms closed to the body
- Memorize the movements taught and choreographed sequence

Each test of the battery has three performance levels: lack of elements execution (codified by the term 'None'), partial execution of the elements (codified by the term 'Partial'), total execution of the elements (codified the term 'Complete') (see table no. 1).

**Table 1.****The test battery**

Execution of two steps added to the right followed by an emphasis			Execution of two steps added to the left followed by an emphasis			Execution of three steps forward followed by a return of 180° to the right, arms closed to the body			Execution of three steps backwards followed by a return of 180° to the right, arms closed to the body			Memorize the movements taught and choreographed sequence		
None	Partial	Complete	None	Partial	Complete	None	Partial	Complete	None	Partial	Complete	None	Partial	Complete

**Data analysis and results**

At initial assessment 68 children were present.

At test 1 were obtained the following results:

**Table 2.****Initial assessment, test 1**

Execution of two steps added to the right followed by an emphasis		
None	Partial	Complete
12 subjects	34 subjects	22 subjects
17.65 %	50.00 %	32.35 %

At test 2 were obtained the following results:

**Table 3.****Initial assessment, test 2**

Execution of two steps added to the left followed by an emphasis		
None	Partial	Complete
9 subjects	39 subjects	20 subjects
13.24 %	57.35 %	29.41 %

At test 3 were obtained the following results:

**Table 4.**

**Initial assessment, test 3**

Execution of three steps forward followed by a return of 180° to the right, arms closed to the body		
None	Partial	Complete
11 subjects	41 subjects	16 subjects
16.18 %	60.29 %	23.53 %

At test 4 were obtained the following results:

**Table 5.**

**Initial assessment, test 4**

Execution of three steps backwards followed by a return of 180° to the right, arms closed to the body		
None	Partial	Complete
11 subjects	42 subjects	15 subjects
16.18 %	61.76 %	22.06 %

At test 5 were obtained the following results:

**Table 6.**

**Initial assessment, test 5**

Memorize the movements taught and choreographed sequence		
None	Partial	Complete
7 subjects	59 subjects	2 subjects
10.29 %	86.76 %	2.94 %

At the final assessment 71 children were present.

At test 1 were obtained the following results:

**Table 7.**

**Final assessment, test 1**

Execution of two steps added to the right followed by an emphasis		
None	Partial	Complete
2 subjects	46 subjects	23 subjects
2.82 %	64.79 %	32.39 %

At test 2 were obtained the following results:

**Table 8.**

**Final assessment, test 2**

Execution of two steps added to the left followed by an emphasis		
None	Partial	Complete
2 subjects	46 subjects	23 subjects
2.82 %	64.79 %	32.39 %

At test 3 were obtained the following results:

**Table 9.**

**Final assessment, test 3**

Execution of three steps forward followed by a return of 180° to the right, arms closed to the body		
None	Partial	Complete
2 subjects	46 subjects	23 subjects
2.82 %	64.79 %	32.39 %

At test 4 were obtained the following results:

**Table 10.**

**Final assessment, test 4**

Execution of three steps backwards followed by a return of 180° to the right, arms closed to the body		
None	Partial	Complete
4 subjects	44 subjects	23 subjects
5.63 %	61.97 %	32.39 %

At test 5 were obtained the following results:

**Table 11.**

**Final assessment, test 5**

Memorize the movements taught and choreographed sequence		
None	Partial	Complete
2 subjects	46 subjects	23 subjects
2.82 %	64.79 %	32.39 %

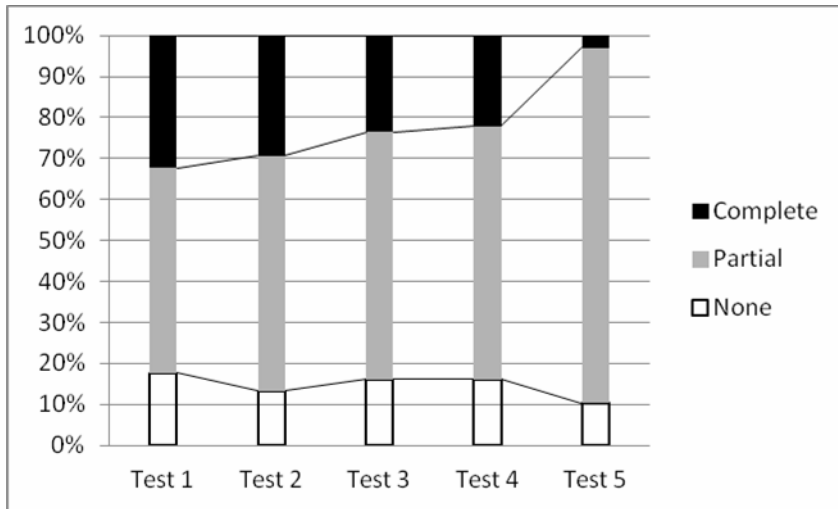
Percentage differences between the two stages of evaluation can be followed in Table 12.

