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BABEȘ-BOLYAI



# EDUCATIO ARTIS GYMNASTICAE

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**S T U D I A**  
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**EDUCATIO ARTIS GYMNASICAЕ**

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## A SURVEY OF THE LIVING CONDITIONS AND LIFE QUALITY OF ELDERLY PEOPLE

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**ABSTRACT. Introduction:** In the present study we intend to deal with a less examined field, that is, the life quality of elderly people. Especially, we plan to examine the health-connected issues of life quality in the mirror of how elderly people evaluate their own living conditions and activities. **Aim:** Our main purpose is to highlight the fact that each element of lifestyle has a crucial role in the improvement of the life quality of this age group. When examining health-cultural behaviour, it seems to be justified to take several factors into consideration (physical activity, change of lifestyle, patterns of older age groups) that can affect or influence the lifestyle of elderly people. One of the most important issues at this age is the mental health condition. **Material and Methods:** We collected data from elderly people over 60 (M=73,89; Min:61 Max:95 SD±7,729) with the questionnaire method (N=1125) in three counties in the eastern part of Hungary. Our research contained questions in three groups: demographic block (age, sex, education, financial situation, living conditions, activities), state of health (subjective state of health, health-consciousness, mental health condition) and health conduct (physical activity, smoking, alcohol consumption). **Results:** More than half of our sample group (50,1 %) live in old people's home and a little less than half of them (49,9 %) attend institutions providing day care only; the proportion of men and women is: 1/3 - 2/3 (30,5 % are men and 69,5 % are women). In the course of the research we examined the differences between counties, institution types and sexes as well. **Conclusions:** As regards their state of health, only every tenth aged person considers himself or herself healthy (subjective state of health). The living conditions of one-third of the questioned people have significantly deteriorated after retirement, which has affected their general feelings. Not suffering from any illnesses and enjoying everyday life are the most characteristic factors of health for elderly people taking part in the research. Doing regular physical exercises is the least important component of the healthy way of life for them irrespective of their sex.

**Key words:** elderly people, quality of life, health promotion

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## **Background**

According to the data of the World Health Organization 14.39 % of the European population is over 60, which indicates that the ageing of the society is one of the greatest problems not only in Hungary but also in the European Union (Sima Á., 2005). The raise of the life prospects of the population and the increase of life expectancy at birth have led to the boost of the proportion of older people in the whole developed world. This fact also makes it important to reach old age in good physical and mental condition. Long life becomes valuable only if that means years spent in good state of health instead of illness, self-helplessness and dependency on others (Beregi E., 1999). Therefore, these days health and life quality have become especially important as people would like to live a longer and healthier life in a satisfactory wellbeing (Iván L., 2004).

The research of life quality is the central issue of several fields of sciences. In our study, we plan to examine the health-connected issues of life quality in the mirror of how elderly people evaluate their own living conditions and activities. It is the mutual interest of the individual and the society to spend the years of old age actively, working and happily in the best possible state of health. The most important task is to support the healthy and active old age. Good state of health influences life quality: the longer we remain healthy, the more opportunity we will have to save our independence and activity (Kopp M., & Skrabski Á., 2000).

From the point of view of our study it is important to define the group of people we consider elderly. The definition of age can be different in various fields. In this present research we use the classification of WHO according to which people between 60 and 74 are ageing, people between 75 and 89 are the old, while people over 90 are the very old. From the point of view of our theme we consider all the three groups as elderly people.

According to gerontology, which is a field of science dealing with the anatomy of ageing, the process of ageing is not an abnormality but a normal biological process which is a regular phase of our life. Gerontology deals with the regularities of ageing and old age and examines old people from bodily, mental and social points of view at the same time. Several changes appear in one's life in the course of ageing. For example, changes occur in the operation of one's body, in his or her social conditions and personality. Therefore, the process of ageing should be studied only in this complex approach (Iván L., 2002).

All experts studying this theme agree that doing sports and physical training may be excellent tools of slowing down the pace of ageing and

improving the quality of health because they may play significant roles in preventing the deterioration of performance and in delaying the ageing process (Jákó P., 2005; Apor P., 2005). Doing regular physical exercises is an important tool for the strengthening of physical condition and improvement of life quality even at middle and old age as well (Sato, T, Demura, S, Murase, T, & Kobayashi, Y., 2005). Successful ageing is interconnected not only with the conscious maintenance of the individual's physical activity but also with his or her mental health. It is important to avoid early ageing with "active lifestyle" that slows down ageing (Plette R, & Grónai É., 2006).

All of the above is directed to the endeavour that old people should remain active participants of the society. We should learn to motivate people to develop a behaviour and lifestyle that can contribute to achieving active ageing (Majercsik E., 2004).

Besides the above, Thurston and Green (Thurston, M, & Green, K., 2004) stress the enjoyability of physical activity since it plays a role in the improvement of individual abilities and human relations as well.

The number of Hungarian studies analysing the lifestyle and life quality of old age as well as old people's evaluation of their own state of health is rather low (Halmos T., 2002; Iván L., 2005; Kovács K., 2006).

Few experts have studied the life conditions and health-conscious behaviour of elderly people in the mirror of physical activity. The purpose of our research is the evaluation of the answers of the questioned people regarding their life quality, state of health, social and living conditions and health behaviour.

### **Material and methods**

In the course of our research we applied the layered sample-taking method in the north-eastern part of Hungary (Babbie, E., 2001). We carried out our research in the two basic forms of the social service system: clubs that provide only day supply for elderly people and old people's homes. Our sample group consists of 1125 elderly people (over 60) from the above two types of social service.

In our research we applied data collection with the help of a questionnaire. The questionnaire contained 25 open and closed questions. The social pedagogues students of the Faculty of Child and Adult Education of the University of Debrecen also took part in the completion of the questionnaire. After proper preliminary training, the students visited the examined people and collected 10 questionnaires from elderly people

voluntarily answering the questions in each social institution. The collection and handling of the questionnaires were carried out in compliance with the principles of anonymity in spite of the fact that in many cases active assistance was needed in the completion of the questionnaires.

Our research contained questions in three groups: demographic block (age, sex, education, financial situation, living conditions, activities), state of health (subjective state of health, health-consciousness, mental health condition) and health conduct (physical activity, smoking, alcohol consumption).

In the course of analysing the data we applied descriptive statistics. We compared and characterised our results by breaking down the data into counties, sexes and types of institutions. We used the statistical programme SPSS 14.0 FOR Windows for our calculations.

Questions not answered change the ratio of answers and, therefore, we indicated values under the ratio of 97 %.

## **Results**

50,1 % of the examined people live in full board common lodging houses, 49,9 % of them visit clubs for aged people which give only day supply; 30,5 % are men, 69,5 % are women, the average age is 73,89 (min. 61, max. 95 year,  $SD \pm 7,729$ ). The people's average age of life in the full board common lodging houses is 76,26 (min. 61, max. 95,  $SD: \pm 7,573$ ), in the clubs for aged people it is 71,50 (min. 61, max. 95,  $SD: \pm 7,131$ ); the proportion of sexes in the full board common lodging houses: 28 % are men, 72 % are women, in the clubs for aged people the proportion is the following: 33 % are men and 67 % are women. 47 % of the sample live in cities, 53 % live in villages; 6,5 % of them have a university or college degree, 16,2 % of them have a secondary school graduation, 15,8 % of them have vocational training, 38,5 % of them have primary school graduation and 23 % of them have lower qualifications than eight years at primary school. 49,6 % of them are self-supporting, respectively live alone, 27 % of them live with a partner and live in a full family, 12,2 % live with other relatives together (relative, child, sister or brother), 11,1 % of them entered into a contract ensuring support for life (the reply ratio is 88,6 %). There is a significant difference between the living conditions of the two sexes and the different institution types. The proportion of women living alone is higher than that of men ( $p=0,001$ ), the proportion of elderly people living with a partner is significantly higher among aged people visiting clubs ( $p=0,000$ )

and the proportion of elderly people entering into a contract ensuring support for life is higher in old people's homes ( $p=0,000$ ).

Considering the judgement of health condition from their own point of views (subjective health) 11,1 % of the elderly people consider themselves healthy. 38,8 % of them fight against smaller diseases (for example, backache, headache, arthralgia and limb pains), 43,4 % of them undergo medical treatments, 6,7 % of them have different operations. Considering the judgement of health condition there is no significant difference ( $p=0,152$ ) between the values of the two types of institutions. Considering the sexes, however, there is a significant difference in the judgement of their own state of health. Men consider themselves healthier than women while more women suffer from smaller diseases and receive regular medical treatments. ( $\text{Chi}^2=5,289$   $p=0,031$ ).

63,3 % of the sample judge their general state of health in a positive way, while 36,7 % of them feel out of sorts. Women consider their general feelings significantly better than men ( $p=0,000$ ), while there is no considerable difference between the two types of institutions in this regard ( $p=0,181$ ).