**Table 12.**

**Percentage differences between the two stages of evaluation**

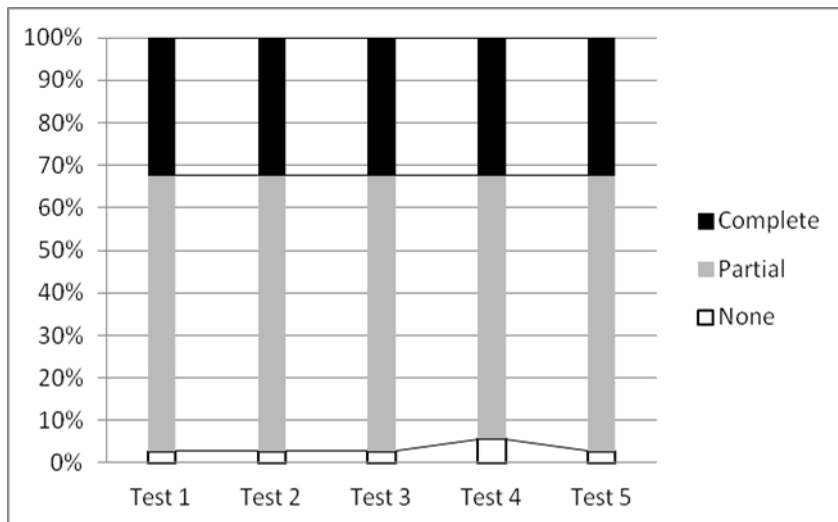
Test	Performance level	Initial assessment	Final assessment	Percentage difference (column 4 – column 3)
1	2	3	4	5
1. Execution of two steps added to the right followed by an emphasis	None	17.65%	2.82%	-14.83%
	Partial	50.00%	64.79%	<b>14.79%</b>
	Complete	32.35%	32.39%	<b>0.04%</b>
2. Execution of two steps added to the left followed by an emphasis	None	13.24%	2.82%	-10.42%
	Partial	57.35%	64.79%	<b>7.44%</b>
	Complete	29.41%	32.39%	<b>2.98%</b>
3. Execution of three steps forward followed by a return of 180° to the right, arms closed to the body	None	16.18%	2.82%	-13.36%
	Partial	60.29%	64.79%	<b>4.50%</b>
	Complete	23.53%	32.39%	<b>8.86%</b>
4. Execution of three steps backwards followed by a return of 180° to the right, arms closed to the body	None	16.18%	5.63%	-10.55%
	Partial	61.76%	61.97%	<b>0.21%</b>
	Complete	22.06%	32.39%	<b>10.33%</b>
5. Memorize the movements taught and choreographed sequence	None	10.29%	2.82%	-7.47%
	Partial	86.76%	64.79%	-21.97%
	Complete	2.94%	32.39%	<b>29.45%</b>

The dynamic of competence level for each test at initial assessment is shown in the chart below.



**Chart 1 – The dynamic of competence level at initial assessment**

In the chart 2 can be traced the dynamic of competence level for each test at final assessment.



**Chart 2 – The dynamic of competence level at final assessment**



## **Discussion**

Analyzing the results of the initial assessment can be seen that at every test the level of competence 'Partial', recorded the highest percentage, over 50%: test 1 (50.00%), test 2 (57.35%), test 3 (60.29%), test 4 (61.76%), test 5 (86.76%).

This finding may be due to the fact that the two kindergartens' subjects participated at this optional in the previous year.

At final assessment, a migration of percentages can be seen from the level 'None' to 'Partial' and 'Complete', and, at some tests, from 'Partial' to 'Complete'.

At level of competence 'Partial' all percentages increased to the first four test: test 1 (64.79%, the difference between final assessment and initial assessment is 14.79%), test 2 (64.79%, the difference between final assessment and initial assessment is 7.44%), test 3 (64.79%, the difference between final assessment and initial assessment is 4.50%), test 4 (61.97%, the difference between final assessment and initial assessment is 0.21%).

As the last test, the level 'Partial' has a lower percentage at final assessment regarding to the initial assessment. Percentage difference is found at the level 'Complete' which shows a significant increase (difference between final assessment and initial assessment is 29.45%).

Following the two graphs above we can observe the dynamics of migration on percentage regarding the children who improved their performance levels. May be noted the areas marked in black (performance level 'Complete') on the two graphs. These areas have increased considerably at the final assessment.

Noting the evolution of results from data collected at the two assessments, we believe that the assumption of the research was confirmed in groups of children.

## **Conclusions**

In an attempt to highlight the importance and effectiveness of specific means of dance, used in physical activities with preschool children, we have built and implemented a specific program for children aged between 4 and 6 year olds. The role of this program was to improve motor memory, space orientation and to educate coordination of all participants working in extended formation.

Following analysis of data we found that a properly constructed program helps to achieve those goals. In this case we are satisfied with improvements in motor ability of children that participated at our program.

Also the confirmation of initial research assumption enables us to conclude that these children have developed the ability to perform structures as close as the complexity of the requirements of a future dancer.

We hope that this research will be a help for other researchers in the field of physical activities with preschoolers, as well as a motivation for practitioners who work daily with children aged between 4 and 6 year olds.

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4. <http://www.copilul.ro/copii-3-6-ani/dezvoltare/Beneficiile-dansului-in-dezvoltarea-copilului-a7900.html>



## THE PLACE AND ROLE OF SPORT IN THE LIFE OF GYMNASIUM AND HIGH SCHOOL PUPILS

GROSU EMILIA FLORINA<sup>1</sup>, KISS LEVENTE<sup>2</sup>,  
GROSU VLAD TEODOR<sup>3</sup>, POROJAN IOAN<sup>4</sup>

**ABSTRACT.** This article aims at determining the place and role of sport in the life of gymnasium and high school pupils in what regards the team spirit and socialization. The research investigated the above mentioned aspects by using three questionnaires. The percentage of the level of practicing sports in gymnasium and high school: an increased level of practicing sports in gymnasium, 63,64%, and 66,67% in high school, an increased level of sociability as compared to the pupils who practice sports only occasionally (27,27% in gymnasium children and 39,39% in high school pupils). In what regards the comparative study of the level of team spirit in gymnasium and high school (21-30 points), in favor of high school pupils, as in the next parameter, that of the level of sociability in both cycles (8-13 points).

**Keywords:** *physical education, sport, sociability, team spirit*

**REZUMAT. Locul și rolul sportului în viața elevilor din gimnaziu și liceu.** Prin acest articol s-a urmărit determinarea locului și rolului sportului în viața elevilor din liceu și din gimnaziu, din punctul de vedere al spiritului de echipă și al socializării. S-au aplicat trei chestionare și s-au urmărit următoarele aspecte: situația eșalonată procentual a nivelului de practicare a sportului la ciclul gimnazial și liceal: au și un nivel mult mai ridicat al spiritului de echipă la gimnaziu = 63,64% și la liceu = 66,67%; un gradul mai mare de sociabilitate, decât elevii care practică sportul doar ocazional (în procente: gimnaziu 27,27% iar la liceu de 39,39%). Privind studiul comparativ al nivelului spiritului de echipă dintre ciclul gimnazial și liceal (21-30 puncte), în favoarea celor din liceu, la fel ca și următorul parametru: al nivelului de sociabilitate la ambele cicluri (8-13 puncte).

**Cuvinte cheie:** *educație fizică, sport, sociabilitate, spirit de echipă*

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## Introduction

For implementing the study we required sixth and eighth form pupils in the rural areas, respectively ninth and eleventh form pupils in the urban areas to complete the questionnaires proposed by us. The period of implementing the research and applying the questionnaires was between January, 10th, 2010 and April, 16th, 2011. The final results are graphically represented. The independent variables were the physical education classes from the school and the trainings practiced by the pupils in their free time. The research was implemented in Țaga School, County Cluj, Romania and Someș Dej Scholar Group, County Cluj, Romania.

## Objectives

The research wants to determine the place and role of sport in the life of gymnasium and high school pupils, in what regards the team spirit and socialization.

## Methods

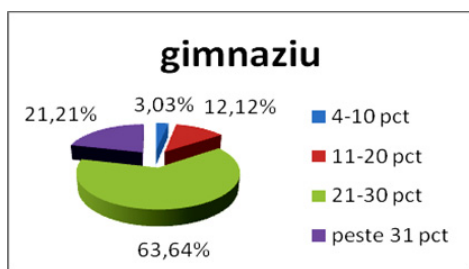
The main method was inquiry by means of applying the following questionnaires: “Do you have team spirit?” by Adriana Crăciun, coordinated by Mitrofan Nicolae, Dr; 2. “Are you a sociable person?” by Corneliu Tocan and Iulia Dumitru, coordinated by Mitrofan Nicolae, Dr.; 3. “Do you like sport?” a personal questionnaire.

## Results

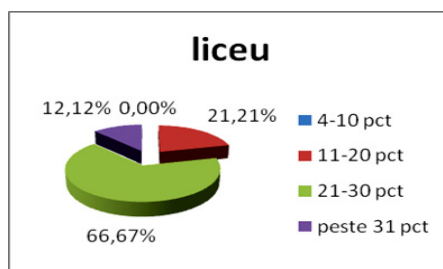
The results of the first two questionnaires for verifying the pupils' level and grade of sociability and team spirit are to be found in Annex 4. After analyzing the statistic-mathematical data, their results are in the tables from annex 5 and 6. The statistic data show that both questionnaires applied to pupils from both cycles, gymnasium and high school, reached almost identical values, the differences in what regards the level of sociability and the team spirit being insignificant. Data were analyzed by using SPSS (The Statistic Analysis of Data). The third questionnaire, which I made personally, reflects pupils' sportive life, whether they practice any kind of sports or not, or more or less, and whether they are active in the world of sport.

1. The percentage of the level of practicing sports in gymnasium and high school shows that the pupils who practice a certain sport regularly or for performance **have a much higher level of team spirit in gymnasium 63,64% and in high school 66,67%**. Those pupils who practice sports only

at school have a lower level of team spirit: gymnasium children 21,21%, and high school pupils 12,12%. The pupils who practice sports only in certain circumstances have a lower level of team spirit as compared to the others. As we can notice, there is a pupil in gymnasium, who scored 4-10 points with a percentage of 3,03% who does not practice any sport at all.