General feelings are not independent of the living conditions of aged people. 26,6 % of the questioned people have had no change in their living conditions since their retirement, 41,1 % of them admit that they have declined to a small degree, according to 28,3 % they have declined to a large degree and in the case of 4 % they are in danger. There is no significant difference between the values of the two sexes ( $\text{Chi}^2=1,870$   $p=0,600$ ) and those of the two types of institutions ( $\text{Chi}^2=6,046$ ,  $p=0,109$ ). In close connection with general feelings we touched on the self-judgement of aged people's mood. 50,5 % of the examined people are in a balanced state of mind and happy, while 32,8 % are low-spirited and sad. The remaining 16,7 % consider themselves worried. Men are more balanced than women and women are sadder and more worried than men. ( $p=0,007$ ). People living in old people's home are sadder ( $p=0,002$ ) while elderly people visiting day clubs are more worried ( $p=0,002$ ). Considering future and life expectations, nearly half of the examined people (44,8 %) judge future to be uncertain and only 55,2 % feel safe. Significant difference can be found between the two types of institutions but such difference cannot be shown between the sexes. (0,318). People living in old people's home feel significantly safer ( $p=0,000$ ) than those visiting aged people's club.

Table 1 shows the distribution of elderly people's daily activities. After analysing the results, it can be summed up that in the order of

frequency of the various daily activities watching TV is in the very first place (75,4 %) followed by taking part in pensioners' programmes (50,6 %), reading (49 %), walking (44,4 %) and doing housework (44,2 %). Physical exercises and sports can be found only in the ninth place in the order of frequency (25,7 %). Cultural programmes are less significant (15,5 %) and the less frequent activities are looking after and caring for children (grand-children, great grand-children) (11,9 %).

**Table 1.**

Statistical characteristics of daily activities

Activity	Frequency	%
Watching TV	811	75,4
Taking part in pensioners' programmes	526	50,6
Reading	503	49,0
Walking	450	44,4
Housework	436	44,2
Medical treatment	316	32,5
Visiting families and relatives	308	30,7
Shopping	280	29,4
Physical activities, sports	249	25,7
Visiting friends	240	24,0
Free-time activities with neighbours	201	20,7
Going on trips	194	20,3
Cultural programmes	151	15,5
Baby-sitting	114	11,9

After doing the calculations in consideration of sexes, we found differences in the cases of housework ( $p=0,000$ ), reading ( $p=0,000$ ), cultural programmes ( $p=0,005$ ), going on trips ( $p=0,005$ ), shopping ( $p=0,017$ ) and caring for and looking after children ( $p=0,000$ ). Among women these activities are much more frequent than among men. As regards differences between the two types of institutions, there are differences in six cases. Reading ( $p=0,000$ ), free-time activities with neighbours ( $p=0,014$ ), walking ( $p=0,000$ ), watching TV ( $p=0,001$ ) and taking part in cultural programmes ( $p=0,000$ ) are more frequent among people living in old people's home while shopping ( $p=0,000$ ) is a significantly more frequent activity among aged people visiting day clubs.

We examined what health means for aged people and how they describe health. We examined the definition of health in the frame of six characteristic features. The examined people had to mark the statements provided. We carried out the analysis on the basis of the frequency and proportion of markings. The results can be found in Table 2.

**Table 2.**

Statistical ratios of the characteristics of good state of health

Characteristics of good state of health	Frequency	%
Not suffering from any illnesses	699	65,4
Enjoying everyday life	389	38,9
Being happy	255	26,3
Avoiding all harmful articles of pleasure	209	21,6
Not taking any medicines almost at all	208	21,4
Doing regular physical exercises	138	14,7

In the order of frequency the most important factor is not suffering from any illnesses (65,4 %) followed by enjoying everyday life (38,9 %) and happiness (26,3 %). These three factors are followed by avoiding harmful articles of pleasure (21,6 %) and not taking medicines (21,4 %). On the basis of the ranking of the examined group of people the least important characteristic feature of health is doing regular physical exercises (14,7 %). When examining the characteristic features of health we did not find any differences in consideration of sexes at the level of  $p=0,000$  significance. As regards the two types of institutions, the proportion of people living in old people's home marking happiness, enjoying everyday life, regular physical activities and avoiding harmful articles of pleasure is higher (at the level of  $p=0,000$  significance) than those visiting aged people's clubs.

We examined health-conscious behaviour by analysing the frequency of harmful habits (smoking and alcohol consumption) and doing physical exercises and sports. 84 % of the sample do not smoke, while 12,8 % of them smoke. The proportion of people smoking occasionally is 3,1 %. As regards smoking habits there is a significant difference between sexes. The proportion of smoking people is significantly higher among men than among women. ( $p=0,000$ ). There is no such difference between the two types of institutions. Concerning alcohol consumption, almost one-third (26,3 %) of the sample drink alcohol occasionally, 73,8 % of them do not drink alcohol at all, while the proportion of old people drinking alcohol regularly is 7,0 %. There is a spectacular difference between sexes in consideration of drinking alcohol regularly and occasionally ( $p=0,000$ ), furthermore, there are

more aged people drinking alcohol regularly or occasionally among those visiting day clubs of old people ( $p=0,000$ ). Regarding physical exercises and sports, 56,5 % of the sample do not do any sports at all, 26,5 % of them do sports occasionally and only 16,9 % of them do physical exercises weekly. As regards the differences between institution types and sexes, the proportion of women ( $p=0,020$ ) and people living in old people's home ( $p=0,000$ ) doing sports regularly and occasionally are significantly higher. We were also curious about the health-preserving activities of elderly people. The frequency and proportion of the results received can be found in Table 3.

**Table 3.**

Statistical ratios of health-preserving activities

Health-preserving activities	Frequency	%
I do not have any harmful habits	534	52,2
I regularly eat fruit and vegetables.	513	49,6
I keep the orders and doctor's advice.	474	48,3
I have more rest.	448	43,5
I visit the doctor in time if I have any problems.	427	42,0
I eat healthy food.	385	37,9
I do regular physical exercises regularly.	255	25,7
I do not do anything.	62	6,7

On the basis of the above results, it can be said that avoiding harmful habits are in the first place in the order of health-preserving activities (52,2 %). It is followed by eating vitamins (fruit, vegetables) regularly (49,6 %) while keeping the doctor's advice falls only a little behind (48,3). Surprisingly, doing regular physical exercises is the last but one activity on the list in spite of its good effects on the general state of health of the individual. (25,7 %) As regards differences between sexes and institution types at the  $p=0,000$  level of significance, we found that women and aged people living in old people's home eat more fruit and vegetables than the other groups. Avoiding harmful habits is also more frequent among women, while having more rest and keeping the doctor's advice are more characteristic among people living in old people's home. When examining the effects of the questions of the questionnaire on the lifestyle of the examined people we specified three possible answers. 40,6 % of the examined people said that they would think over whether they led a healthy way of life and they would change their lifestyle, 46,3 % said they would think the issue over but they would not change their lifestyle and 13,1 % of them are not interested in this

issue. Regarding the examined institution types we did not find any significant differences in the answers, but as regards sexes, the proportion of women was higher in all the three categories. ( $p=0,002$ ).

### **Conclusion**

The aim of our research was to examine the lifestyle, life quality and health-conscious behaviour of elderly people. On the basis of the analysed literature published in this theme, it can be stated that the number of Hungarian studies analysing the lifestyle and life quality of old age as well as old people's evaluation of their own health condition is rather low (Majercsik E., 2008; Iván L., 2005; Kovács K., 2006; Olvasztóné B Zs, Huszár A, & Konczos Cs., 2007)

We intended to provide information about elderly people by analysing this field of life. We carried out our research in counties of Hungary where the proportion of aged people is among the highest ones at country level. When analysing the results, we examined differences between sexes and different types of institutions providing service for elderly people. As regards their state of health, only every tenth aged person considers himself or herself healthy (subjective state of health). Almost half of the sample group undergoes regular medical treatments both in old people's homes and among aged people visiting day clubs. The proportion of women undergoing regular medical treatments is significantly higher than that of men. Our study underlines those previous findings according to which we consider it natural that the deterioration of people's state of health is parallel with the process of ageing and the presence of medical problems restricting daily activities is more frequent among women (Monostori J., 2009).

Men are more balanced than women and women are sadder and more worried than men. ( $p= 0,007$ ). People living in old people's home are sadder ( $p=0,002$ ), while elderly people visiting day clubs are more worried ( $p=0,002$ ). On the basis of the results received it is important to highlight that, similarly to the findings of other Hungarian researches, almost half of the questioned people feel their future uncertain when we ask them about their life prospects (Tróznai T., & Kullmann L., 2007). As regards their future, people living in old people's home feel much safer than those visiting aged people's day clubs. ( $p=0,000$ ).

Almost one-third of the examined people consider their general feelings bad. There is no significant difference between the two institution types ( $p=0,181$ ), however, women judge their own general feelings to be

significantly better than men ( $p=0,000$ ). The connection between general feelings and living conditions is proved by scientific researches and is supported by our findings as well. The living conditions of one-third of the questioned people have significantly deteriorated after retirement, which has affected their general feelings (Dobossy I, S.Molnár E, & Virágh E., 2003).

In the order of frequency of the various daily activities watching TV is in the very first place followed by taking part in pensioners' programmes. Taking part in medical treatments is also considerable in the order (sixth). Doing physical activities is only the twelfth most frequent daily activity. Housework, reading, cultural programmes, going on trips, shopping and looking after children are more frequent activities among women than among men. As regards the examined institution types we found differences in the case of six activities. Reading, free-time activities with neighbours, walking, watching TV and taking part in cultural programmes are more frequent among people living in old people's homes than among aged people visiting day clubs. However, shopping is more frequent among people visiting clubs.

Not suffering from any illnesses and enjoying everyday life are the most characteristic factors of health for elderly people taking part in the research. Doing regular physical exercises is the least important component of the healthy way of life for them irrespective of their sex. As regards harmful habits, the proportion of smoking and alcohol consumption is significantly higher among men than among women ( $p=0,000$ ). We did not find any such differences between institution types. The proportion of people drinking alcohol occasionally or regularly is higher among people visiting day clubs ( $p=0,000$ ). Considering health-preserving activities, avoiding harmful habits is the first on the list, which is closely followed by eating fruit and vegetables and then by keeping the doctor's advice. Doing regular physical exercises is the last frequent activity done in the interest of preserving their health. As regards differences between sexes and institution types at the  $p=0,000$  level of significance, we found that women and aged people living in old people's home eat more fruit and vegetables than the other groups. Avoiding harmful habits is more frequent among women, while the proportion of having more rest and keeping the doctor's advice are higher among people living in old people's home.

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## THE QUALITY OF LIFE AND SPORT. A THEORETICAL APPROACH

NEGRU NICOLAIE IOAN

**ABSTRACT.** This paper is conceived as a theoretical approach on the concept of quality of life on the whole, while, in particular, the purpose is that of highlighting the relation between the quality of life and the practice of sports. The short-term function of this article is that of constituting a chapter of major importance in an extended work which has the purpose of pointing out the lifestyle of young people (laying the emphasis on activities performed in their spare time), especially in their relationship with sports and sports activities.

**Key words:** quality of life, lifestyle, social indicators, sport activities, well-being

**REZUMAT.** *Calitatea vieții și a sportului. O abordare teoretică.* Lucrarea de față se dorește a fi o abordare teoretică, a conceptului de calitate a vieții, în general, iar în particular se încearcă evidențierea unei relații între calitatea vieții și activitatea sportivă. În perspectiva imediată, articolul va constitui un capitol însemnat al unei lucrări ce are ca scop evidențierea stilului de viață a tinerilor (cu accent pe modul de petrecere a timpului liber), mai ales în relația acestora cu sportul și activitățile fizice cu tentă sportivă.

**Cuvinte cheie:** calitatea vieții, lifestyle, indicatorii sociali, activități sportive, starea de bine

Beginning with the 60s-70s, the Western societies manifested a growing interest in sport phenomena and physical activities of all kinds, including those from the group of “loisir”.

Most of the public institutions, especially those from developed countries, having as their main activity the development of programmes of public politics, are strongly preoccupied with the dynamics of the “well-being”, respectively of the quality of life amongst the population. Studies concerning the quality of life, according to Wallace and Abbot (2007), are an important concern to the politics of the European Union, focusing at the same time on the understanding of the concept of “well-being” (which is a essential component of the quality of life).

It is a well known fact that the relation between sports and physical and mental health (central components of life quality) is a major concern of medicine, physiology, sport sciences and psychology. The link between sport and health protrudes in the field of sociological research as public health, on a statistic scale, which involves investigations, questionnaires and interviews. This kind of research has shown associations, significantly positive, between the practice of sports and an improved physical and mental health on an individual level.

### **I. Determining the concept of quality of life**

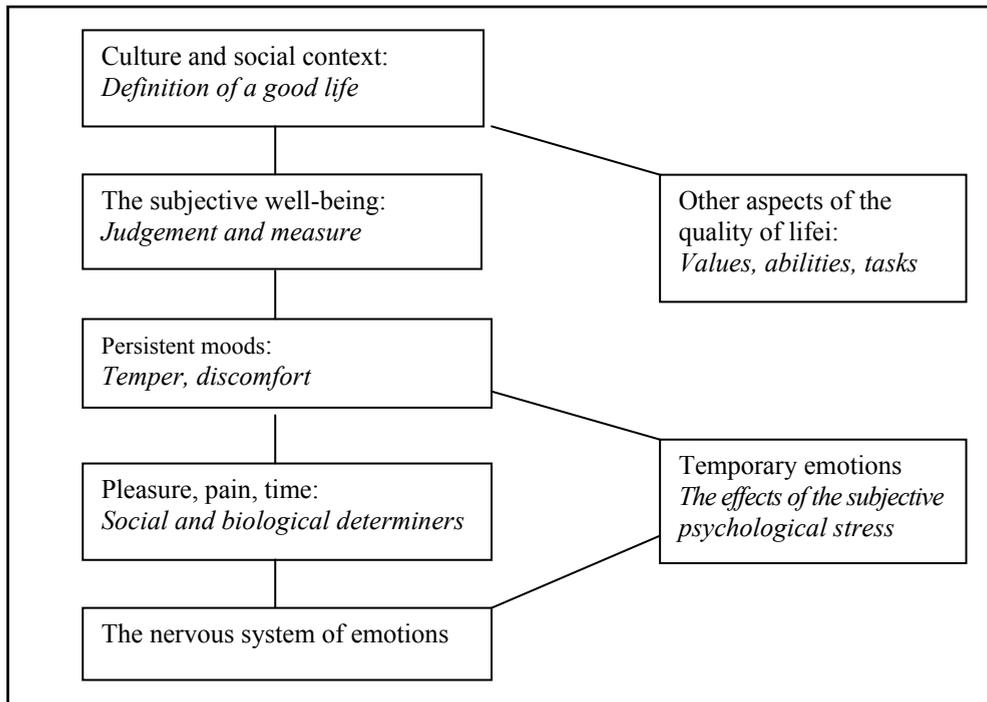
The articles on the quality of life, encountered mostly in academic literature, are mainly focused on the field of health, making references to the services of medical assistance, medicine and promotion of health. Although used on a wide scale, the concept remains vague and hard to define, relatively inconsistent. At the same time, the area of interest on the subject is greatly extended: the quality of life is, by its nature and its content, an interdisciplinary concept that acquired a special importance in the research activity of several fields, such as: psychology, marketing, sociology, health etc.

The definition allotted to the term, according to Galloway (2005), and the ways in which it may be employed, depend on the objectives imposed for research and on the perspective of interpretation/analysis. Authors from various domains of research are approaching the concept from their personal disciplinary interests. The quality of life of an individual “relies on exterior (objective) factors of his life and on subjective perspectives which the individual assigns to these factors” (Dissart and Deller, 2000, p. 3).

Diener (1994) said about the *quality of life* that “it reflects the harmony between purposes and desires” (according to Berger and Motl, 2001, p. 636). *The quality of life*, according to Cambell and partners (1976), “highlights the subjective experience or the perceptions and needs of the spirit, in relation to the objective life conditions” (Berger and Motl, 2001, p. 636). Keith (2001) is in favour of the idea that the quality of life is “a context systematically oriented towards the improvement of the individual’s life” (Galloway, 2005, p. 12). *The quality of life* is “an integrated part of the social theory which describes the individual welfare with the help of certain objective indicators, on the one hand, such as income, living conditions, work place, and with the help of subjective indicators, on the other hand, representing the degree of individual satisfaction in relation to different aspects of the personal life.” (Wallace and Abbot, 2007, p. 109).

The World Health Organization, in an intercultural programme focused on the *quality of life*, defines the concept as “*the individual’s perceptions of their position in life in the context of the culture and value system where they live, and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept, incorporating in a complex way a person’s physical health, psychological state, level of independence, social relationships, personal beliefs and relationship to salient features of the environment*”. (WHOQOL Group, 1995, p. 1404).

*The quality of life*, in the view of Kahneman, Diener and Schwartz (1999) is influenced by a series of factors (Berger and Motl, 2001, p. 637):



Important factors in the quality of life

Source: Kahneman, Diener and Schwarz, 1999, according to Berger and Motl, 2001, p. 637

### **I.I Social indicators**

Measuring the conditions of life of various families has been a challenge for sociologists from the very beginning of sociology as a science. The social and economic status, the welfare, could only be determined, largely,

based on the conditions of life of those involved. As time went by, some aspects of those life conditions became social indicators. Johnson (2002) defines *social indicators* as being “model elements of social systems”(Ferries, 2004, p. 38). According to Ferries (2004), social indicators are the basis of the concept of *quality of life*, acquiring a special attention, both objectively and subjectively. The appearance of these social indicators and, later on, their use in research and in the politics of public development contributed immensely to the development of the concept of *quality of life*. Social indicators are used to point out changes in time, to monitor social systems, to evaluate interventions and to try to anticipate the future. Social indicators are not limited to the existence of a statistical series, but they also serve in national social reports which analyse the tendencies and relations of the social forces.

The efforts made in the beginning to define and measure the concept of *quality of life* were based on an approach centred on social, economic or objective indicators. Haas (1999) believes that those studies that focus on objective social indicators (Galloway, 2005) offer only limited information about the individual’s subjectivity in relation to the *quality of life*. Therefore, it became an imposition that the studies based on economic and social indicators would comprise subjective, individual answers on the topic of living conditions.