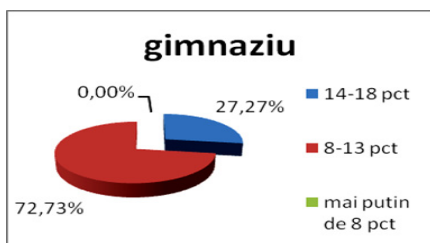
**Graph no.1**



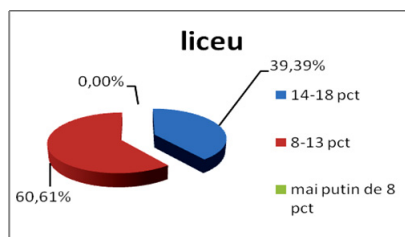
**Graph no.2**

**G.1, G.2** – The percentage of practicing sport by gymnasium and high school pupils compared to their team spirit development level.

2. The percentage of the level of practicing sport in gymnasium and high school shows that in both cycles the pupils who practice sport for performance or on a permanent basis **get a higher level of sociability than the pupils who practice sport only occasionally**. In gymnasium we have a percentage of 27,27% and in high school a percentage of 39,39%. Among primary school children there are more pupils who practice performance sport or sport on a permanent basis than those who practice performance sport or sport on a permanent basis in gymnasium. In none of the levels do we find pupils who practice no sport or physical exercise.



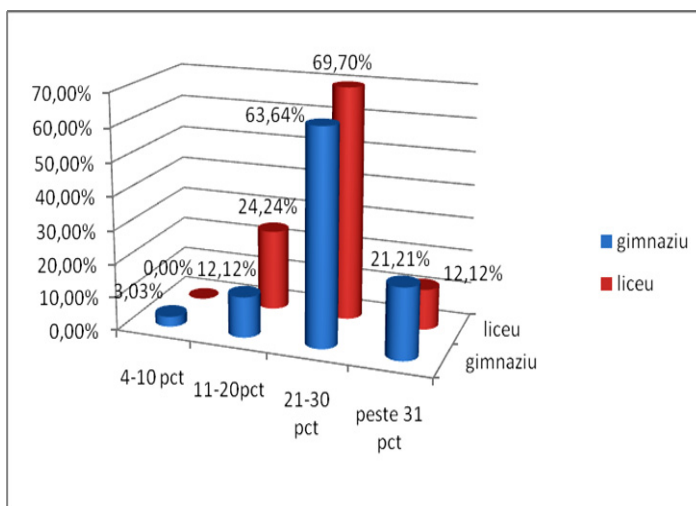
**Graph no.3**



**Graph no.4**

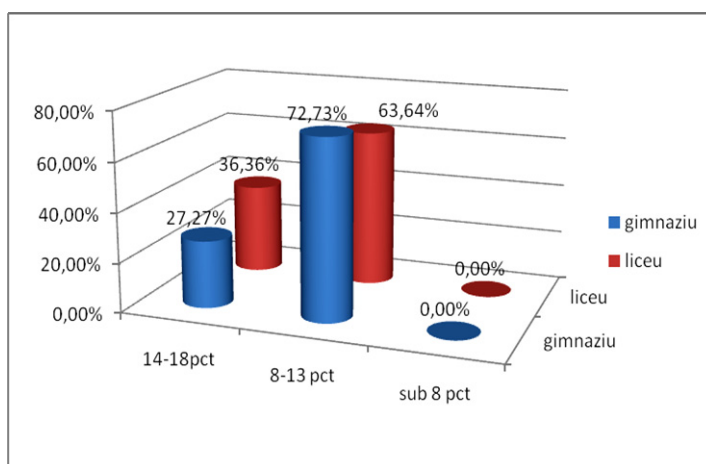
**G.3, G.4** – The percentage of practicing sport by gymnasium and high school pupils compared to their level of sociability.

3. In what regards the comparative study of the level of team spirit in gymnasium and high school, taking into account the scores, in both cycles the pupils who benefit of their high levels of team spirit are dominant (**21-30 points**). These pupils always take more care of the collective well than of their personal interest and know how to make an ally from each of their team mates, to encourage their co-workers for using their talent in the benefit of the team. The number of high school pupils who have the capacity of listening and involving the others allowing the improvement of the team spirit is greater with 6,6 % than that of gymnasium pupils. There are many gymnasium pupils (**more than 31 points**) who need to be encouraged and advised because of their young age, in the middle of a group where they feel comfortable and their performances depend on this factor. They always get into panic when they have to take responsibilities and have the tendency of abandoning the activity: only one in 33 students does not feel well in the middle of a group and avoids team work (**4-10 points**). The reason is the fact that he does not agree to be ruled or governed by others. He makes an exception only when he is the organizer and the leader, the one who coordinates the operation and then he does not consider what the others say. The difference between the pupils who, although they do not like working in teams, still do it if it is necessary and who are capable to contribute to the success of a common activity, is not so great. (**11-20 points**)(See graph no.3)