Specialised literature divides the social indicators in two groups: subjective and objective. The social indicators “that refer to personal feelings, attitudes, preferences, opinions, judgements or beliefs are called *subjective social indicators*. Those that refer to things which are easily noticeable and, at the same time, measurable are called *objective social indicators*”. (Michalos, 2002, p. 30). (Table 1)

**Table 1.**

Objective and subjective social indicators

Objective social indicators – <i>social information, independent from individual evaluation</i>	Subjective social indicators – <i>individual evaluation of the social conditions</i>
<ul style="list-style-type: none"> <li>- Life expectancy</li> <li>- Criminality rate</li> <li>- Unemployment rate</li> <li>- Gross domestic product                             <ul style="list-style-type: none"> <li>- Poverty rate</li> </ul> </li> <li>- Engaging in school programmes                             <ul style="list-style-type: none"> <li>- Work hours per week</li> <li>- Child mortality rate</li> <li>- Suicide rate</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- Sense of community</li> <li>- Material possessions</li> <li>- Sense of security                             <ul style="list-style-type: none"> <li>- Happiness</li> </ul> </li> <li>- Life satisfaction per whole                             <ul style="list-style-type: none"> <li>- Family relations</li> </ul> </li> <li>- Workplace satisfaction                             <ul style="list-style-type: none"> <li>- Sex life</li> </ul> </li> <li>- Perception of justice</li> <li>- Identification of social class                             <ul style="list-style-type: none"> <li>- Hobbies and clubs</li> </ul> </li> </ul>

Source: Cummins, 1996b; Haggerty and partners; 2001; Noll, 2001 (Rapley, 2003, p. 11)

*The indicators of the quality of life*, according to Szallai (1980), are indicators used to define the well being of certain groups of people, based on objective factors and subjective evaluations of life. (Dissart and Deller, 2000).

## 1.2 The fields of the quality of life

In specialised literature, we come across various fields concerning the quality of life, which, gathered as a whole, may describe the concept of quality of life. This phenomenon has grown immensely in importance, fact proven by the founding of centres and institutions with sole object of activity the study of quality of life. Such a centre is *EurLIFE*, which contains an interactive database, coming from various investigations organised by certain foundations. The database encases information referring to objective living conditions and to the subjective well-being of European citizens. According to *EurLIFE*, the quality of life comprises a series of fields (Table 2), each of these having a number of indicators.

**Table 2.**

The fields of life quality

Health	Property
Workplace	Environment
Income	Transportation
Education	Safety
Family	Leisure time activities
Social participation	Satisfaction of life

Source: [www.eurofound.europa.eu/areas/qualityoflife/eurlife/](http://www.eurofound.europa.eu/areas/qualityoflife/eurlife/)

Since the main purpose of the paper concerns the presentation of the relation between sports activities and ways of spending leisure time, a brief introduction of the indicators established by *EurLIFE* felt imperative. (Table 3)

**Table 3.**

Indicators of leisure time activities

Field	Indicators
	Time spent for activities with the family
	Time spent for sports activities
	Time spent for social activities
	Time spent for cultural activities
	Time spent for relaxation
	Time spent for volunteer or political activities

Field	Indicators
Leisure time activities	Watching TV
	Young people doing sports
	Young people using multimedia means of information
	Young people doing outdoors activities
	Young people doing support activities
	Reading
	Satisfaction regarding the amount of leisure time
	Importance of leisure time activities
	Not enough time for hobbies

Source: [www.eurofound.europa.eu/areas/qualityoflife/eurlife/](http://www.eurofound.europa.eu/areas/qualityoflife/eurlife/)

### **I.3 The well-being: life satisfaction and happiness**

The terms *quality of life* and *well-being* have both an objective and a subjective character, the distinction between the two being made by the social inequalities and economic factors. The understanding of the subjective well-being, according to Diener and Suh (Galloway, 2005) requires knowledge on the way in which external, objective conditions influence individuals in the process of evaluation of their own lives.

*The subjective well-being*, centred on the individual, presents positive, measurable aspects, including an evaluation per whole of the individual's life. In Ratliff's words (2000), the well-being is "more than the absence of negative aspects" (according to Camfield and Skevington, 2008, p. 765). It is "a term generally used to describe the evaluation that the individuals make to their own lives, to the events they go through, to their own body and mind, to the conditions in which they live" (Diener, 2006, p. 400).

The well-being differs from person to person, from one society to another, depending on the social climate, environment and individual perceptions. Therefore, if in underdeveloped countries the well-being is associated with financial prosperity, the same doesn't hold good for developed countries. In poor countries, according to Wallace and Abbot (2007), covering the basic needs is the most important factor for the life satisfaction and the existence of a minimal income is essential for the well-being. As society evolves, a series of other factors become meaningful in this sense. In the case of satisfaction towards the workplace, as mentioned by Wallace and Abbot (2007), if in the beginning, the individual seeks a workplace that could ensure him a good income, as time goes by, he finds himself oriented towards finding an interesting and challenging workplace. The applicant is looking for intrinsic satisfaction or the possibility of a career that offers him perspectives. What appears to be a paradox is the fact

that, even though the wages in developed countries have been almost doubled, a large majority of the population remains unhappy. Starting from these premises, the conclusion is that a study on the well-being of a society should also consider factors such as the individual happiness and the environment.

*The life satisfaction* is a rather poorly defined concept in specialised literature, being considered a subordinate component of the *subjective well-being* and implicitly of the quality of life. Nowadays, the subjective perspectives concerning the quality of life have replaced most of the objective ones. According to the World Health Organisation, *the life satisfaction constitutes the centre of the quality of life*. In specialised studies, which focus on the life satisfaction, the individuals are usually questioned about their personal satisfaction, happiness, in relation to the current life conditions. The individual, according to Argyle (Wallace and Abbot, 2007) defines the well-being in terms of general life satisfaction.

*The life satisfaction* is conditioned both by the cultural norms of the society and by the individuals' capacity to adapt to new circumstances. Happiness, as shown by Ratzlaff (2000), is synonymous to the subjective well-being, and in some countries the term is interchangeable with that of *quality of life*. *Happiness* is perceived as an indicator of the emotional state or mood. *Happiness*, according to Diener (2006), "can be defined as a positive affect, but also a general positive mood, a global evaluation of the life satisfaction" (Camfield and Skevington, 2008, p. 768).

## II. The quality of life and sport

According to Galloway (2005), what appears to be rather surprising, analysing the literature on the quality of life, is the lack of attempts to define the relation between the *quality of life* and *sport activities*. In most of the studies, the researchers start from the idea that the term and the mutual conditionings are very well known, or better yet, self understood.

Nowadays, the literature discussing the relation between the quality of life and sports is quite restricted, most of studies coming from the field of health science, sports psychology or sociology. Reviewing the specialised literature, according to Galloway (2005), a common position is observed, that of the specialists agreeing about the positive influence of sports activities on mental and physical health. Physical exercises influence directly the health of the individual, the components of the quality of life and indirectly, the primary and secondary social components.

Physical exercises, according to Berger and Motl (2001), influence indirectly the quality of life, not just by preventing, but also by cumulating certain effects on the individual's well-being, such as the increase of vitality and of the personal satisfaction.

That the individual is the bio-psycho-social unit is a well-known fact, numerous organisations and institutions creating a series of research programmes that allow the individual to evolve in all three dimensions. Physical exercises, according to Berger and Motl (2001), influence directly health and the quality of life and indirectly, they influence social components.

*Sport* is associated with improving the mood, increasing the self-esteem, the joy, decreasing the physical and mental stress. In our everyday life, our efficacy in fulfilling certain duties depends largely on our capacity of managing stress. Stress and its management influence directly the quality of life. Stress, as proven by Lazarus and Folkman (1986), is "the relation with the surrounding environment which the individual appreciates as being significant to his personal well-being" (Berger and Motl, 2000, p. 641).

Anxiety is considered to be the reaction of the individual to the situations which can endanger his personal well-being. Along time, a series of techniques were created with the purpose of diminishing negative effects of stress, techniques that proved to be successful in managing stress. Among these techniques, the physical exercises are placed on a high rank. Physical exercises and sport, according to Berger and Motl (2001), are methods that can help the individual increase or decrease the level of stress and thus, support his importance in establishing a personal level of stress.

## **II.1 The relation between the subjective well-being and physical activity**

Between the *well-being* and *physical activity*, according to Berger and Motl (2001), there exists a complex relation, affected by the variety of forms of physical activity. Exercises and sports activities can be individual or in groups, with a competitive purpose or a recreational one, with aerobic or anaerobic character. An imposition to differentiate between individuals, from the point of view of age, physical resistance and level of development of psychometric aptitudes is necessary. The relation between the well-being and the physical activity is a relation of association rather than one based on causality. Most of those who practice physical activities claim to feel better after practising, but referring to what causes the well-being one can only make suppositions. The well-being, as pointed out by Berger (2001), can be

induced by physical exercises, but we have to consider the fact that the individual is free and for a certain time, he is in nature or interacting with his friends. Starting from the variety of physical exercises, it must be mentioned that some of them contribute more or less to the improving of the individual's mood. Aerobics, cycling, yoga, jogging, climbing, swimming, weight-lifting contribute to the increase of well-being. Short-lasting shifts in mood, according to Raglin and Morgan (1987), last between 2 and 4 hours after the physical activity is over (Berger and Motl, 2001, p. 640). Changes in mood that take place immediately after the physical effort can influence in a beneficial way the relationships with friends and co-workers, the choice of future projects or even work efficiency.

## **II.2 The quality of life and sports in elder people**

As we grow older, we are more exposed to diseases, functional limits and disabilities, all of these having a negative effect on the emotional and mental *well-being*, diminishing greatly the quality of life. Specialised literature highlights the necessity of engaging in a very active lifestyle in order to achieve and maintain the individual's mental and physical health.

In developed countries, the increase in numbers of older people has mobilised the governing institutions in creating and implementing certain programmes to ensure independence, to support social value, mental and physical well-being for older people. For example, in the US, and recently in Romania, there exists a series of public recommendations concerning health which advise people to actively participate in moderate physical activities, for a span of at least 30 minutes, for five times a week. The target of these public programmes, according to McAuley and Morris (2007), is not only to enlarge the lifespan, but to improve the quality of life. Physical activity influences important aspects of mental and physical functions, such as cognitive functions (attention or memory processes), physical functions (functional performance) and social functions (self-esteem, personal effectiveness).

The studies, based on the relation between physical activity and the quality of life of older people, highlight that as the individual grows old the cognitive processes are diminished significantly. The diminishing of cognitive processes is a risk factor associated with a series of diseases, such as Alzheimer's.

The investigations made in the last decades mark out that the individuals in a good physical shape (that work out on a regular basis) are capable of reacting more promptly and more precisely to different

perceptive, cognitive and dynamic tasks, as opposed to those that did not work out at all (overweight, out of shape). Kramer and Colcomb (according to McAuley and Morris, 2007) underline that the executing process, which comprises planning and memorising, is directly influenced by the fitness level of the individual.

In order to point out as clear as possible the relation between the physical activity and the cognitive processes, in a study made by Colcomb and partners (2004), magnetic resonance was used, which highlighted that, as the individual grows older, irrespective of the fitness level of the individual, the cortical tissue decreases. However, with the persons that have a high level of fitness, the loss of cortical tissue was significantly smaller than that of the individuals not engaged in any sports activities.

Maintaining the cognitive functions at a high level, as we grow old, directly influences the satisfaction and quality of life. By diminishing the physical abilities and health, in time, induces the risk of loss of independence. The loss or reduction of movement capacity has a negative effect on the quality of life, leading to the institutionalisation of most inactive senior people. When we talk about functional limits we are referring to difficulties in moving, lifting, transporting certain weights, all of these increasing because of sedentary behaviours. Rejensky and partners (according to McAuley and Morris, 2007), point out that physical activity may have a protective role in decreasing the level of instalment of functional limits. The regular practice of physical activities, even that of walking, doesn't only contribute to the reduction of the process of limiting the physical capacities, but also positively influences the speed of moving, the easiness of climbing steps, the transportation of certain loads, making the elder individuals feel independent, having direct implications on self-esteem.

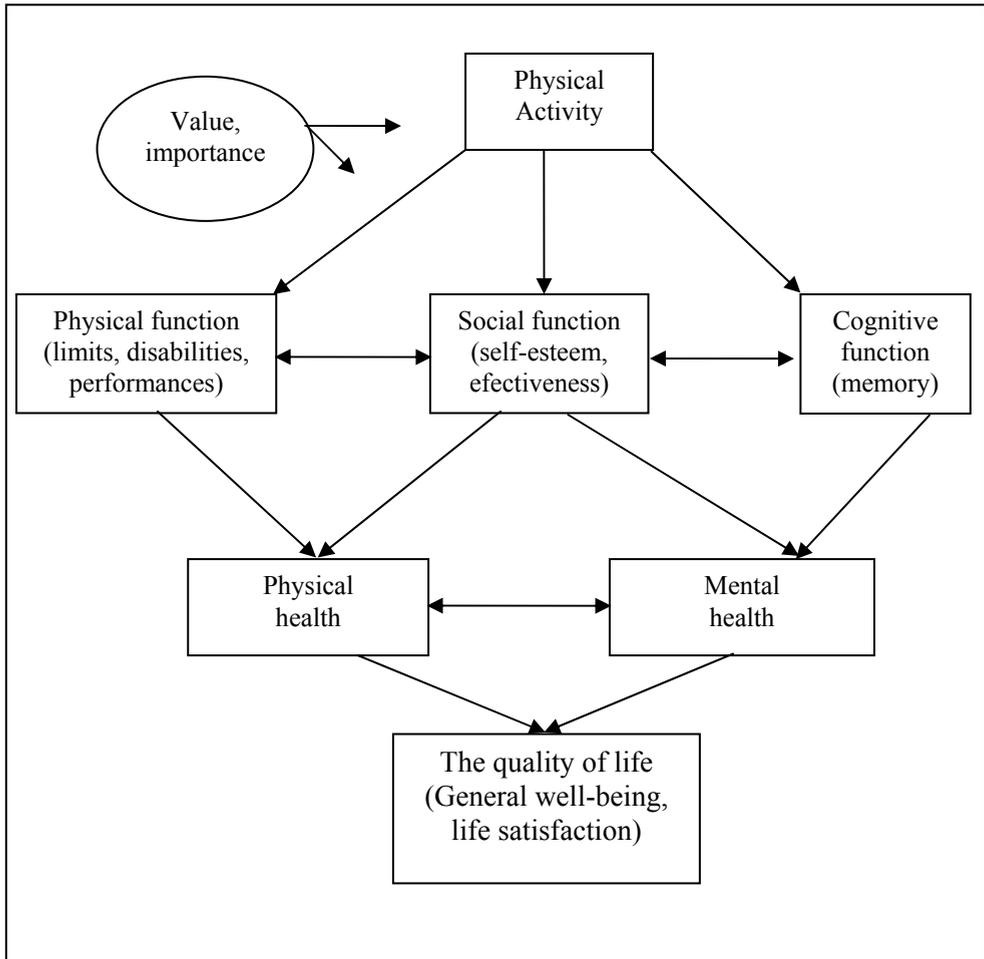
Physical activity has been and continues to be positively associated with self-esteem, self-effectiveness and emotional states. At the end of a physical exercise, which could be a sports game, a walk or a jog through nature, an improvement of the emotional state can be noticed.

*Self-effectiveness*, as shown by Bandura (McAuley and Morris, 2007), is an essential part of the social cognitive theory, being applied on a large scale in the studies connected with physical and mental activity. Between physical activity and self-effectiveness there exists a relation of interdependence.

*Self-esteem*, another component of the social cognitive theory, is influenced by the physical activity. An individual doing certain sports is often confronted with difficult situations that require making decisions in a

short time, in accordance with the situation. The fact that he trains regularly contributes to the improvement of the parameters of physical functions and, implicitly, to the gain of a positive self-image, with an undeniable role in the increase of self-esteem.

Regarding *the emotional state*, an improvement of affective indicators is noticeable in those that exercise regularly. As claimed in the previous chapters, after exercising, the individuals feel better than before doing any effort. Certainly, this well-being is valid for the emotional states as well.



**Picture 3.** The relation between physical activity and the quality of life

Source: McAuley and Morris, 2007, p. 391

In conclusion, the importance of physical activity in the mental and physical health of the individual is undeniable. It appears that our general health is essential for our life satisfaction as we grow old. As a sum up of the relation between physical activity and the quality of life, McAuley and Morris (2007) present a conceptual model in picture 3 (see above).

### **III. The lifestyle as a concept**

The concept of *lifestyle*, according to Beaulieu (2004), is used to describe three main directions of study: the sociology of social classes and of consumers, the sociology of health and the sociology of recreational activities and leisure activities.

The concept of lifestyle is a challenge for the notion of class, underlining the fact that the social hierarchy and the class division can be based on the social position as much as it can be based on economic categories of classes. In sociological thinking, according to Tomlinson and partners (2005), lifestyle has become a conceptual point of orientation for social and cultural forms of life, in which consumerism has become the essential source of social identity. The identity and social-economic status of individuals can be determined starting from the activity of consumerism, activity that points out the characteristics of lifestyle.

Those living in modern societies use the notion of lifestyle to describe themselves in relation to the others.

The concept of lifestyle is defined as “something constant, situated within the individual, something behind our actions, that determines them; it is something related to the way in which we spend money and time” (Comsa, 2006, p. 22).

B. Reimer claims about lifestyle that it is a specific pattern of daily activities that characterise an individual. The lasting individual actions of the subject are in fact his own lifestyle. The actions of the individual are permanently influenced by the social structure, by the social position and only towards the end by the individual himself. The decisions of the individual have been and will be influenced by the restrictions imposed by the surrounding environment.

*Lifestyle* “refers to individuals, to the way in which they run their daily lives, in the context of society structures, thus referring to the choices the individuals make in order to create an identity that is simultaneously personal and integrated in a group” (Comsa, 2006, p. 125).

### III.1 Lifestyle and sports

When talking about lifestyle in relation to sport, one must refer to: body image, personal choices, means and methods of control which one can apply to his personal life. When talking about consumerism, it is an error to refer strictly to the consuming of food or the acquisition of material goods. *Consumerism* refers to everything that people do when they don't act towards survival. The culture of consumerism and the economy of free time take a high place in modern societies, most of the individuals wishing to get inspiration from the lifestyle of young people.

Lifestyle is used as a wider concept, encasing various aspects of identity and sports. *Identity* is associated with models of consumerism, taste and distinction. It can be underlined in the way of dressing, in the music one listens to, in the public behaviour.

In contemporary societies, adopting a sportive lifestyle means organising daily activities, being inspired by the basic principles of sport. Sport, according to Tomlinson and partners (2005), defines who an individual is, offers the image of a person with multiple abilities and presents the pertaining to a group of young people.