**Graph no.5.** The rate of the level of team spirit in gymnasium and high school pupils.

4. In what regards the comparative study of the level of sociability in both cycles we find very similar values many of the pupils being among those who benefit of a level of sociability which requires relevant improvements (8-13 points). These do not agree to be alone, feel the need to be among people. These help those around them if this does not involve much effort. They need to be loved, not to love and this is not enough. There are more sociable pupils in high school than in gymnasium, but this is an insignificant difference (14-18 points). These pupils are very loved by their classmates and are the type of people who always keep their smile and who think more about the others than about themselves. These pupils are the sunshine in the groups in which they activate, being a real luck for those around them. In what regards the selfish pupils, who like to live by themselves and who do not have many friends, the report between the two cycles is equal. These pupils do not exist among those involved in the research. (less than 8 points)



**Graph no.6.** The rate of the sociability level in gymnasium and high school pupils.

**Table 1.**

The comparison of the differences between the team spirit values and the sociability values in gymnasium and high school.

Variables	The difference between averages	The t test	The Significance Sig (p)
Team spirit	0,212	0,158	0,170
Sociability	- 1,061	- 2,128	0,553



We can see in the above table that the difference between the level of sociability average and the team spirit average in the two cycles is insignificant provided that  $\text{Sig}(p) > 0,005$ .

## **Conclusions**

After applying the questionnaires in gymnasium and high school pupils we can come to the following conclusions:

1. The pupils who practice different kinds of sports benefit of a higher level of team spirit as compared to those who practice sports only occasionally.

2. The pupils who practice performance sports or sport on a permanent basis have a higher level of sociability than those who practice sports only in the school activities, occasionally or in certain circumstances.

3. Most pupils generally practice sports and this fact influences their behavior positively and contributes in developing their level of sociability, spirituality and pupils' team spirit, developing pupils' personality at the same time too.

4. We can see a percentage of the pupils who feel comfortable in the middle of a group, who need to be advised and encouraged for being active and for getting performance in their activity. By practicing sports these pupils can become more responsible, can be more self confident and their work can be valorized in the sportive collective in which they act in the benefit of the group, team.

5. In both cycles, gymnasium and high school we found many pupils who need an improvement in their spirituality and sociability and by practicing sports they can reach a better conduct on the spiritual and moral level.

6. By statistically analyzing the data which were collected in the research, these indicate the fact that the research was correct, that the questions were well selected and they were enough for reflecting a good level of team spirit, sociability and spirituality of the pupils and this fact is essential, having a precise determination. So practicing different kinds of sport is at the basis of pupils' progress and their socialization.

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## PHYSICAL EDUCATION AND STUDENTS' HEALTH PROMOTION PLATFORM AS AN ELEMENT OF EUROPEAN UNION'S HEALTH STRATEGY AGAINST THE LEVEL OF CARDIORESPIRATORY FITNESS OF STUDENTS FROM POLAND, SLOVAKIA, ROMANIA

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**ABSTRACT.** The aim of the paper was to present assumptions and purposeness of Physical Education and Students' Health Promotion Platform [www.studentfit.eu](http://www.studentfit.eu) and the analysis of the state of cardiorespiratory fitness, as one of the measures of health. Study included a randomized sample of 353 students from University of Oradea and Universty Babes-Bolyai of Cluj-Napoca, Romania (204 women, 149 men) and the results were compared with the results of Polish and Slovakian students, whom study similar as students from Romania in Carpathian Euroregion (Rzeszów, Krosno, Presov). Analysis included 4355 students from Poland, Slovakia, Romania, whom were tested for cardiorespiratory fitness and a set of marked somatic features indicators were measured. Students from Romania obtained statistically significant lower results of cardiorespiratory fitness than those from Poland and Slovakia.

*Keywords:* physical education, cardiorespiratory fitness, health.

**REZUMAT.** Educația Fizică și Platforma de promovare a sănătății studenților ca un element al strategiei pentru sănătate al Uniunii Europene și nivelul de fitness cardiorespirator al studenților din Polonia, Slovacia, România. **Introducere.** Scopul lucrării a fost de a prezenta unele aspecte cu privire la Platforma de Promovare a Sănătății Studenților [www.studentfit.eu](http://www.studentfit.eu) în Educația Fizică, precum și o analiză a nivelului de fitness cardiorespirator al studenților. Studiul a inclus un eșantion randomizat de 353 studenți de la Universitatea din Oradea, România (204 femei, 149 bărbați), iar rezultatele au fost comparate cu cele obținute de studenți polonezi și slovaci ale căror universități fac parte din Euroregiunea Carpaților (Rzeszów, Krosno, Presov). Analiza a inclus 4355 de studenți din Polonia, Slovacia, România, care au fost testați din punct de vedere al fitness-ului cardio-respirator și prin măsurarea unui set de indicatori somatici. Rezultatele semnificative din punct de vedere statistic au evidențiat faptul că studenții din România au obținut rezultate mai mici în ce privește fitness-ul cardiorespirator decât cei din Polonia și Slovacia

*Cuvinte cheie:* educație fizică, fitness cardio-respirator, sănătate.

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## **Preface**

European Union directives consider Physical Activity and try to use motion activity as a source in the fight with civilization diseases. With the use of tools such as guides promoting societies' activity and recreation activity, they have an impact on a positive evaluation of motion activity values.