Later on, another meaning of the term lifestyle was admitted, namely that of elite or leader style with innovative features. Nowadays, in the field of sports, the efforts are oriented towards creating a strong connection between elites and the phenomenon of innovation. The attempts of creating new movements, new equipments and sports are relentless, having the purpose of satisfying the interest of elites, which in modern society are oriented towards extreme experiences, to which common individuals don't have access.

By making an analogy with the consumer's lifestyle, in the field of sport the individual is confronted with making choices, ranging from the structures and sport institutions, the social position, to personal characteristics. Sportive lifestyle divides the individuals into three groups:

- those taking part in general activities
- those taking part in events
- those taking part in specific activities of tourism – adventure

General activities, different events and adventure tourism can be seen as extreme sports. Extreme sports, according to Tomlinson and partners (2005), much appreciated by superior social classes, differ from classical sports in the following: spaces of developing, emotional adrenaline-induced feelings, breaking rules, the existence of danger and risk.

#### **IV. Critical aspects concerning the conceptualisation of life quality in the contemporary world**

The concept of quality of life, according to Ferries (2004), lacks in a technical definition and specificity. A series of life aspects, negative or positive, can be measured by means of quality of life, without establishing a theoretical basis.

The level of life quality differs from one evaluation to the other, the relation between subjective and objective evaluations being rather diminished. Concerning the subjective evaluation, there is no fixed standard. The theory is rather shallow, lacking in explanations concerning the time and place differences in the quality of life.

The approach of life quality, by collecting and analysing indicators, is quite distant from the social theory, being closer to the theory of needs from psychology. Critics upon the approach of life quality are both theoretical and methodological. This approach is an individualist one, presenting the individual as being an isolated unit to be analysed, in this way closing in on the literature pertaining to psychology.

From a methodological point of view, according to Wallace and Abbot (2007), the critics are based on the nature of indicators and on what these can provide. Sociology should continue research, according to Schussler and Fisher (1985), using standard sociological concepts about the quality of life (Ferries, 2004).

From a global perspective concerning the relation society – life quality, in developed countries several attempts were made at adjusting the economic growth by finding efficient ways of removing negative effects of economic growth on the quality of life. There are numerous unclear aspects related to the object of measuring the social well-being and quality of life, which are not identical notions, as one may believe. This is because a society doesn't always ensure a high level of quality of life in all its aspects (especially when talking about subjective perceptions and appreciations of individuals).

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- \*\*\* [www.crisis.uquam.ca](http://www.crisis.uquam.ca)

## STUDY REGARDING MAXIMUM PROFIT OR MAXIMUM UTILITY APPLIED BY PROFESSIONAL SPORTS ORGANIZATIONS

BALOGA ISTVÁN<sup>1</sup>, POP GIOVANA<sup>2</sup> & TOCAN HORAȚIU<sup>3</sup>

**ABSTRACT.** In the following study we would like to present, whether professional team sports organizations primary objectives can be more profit or more win orientated. One of the most important decisions club managers have to take is the hiring of talented athletes. More talents not only increase the season cost of a club but also the winning record and the season revenue. Professional team sports organizations will consequently hire the number of playing talents that maximizes the difference between season revenue and season cost.

**Key words:** profit-maximizer; utility-maximizer; revenue maximizer; professional athlete; professional sports organization.

**REZUMAT.** *Studiu privind maximalizarea profitului sau maximalizarea utilității aplicat în cazul organizațiilor sportive profesioniste.* Studiul de față prezintă orientarea organizațiilor sportive profesioniste, îndeosebi cele de jocuri sportive de echipă, ale căror obiective primare pot fi maximalizarea profitului sau maximalizarea utilității. Una dintre cele mai importante decizii luate de către managerii de club este angajarea de sportivi talentați. Mai mulți sportivi profesioniști de valoare angajați aduc nu numai la creșterea costurilor unui club, dar duc de asemenea, la înregistrarea a mai multor victorii și venituri pe perioada campionatului. Cluburile sportive profesioniste (cu jocuri de echipă), vor angaja în consecință, numărul de jucători valoroși care maximalizează diferența dintre veniturile și costurile în timpul unui sezon de campionat.

**Cuvinte cheie:** maximalizarea profitului; maximalizarea utilității; maximalizarea venit/câștigului; sportiv profesionist; organizație sportivă profesionistă.

Professional team sports management it is still considered a new field of research, therefore many authors are questioning if there is any justification for devoting a separate field of economic research to it. Is there anything outstanding about this industry that makes the professional team sports different from other industries? Neale, in “The peculiar economics of professional

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sports”, called it the “inverted joint product”. Economists are familiar with joint products: one single production process yields two or more different products. Inverted joint product refers to a situation where two production processes by two companies are needed to produce and supply one single product. In team sports, the companies are the sports clubs, the product is the game. One team cannot play for example a football match; it needs an opponent team. If the product is not just one individual game but also the league championship, more than two clubs are necessary. Furthermore, sport is basically about competition. If the playing strengths of two teams are too far apart so that one team always wins without much competition, the product is not very interesting for people to watch. So, another characteristic of the industry is that a certain degree of competitive balance between the teams is necessary in order to sell the product.

Profit constitutes the base of a firm's activity, in our case professional sports organizations. According to Ilieș, Lazăr, Mortan, Popa in “Management”, there is no firm that will not follow to obtain profit, because if revenue is less than the cost, not only that a firm will not be able to develop its own resources, but may not survive. Profit is the criteria of efficiency and effectiveness of the firm (sport club) and is apparently the most important aspect behind its success or failure. Profit should not be the cause, but the goal of the company; it is also the desired and essential result because it serves the basic economic function. Therefore, profit constitutes de base of the company's effort for development.

In professional team sports, clubs can have different objectives and they lead to different outcomes in terms of distribution of talent among clubs in a league, player salary level, total league revenue, ticket price and so on. Also, the impact of most market regulations on these variables is different. The most common firm objective in economic theory is profit maximization. For instance it is well known that in the United States, professional sports clubs also behave as profit maximizers, Vrooman and other analyst state that. One of the most important decisions club managers have to make is the hiring of talented athletes. More talents not only increase the season cost of a club but also the winning record and the season revenue. Therefore clubs will hire the number of playing talents that maximizes the difference between season revenue and season cost. If  $\pi$  indicates season profits, starting from the simple equation for profit:

$$\pi = TR - TC$$

where total revenue TR minus total cost TC leading to maximizing profit, the objective will be:

$$\max \pi = \max(R-C)$$

where  $R$  is total season revenue and  $C$  is total season cost. If we assume that the number of talents of the team is the only decision variable, the optimality condition for profit maximization is that the marginal revenue of talent equals the marginal cost. A club maximizes its profits if the increase in total revenue by hiring one more talent is equal to the increase in the total cost of one more talent. As long as the marginal revenue is higher than the marginal cost, the club can increase its profit by hiring more talented athletes.

Professional sports organizations' primary objective, rather than profit maximization, can also be the maximization of revenue, subject to satisfying a specific level of profits. Therefore a sports club will be more competitive when it achieves large size (in terms of revenue) and the management remuneration may be more closely related to revenue than profits.

In Europe, sports economists have raised doubts about profit maximization as a realistic objective in professional sports. Although professional sports clubs in the North American major leagues for instance are more businesslike than in the European football leagues. US economists seem to have their doubts as well in this matter. Zimbalist, asserted that European football clubs do not behave as profit maximizers, but they are acting more as utility maximizers. We have also observed that many owners of European football clubs consider spending money on their team as a consumption activity. As consumers, club owners act as if they are maximizing a utility function where other variables, beside profits, appear as arguments; this might include playing success, stadium attendance, competitive balance, community building, et cetera.

Analyst, in an attempt to make the utility-maximizing model more operational, introduced win maximization as the exclusive objective. Sports clubs are most of all interested in winning, and the best way to achieve that goal is to hire the best players, or in other words, to maximize the number of playing talents under certain restrictions. One restriction is that a club has to stay within the limits of its budget. As a first approximation, the breakeven condition can be imposed, that is, total revenue equals total cost. However, this condition is not necessary for the application of the win maximization model. It could be assumed that a club has to guarantee a certain profit rate in order to satisfy the owners or the shareholders, but a club can be profitable without being a profit maximizer. Also, the win-maximization model does not exclude season losses because, as a consumer, the owner can be prepared to spend money on the team. In its most simple form, this objective function can be written as:

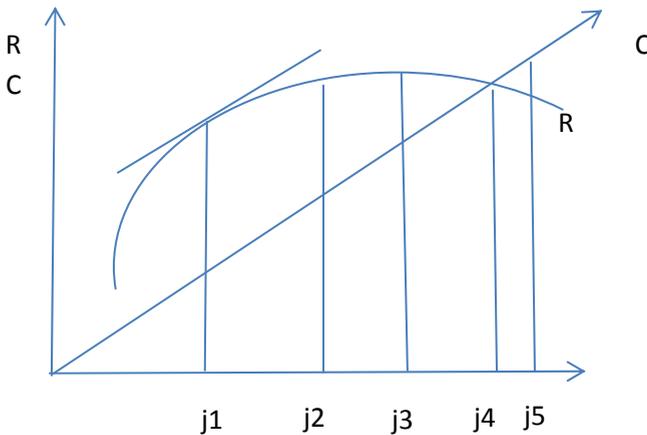
$$\max w \quad \text{subject to: } R - C = \pi^\circ$$

where  $w$  is the season winning percentage of the team and  $\pi^\circ$  is a fixed amount of positive or negative profits. A fixed amount of profits also implies a fixed profit rate, because the capital stock is considered to be constant in the short run. Therefore, the breakeven condition is only a special case where profits are zero. Win maximization under the breakeven condition is also equivalent to constrained revenue maximization as long as total club revenue is not reduced at a very high winning percentage.

Another variant of the utility maximization model adapted from microeconomics can be written as sports clubs are maximizing a linear combination of profits and wins:

$$\max (\pi + aw) \quad \text{with } a > 0.$$

Since the weight parameter  $a$  can be different for every sport organization, it allows clubs to be more profit orientated or more win orientated. This model is comparable with the win-maximization model, which also includes the possibility of a certain profit rate.



**Figure A.1**

So far, all empirical tests have failed to be conclusive in accepting or rejecting the profit or the win-maximization hypothesis. To the best of our knowledge, all tests are based on the pricing rule or price elasticity. According to price theory, the pricing rule of a win-maximizing club is the same as the pricing rule of a profit-maximizing club.

Consequently, we can ask whether these three objectives are all that different. Is hiring the best players not the only way to increase the winning percentage, as well as club revenue and profits? A simple diagram used in managerial economics (Keat, Young 2000), shows that win and profit maximization do make a difference in hiring the optimal number of playing talents.

Figure A.1 shows the different athletes demand levels rising from different club objectives. The number of athletes is indicated on the horizontal axis and total season revenue and cost on the vertical axis. Evidently, the total cost increases with the number of talents. Also a club's total revenue increases as the club becomes more successful, but the revenue function is assumed to be concave in the number of talents. It decreases if the club becomes too strong and public interest fades because of a lack of uncertainty of outcome.

A profit-maximizing club will hire  $j_1$ , playing talents, where marginal revenue, which is the slope of the revenue function, equals marginal cost, which is the slope of the cost function. A revenue maximizer will hire  $j_2$  talents. A win-maximizing club under the breakeven constraint will hire  $j_4$  talents, where total cost equals total revenue. If a certain profit rate is necessary, the club can hire  $j_3$  talents. If the owner is hiring  $j_5$  players, obviously he will lose money.

According to microeconomics theory, adapting the utility functions to sports management, professional team sports organizations will hire whether they are willing to maximize profit, revenue or win, the number of talented athletes according to their objectives presented on the above figure. Further on, in a next study we will present that these different objectives have serious implications not only for the club's talent demand but also to the competitive balance in the league, the player salary level and the ticket price, as well as for the impact of the player transfer system and club revenue sharing arrangements.

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## METHODS FOR THE INVENTORY OF STRESS PRODUCED BY THE RESISTANCE TO THE EFFORT IN JUNIOR FOOTBALL GAME

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BONDOC-IONESCU DRAGOS<sup>2</sup> & MONEA GHEORGHE<sup>1</sup>

**ABSTRACT.** From psychological point of view, most subjects are extroverted, sociable, easily making interpersonal contacts and they are directly involved in group actions, more exactly team games, training in common applications and more specifically, they willingly participate in resistance efforts. At the same time the obtained data shows an emotional state of optimism, confidence, opportunities for adaptation to the required effort by the trainings and games. The investigated junior players are represented by a class of sport players able to engage in resistance efforts that involve mental stress caused by performing complex and difficult tasks and over a long period of time.

**Keywords:** personality, sociable, evaluation, performance.

**REZUMAT.** Din punct de vedere psihologic, cei mai mulți subiecți sunt extrovertiți, sociabili, ceea ce face ușor contactele interpersonale și care sunt direcți implicați în acțiuni de grup, mai exact jocuri de echipa, de formare în aplicațiile comune și mai precis, ei pot să participe la eforturile de rezistență. În același timp, datele obținute arată o stare emoțională de optimism, încredere, oportunități pentru adaptarea la efortul cerut de traininguri și jocuri. Jucătorii investigați sunt reprezentați de o clasă de jucători sportului în măsură să se angajeze în eforturi de rezistență care implică stresul psihic cauzat de îndeplinirea unor sarcini complexe și dificile și peste o perioadă lungă de timp.

**Cuvinte cheie:** personalitate, evaluare, sociabil, performanta.

In the everyday life, we tend to label others according to the type of person each represents. There are friendly and sociable type, aggressive type, quiet and shy type, the type of active and busy, and so on. On the basis of these classifications is the idea that each person has a certain personality, a certain way to react and behave. If we know what kind of person we have, it is easier for us to understand his behavior. We can also predict the reactions of a person in a certain situation.

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### Personality evaluation

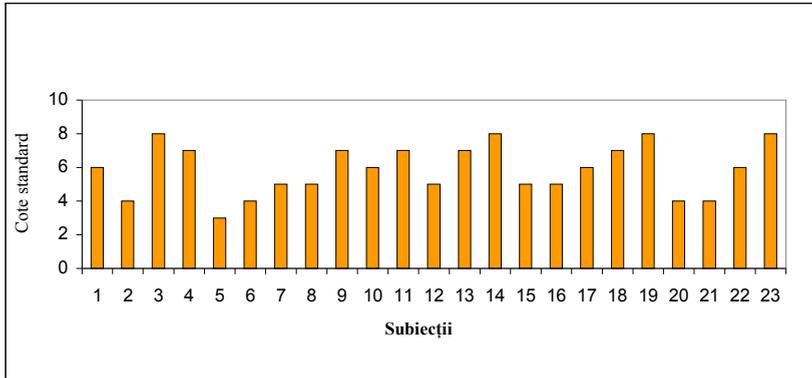
The investigated sample was applied "Eyenck personality inventory", which is highlighting two fundamental personality traits, respectively extraversion - introversion and stability - emotional instability, these two dimensions of personality, are made in relation to the ability of junior football players, characterized mainly by resistance to efforts

**Table 1.**

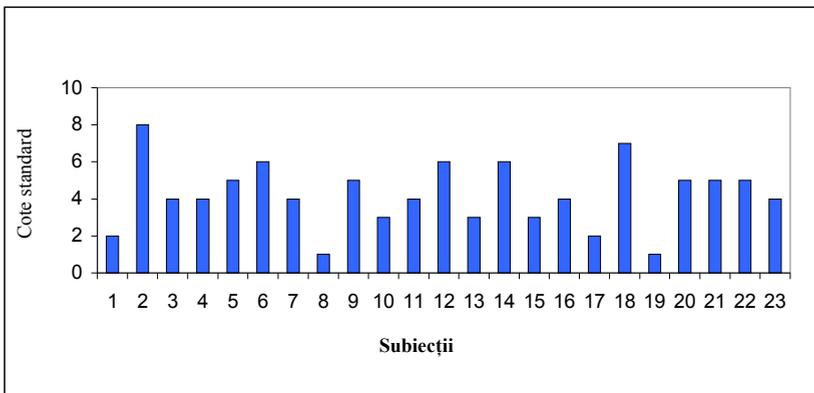
Eyenck personality inventory (E.P.I.)

Nr.crt.	Name First name	Dimension (extraversion/ introversion) E	Dimension (instability/ stability) N
1	B.M.	6	2
2	C.O.	4	8
3	C.M.	8	4
4	C.S.	7	4
5	C.T.	3	5
6	F.F.	4	6
7	F.B.	5	4
8	H.A.	5	1
9	O.M.	7	5
10	P.D.	6	3
11	P.T.	7	4
12	R.S.	5	6
13	R.H.	7	3
14	R.P.	8	6
15	S.I.	5	3
16	S.G.	5	4
17	S.V.	6	2
18	V.C.	7	7
19	V.Z.	8	1
20	T.M.	4	5
21	R. S.	4	5
22	M.C.	6	5
23	C.A.	8	4

Average = 5,869 (E)      Average = 4,217 (N)



**Distribution Chart** of the results obtained at the subjects at the scale (E)



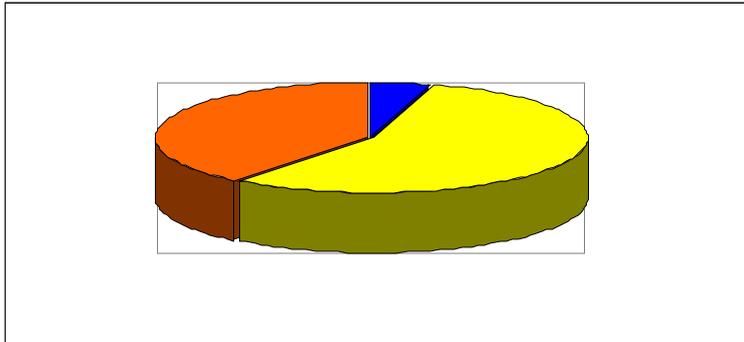
**Distribution Chart** of the results obtained at the subjects at the scale (N)

### Specific personality characteristics of the subjects

Regarding the personality characteristics of the examined subjects, the **extraversion** scale scores (E) were as follows:

**Average scale scores** for gross proceeds extraversion (E) is  $m = 5.869$ , which indicates a higher concentration at the intersection of introversion and extraversion. Analysis of the scores achieved by each subject on this scale indicates the following distribution:

- introverted - 3 subjects (4.34%);
- medium - 13 subjects (56.51%);
- extroverted - 9 subjects (39, 15%).