A necessity to implement preventive actions is a result of the fact that cardiovascular diseases are still the main cause of death. Cardio-vascular diseases are the direct cause of more than 4 million deaths in Europe (1,9 million in European Union countries, which is 43% of deaths among men and 55% among women [Cardiovascular Disease Statistics 2008].

An aim of prevention is to decrease frequency of first and the following disease occurrence related to ischemic heart disease, cerebral ischemic stroke, peripheral vascular disease, as well as to prevent disability and premature mortality. Knowledge development unambiguously that cardiovascular diseases occurrence is in a large measure related to lifestyle and physiological factors, which might be modified. It was showed that risk factors modification decreases incidence of disease and mortality due to cardiovascular diseases, and prevention's effectiveness is one of the best proved facts in medicine. It was demonstrated that in developed countries decrease of mortality due to ischemic heart disease might be in 70% the reason of incidence of disease decrees [Pajak 2007].

The period of university study is the last stage when cardio-vascular diseases prevention can be carried out thru health education focused on development, maintenance, and physical efficiency monitoring. An essence of Physical Education and Students' Health Promotion Platform is about to identify and modify (educational actions) selected risk factors of ischemic heart disease, such as: low level of physical activity and cardio-respiratory resistance, irrational nourishing, overweight, abdominal obesity, tobacco smoking as well as activities related to health education.

Thanks to created data base placed on charge free platform, it is possible to compare dynamic and direction of changes over the years, as well as to analyze those results with reference to the whole students' society and taking into consideration for example: country, age, gender, somatic parameters, faculty of study, preferred physical education.

The latest researches indicate that lack of regular physical exercises is a cause of at least seventeen chronic diseases, including numerous cardio-vascular diseases, some tumors, diabetics, as well osteoporosis [Podolec 2008].

### **Aim of the paper**

The aim of the paper was to:

- Present assumptions and purposness of Physical Education and Students' Health Promotion Platform [www.studentfit.eu](http://www.studentfit.eu)
- Analysis of the state of cardiorespiratory fitness, as one of the measures of heath.

### **Material**

- Study included a randomized sample of 353 students of Oradea University In Romania (204 women, 149 men)
- Gathered results were compared with the results of Polish and Slovakian students, whom study similar as students from Romania in Carpathian Euroregion (Rzeszów, Krosno, Presov) [Zadarko 2010]

### **Methodology of study**

A standardized 20m shuttle run test (beep test version 3\_3) with PACER (Progressive Aerobic Cardiovascular Endurance Run, enabling indirect assess of VO<sub>2</sub> max was used to assess CRF - Cardio respiratory Fitness. A test was conducted on the gym and was about 20m shuttle run back and fort increasing in intensity as time progress, announced by time signal till the refusal (tiredness) or run pace decrease in contradiction to time signal [Leger 1982, Shvartz 1990]. Test enables to test a large quantity of people and the reliability coefficient causes that it is recommended and willingly used tool in adult population studies ( $r=0,95-0,975$ ) as well as children and youth ( $r=0,89$ ) [FITNESSGRAM 1994, Kusy 2000, Chatterjee 2010 ]. At the end of test with the use of sport tester Polar there were marked maximum myocardial contraction frequency ( HR max.)

- Including criteria: negative interview of effort readiness after completing Physical Activity Readiness Questionnaire, written approval to take a part in the study and obtaining actual medical examinations.
- Excluding criteria: positive interview of effort readiness (at least one positive answer in Physical Activity Readiness Questionnaire, lack of approval to take a part in the study and no actual medical examinations, bad general-feeling before or during exercise test.

- Before exercise test body high was measured with the use of anthropometry and body mass and its components with the use of Tanita TBF 300 weight (determining at the same time BMI- Body Mass Index) and its components (BF% - Body Fat). Circumference of waist and hip was measured with the use of centimeters band, WHR – waist to hip ratio was also measured.

## Results

### 1. Characteristic of the study sample

Analysis included 4355 students from Poland, Slovakia, Romania, whom were tested for cardiorespiratory fitness and a set of marked somatic features indicators (tab.1)

**Table 1.**

Numerous characteristic of students

Nationality	N	%
Poland	3353	77,0%
Slovakia	649	14,9%
Romania	353	8,1%

Structure of gender of study sample is similar for specific countries of Carpathian Euroregion (tab.2).

**Table 2.**

Distribution of number of students against gender

Gender	Nationality			Total
	Poland	Slovakia	Romania	
woman	1965 (58,6%↓)	397 (61,2%↓)	204 (57,8%↓)	2566
man	1388 (41,4%↓)	252 (38,8%↓)	149 (42,2%↓)	1789
Total	3353	649	353	4355

From the point of view of analysis' reliability, the structure of studied faculties shows a great diversity (tab.3). Significantly essential are the differences considering physical education students, which presents table 4 and graph 1. In this contests it seems justify to conduct additional analysis, including only and exclusively students of other faculties than physical education. Present specification includes the total of study sample.

**Table 3.**

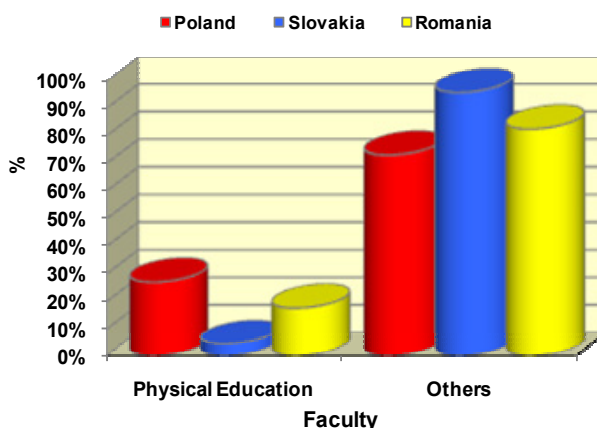
Structure of studied faculties

Faculty	Nationality			Total
	Poland	Slovakia	Romania	
humanistic	800 (23,9%↓)	215 (33,1%↓)	45 (13,2%↓)	1060
law and administration	301 (9,0%↓)	0 (0,0%↓)	29 (8,5%↓)	330
medical	164 (4,9%↓)	16 (2,5%↓)	44 (12,9%↓)	224
mathematics-sciences	572 (17,1%↓)	13 (2,0%↓)	92 (27,0%↓)	677
physical education	906 (27,0%↓)	28 (4,3%↓)	60 (17,6%↓)	994
tourism and recreation	322 (9,6%↓)	0 (0,0%↓)	0 (0,0%↓)	322
other	20 (0,6%↓)	89 (13,7%↓)	0 (0,0%↓)	109
technical	268 (8,0%↓)	288 (44,4%↓)	71 (20,8%↓)	627
Total	3353	649	341	4343

**Table 4.**

Structure of faculties with specification of physical education

Faculty	Nationality			Total
	Poland	Slovakia	Romania	
physical education	906 (27,0%↓)	28 (4,3%↓)	60 (17,6%↓)	994
others	2447 (73,0%↓)	621 (95,7%↓)	280 (82,4%↓)	3348
Total	3353	649	340	4342



**Graph 1.** Structure of studied faculties with specification of physical education



## 2. Cardiorespiratory fitness comparison

In an anagogic way was conducted comparison of  $VO_{2\max}$  (ml/kg/min)m and average distance (m), however due to some asymmetry of capacity test results distribution, non-parametric analysis Kruskal-Wallis was used, and median was add to statistical description.

Defiantly the lowest results were obtained by Romanian women (tab. 5).

**Table 5.**

Cardiorespiratory fitness results of women

Cardiorespiratory fitness results	Nationality									p
	Poland (N = 1965)			Slovakia (N = 397)			Romania (N = 204)			
	$\bar{x}$	Me	s	$\bar{x}$	Me	s	$\bar{x}$	Me	s	
Distance (m)	865	820	284	831	800	272	743	660	404	0,0000***
$VO_{2\max}$ (ml/kg/min)	35,1	34,4	5,5	34,4	34,0	5,4	32,4	31,0	7,4	0,0000***

Also among men the results from Romania were definitely worse than from other Poland and Slovakia (tab. 6).

**Table 6.**

Cardiorespiratory fitness results of men

Cardiorespiratory fitness results	Nationality									p
	Poland (N = 1388)			Slovakia (N = 252)			Romania (N = 149)			
	$\bar{x}$	Me	s	$\bar{x}$	Me	s	$\bar{x}$	Me	s	
Distance (m)	1631	1620	416	1570	1520	401	1494	1420	422	0,0001***
$VO_{2\max}$ (ml/kg/min)	48,9	48,9	7,0	47,9	47,4	6,8	46,6	45,6	7,2	0,0001***

## 4. Classification of gathered results against cardiorespiratory fitness standards

Obtained in Beep test results  $VO_{2\max}$  (ml/kg/min) were referred to standards for men and women in age of 20-29 proposed by: The Physical Fitness Specialist Certification Manual, The Cooper Institute for Aerobics Research, Dallas TX, revised 1997 printed in Advance Fitness Assessment & Exercise Prescription, 3rd Edition, Vivian H. Heyward, 1998, p.48 (tab.7).

**Table 7.**

Specification of the level of cardiorespiratory fitness of women against nationality

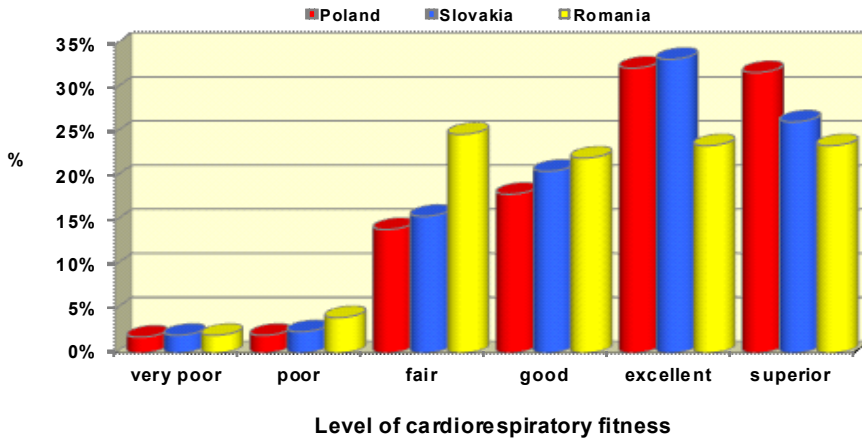
Cardiorespiratory fitness	Nationality ( $p = 0,0000^{***}$ )			Total
	Poland	Slovakia	Romania	
Very poor	14 (0,7%↓)	3 (0,8%↓)	1 (0,5%↓)	18
Poor	220 (11,2%↓)	49 (12,3%↓)	61 (29,9%↓)	330
Fair	526 (26,8%↓)	127 (32,0%↓)	74 (36,3%↓)	727
Good	507 (25,8%↓)	91 (22,9%↓)	40 (19,6%↓)	638
Excellent	421 (21,4%↓)	83 (20,9%↓)	10 (4,9%↓)	514
Superior	277 (14,1%↓)	44 (11,1%↓)	18 (8,8%↓)	339
Total	1965	397	204	2566

It is visible that among men from Romania there is lower participation categories such: superior and excellent. In two the highest categories of cardiorespiratory fitness not even 50% of this country against almost and more than 60% in Slovakia and Poland.

**Table 8.**

Specification of the level of cardiorespiratory fitness of men against nationality

Cardiorespiratory fitness	Nationality ( $p = 0,0101^*$ )			Total
	Poland	Slovakia	Romania	
Very poor	25 (1,8%↓)	5 (2,0%↓)	3 (2,0%↓)	33
Poor	28 (2,0%↓)	6 (2,4%↓)	6 (4,0%↓)	40
Fair	194 (14,0%↓)	39 (15,5%↓)	37 (24,8%↓)	270
Good	250 (18,0%↓)	52 (20,6%↓)	33 (22,1%↓)	335
Excellent	449 (32,3%↓)	84 (33,3%↓)	35 (23,5%↓)	568
Superior	442 (31,8%↓)	66 (26,2%↓)	35 (23,5%↓)	543
Total	1388	252	149	1789



**Graph 2.** Specification of the level of cardiorespiratory fitness of men against nationality

### Discussion

In 15 European Union countries at least 50% residents declares that have never practice sport or practice it rarely than once a month. According to this criteria, countries where sport is practice the most rarely are the following: Bulgaria (82%), Greece (79%), Hungary (71%), Romania (69%), Italy (67%), Poland (66%) and Latvia (65%) [Eurobarometer 72.3]. Lack of physical activity is an essential problem of public health in Europe. The most important risk factors of cardiovascular disease, CVD include above all low physical activity [Kardiologia Polska 2008]. Mortality rate due to cardiovascular disease In Poland, Slovakia, Hungary, and especially in Romania and Ukraine (Carpathian Euroregion) are the highest in Europe. It results from the study that results of exercise test among people with negative cardiology history are the forecast factors for cardiovascular diseases [Myers 2002, Blair 2009].

Modern social reforms present in many countries of the world commonly perceive physical activity popularization as an import ant element of national health promotion programs. It is a consequence of knowledge about the meaning of motion activity in health prophylaxis.

Physical activity at universities might stimulate for the further physical development ant continue previously gained motion and even hygienic habits. Because modern times raise in front of graduated high demands regarding specialist preparation, availability and engagement must be accompanied by increased psychical resistance, balanced physical resistance [Bittner 1995].

A contact of student with a teacher-health educator and via Internet (even after graduation) with the platform dedicated to health and physical education is about to activate students and make them the object of that system. Only then we may expect that activities in the scope of academic health education being a natural development of school activities would bring long-term effects, which thanks to creating proper health habits would not end along with the end of education at the university.

It seems that the period of university study is the last stage when cardio-vascular diseases prevention can be carried out thru health education focused on development, maintenance, and physical efficiency monitoring. Other authors also put attentions on that, and find that there should not resign from obligatory physical education classes, as a form of participation of university students in physical education, because physical activity is an important factor that has an impact on the level of fitness included in the concept of health. They propose to test fitness in convention of health with the use of tests based on Health Related Fitness conception (H-RF), putting attention so the results of test would be used to assess the effects of pedagogic work [Mleczko 2007, Mirek 2008].

### Conclusions

1. Physical Education and Students' Health Promotion Platform is inscribe to the concept of activities based on the idea Health Related Fitness as well as health literacy. It might be a helpful tool in shaping university students' health efficiency, and particularly morphologic and circulatory-respiratory. Mentioned efficiency is thought to be directly related to high quality of life.

2. Physical Education and Students' Health Promotion Platform [www.studentfit.eu](http://www.studentfit.eu) enters the conception of actions based on H-RF idea and Health literacy, and might be helpful toll in shaping fitness of youth, especially morphology and cardiorespiratory, and those are the one directly related to quality of life.

3. Students from Romania obtained statistically significant lower results of cardiorespiratory fitness than those from Poland and Slovakia.

4. It is necessary to undertake action focus on monitoring (conducting further studies) and finding out factors influencing the occurred situation.

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