**Distribution Chart** extraversion scale scores (E) on the whole investigated group

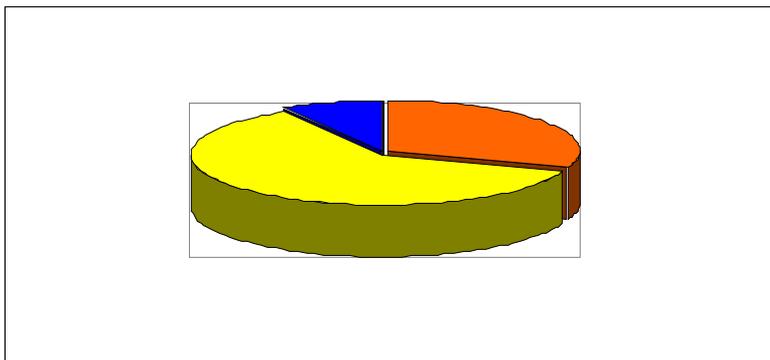
### Case Study

Subject: **V.Z.**

It is a sociable, extroverted, easily establishes relationships with others having many friends, participates directly in the work group, with a high degree of integration. Prefers movement and action, being optimistic and self confident, able to resist at high mental stress caused by the performance of complex and difficult tasks.

At the scale of **neuroticism (N)**, the average scores obtained is  $m = 4.217$ , which indicates that we are dealing with for most of their emotional stability, high capacity and lack of self anxiety:

- emotionally unstable – 2 subjets (8,7%);
- relatively stabile – 14 subjects (60,85%);
- emotionally stable – 7 subjects (30,45%).



**Distribution Chart** neuroticism scale scores (N) over the whole investigated group

**Case Study**Subject: **T.M.**

Shares and introspective, quiet life and likes to be conducted under precise coordinates. Compared to most people is reserved and distant, except for his intimate friends. It is rather pessimistic and cautious, when involved in realizing more difficult task. It also presents a state of mental instability and psychological difficulties in restoring balance after accusing emotional shock sometimes diffuse somatic disorders (headaches, digestive disorders, insomnia, etc.).

Summarizing, at the level of the investigated group, we can note the followings: • psychologically, most subjects are extroverted, sociable, easily setting interpersonal contacts, are directly involved in actions in the group, namely the team games trainings, in common applications and more specifically, are willing to participate in resistance efforts; • data obtained also show a stable emotional state of optimism, confidence, opportunities for adaptation to the effort required by the training and games; • junior players investigated is a class of sports players are able to engage in resistance efforts that involve mental stress caused by performing complex and difficult tasks, over a long period of time.

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## ASSESSMENT OF COORDINATION OF STUDENTS IN PRIMARY AND SECONDARY SCHOOLS

GROSU EMILIA FLORINA, POPOVICI CORNEL, CRACIUN MARIUS,  
PETREHUS DENISA & GROSU VLAD - TEODOR<sup>1</sup>

**ABSTRACT.** The study is a theoretical and experimental optimization of educational process in physical education lessons in primary and secondary school students. Studies have shown that the age of 10-14 years is favorable for the developing of coordination along with the development of morphological, functional and motric development of students. *The research purpose is* to find ways and means to increase the coordinative indices of abilities: balance and coordination (Alternate Hand Toss Wall Test). Balance was tested by applying the Bass test, and test coordination through throwing and catching tennis balls to the wall. The proposed experiment is intended as a pilot study.

**Key words:** coordination, coordinative capacity, primary school, secondary school, physical education lessons, physical training, training methods, programs, planning, games.

**REZUMAT.** *Evaluarea capacităților coordinative la elevii din clasele primare și gimnaziale.* Studiul este dedicat argumentării teoretice și experimentale a optimizării procesului instructiv-educativ la lecțiile de educație fizică cu elevii claselor primare și gimnaziale. Studiile efectuate au demonstrat că vârsta de 10-14 ani este favorabilă pentru dezvoltarea coordonării odată cu dezvoltarea morfo-funcțională și motrică a elevilor. *Scopul cercetării* este de a găsi căi și mijloace prin care să ducă la creșterea indicilor capacităților coordinative: echilibru și coordonare (Alternate Hand Wall Toss Test). Echilibrul s-a testat prin aplicarea testului Bass, iar coordonarea prin testul aruncării și prinderii mingii de tenis la perete. Experimentul propus se dorește a fi un studiu pilot.

**Cuvinte cheie:** coordonare, echilibru, capacități coordinative, clasele primare, clase gimnaziale, lecțiile de educație fizică, pregătirea fizică, pregătirea tehnică, mijloace de pregătire, programe, planificare, jocuri de mișcare.

*The hypothesis of the research* was: by applying in the educational process from the physical education lessons our proposed means which improves the motor students' capacity in relation to: balance and coordination. This experiment is a transverse pilot study (the evolution of coordination and equilibrium parameters of each pupil in these two classes)

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and longitudinal (balance and coordination development parameters from IV<sup>th</sup> grade to VII<sup>th</sup> grade).

**The objectives of the research are:**

1. The study and analysis of theory and practice of the educational content in physical education class, primary and secondary.
2. Assessing the performance level of balance and coordination in 11-14 years, in IV<sup>th</sup> and VII<sup>th</sup> grade.
3. Establishing the content of means and methods development of the two coordinative aspects in physical education classes, in IV<sup>th</sup> and VII<sup>th</sup> grade.

**Methods used** in research are grouped as follows:

*a. presentation training and teaching methods* are: bibliographic study, observation, demonstration, experiment, exercise method and statistical-mathematical method.

*b. methods of assessing motric skills:* coordination and balance by: Alternate Wall Hand Toss Test – the throwing test to the wall by alternating hands and Bass test – for balance.

**Spatial-temporal coordinates of the research:** the experiment was conducted over the period: September 2009 - May 2010 at School "Bob" from Cluj-Napoca, as agreed with the professor teaching the class IV<sup>th</sup> and VII<sup>th</sup> A classes. The choice of these samples was done randomly and is justified by the following: children age 10-11 years and 13-14 years (pubertal period). The necessary equipment consisted of: apparatus from the school gym, ball, clock, audio-video device.

**Experimental design includes two stages**, which we present in detail below:

**1. Pre-test** in both groups: the knowledge of the subjects were examined in terms of motricity by performing: Hand Coordination Alternate Wall Toss Test and Bass test - the balance, during 20 to 30 September 2009. Students have been advised, and then encouraged to explore the possibilities of movement of each body segment separately and fully, of the two types of movement.

**2. Post - test**, where both groups were again examined after one year from the first test to track progress of coordination and balance parameters, between 20 and 30 May 2010.

**The operational means used to develop coordination and balance**

a). Spontaneous dynamic balance, which is done using a large number of exercises (walking, jumping);

b). The balance on the ground and above ground: from the most simple exercises (balance on tip toes, one foot support) to the complex ones (the same exercises with a combination of upper limb movements or objects balanced on her head; control exercises of the body as the one of taking scattered objects from the ground) exercises made above stable or unstable objects located on the ground (equilibrium axes);

c). Balance with eyes closed. To achieve this balance are valid all previous exercises, because it eliminates possible causes of restlessness of the subject.

d). Dexterity games and exercises contribute to the education of reflexes, control and economy of effort; games with balls and hoops. Different material used in volume, weight, texture, allowing a gradual adaptation to the real possibilities of the child, the progressivity is determined by the complexity of the exercises, however, the variability of the factors temporal and spatial dynamics (speed, distance, force).; the rule of body gesture and space (passing the ball from one hand to another, launching the ball to the right by turning the shaft, sending and receiving the ball from seating) adaptation to space and movement, coordination of movements (jumping the ball without passing during stairs ascending and descending in the same knee, skill games with hoops and balls).

e). Jumping rope games. Use a rope attached to the end, in the beginning, teacher is one who spins the rope, adapting to the possibilities of the child. Along with successive stages exercises the impulse control will be won, (jumping rope to its passage), and impulse control of jump (jump rope is made at first with one leg and then with the other), body mastery and adaptation to movement.

### **The tests used in the experiment to assess coordination**

**1. Alternate Wall Hand Toss Test;** Purpose: measuring the coordination hand - eye; Equipment needed: tennis ball or baseball, smooth wall, durable, metric tape, stopwatch (optional). Procedure: it marks a place at a certain distance from the wall (ex 2m). Line behind The person is behind the line, facing the wall. The ball is thrown down the wall and tries to catch it with the opposite hand. The ball is then thrown to the wall and stuck with the same hand. The test can continue for a specified number of attempts or for a certain period (ex. 30 sec). Score: **The following table** provides general estimates for the test by throwing at the wall based on a number of successful recoveries for 30 seconds.

Interpretation	Score (in 30 seconds)
Excellent	> 35
good	30 - 35
medium	20- 29
satisfactory	15 - 19
weak	< 15

**Variations / changes:** there are many variations to this test procedure that can be made according to the results you want: size, weight and shape of the object, the distance from the wall, the number of attempts or the time may vary. The procedure is recorded and maintained the same for subsequent tests of the same subjects

**Advantages:** equipment and materials required are minimal, and the test can be self-managed.

**Disadvantages:** the ability to recover the ball depends on the strength and trajectory of the ball. You can set a target to facilitate disposal.

## 2. The Bass test is the most widely used in motric activities:

**Measurement of dynamic equilibrium (Bass test):** Subject stands with right foot on the departure point (mark) and then jumps on the first mark with the left foot and tries to maintain static position for 5 seconds. The subject will continue to alternate legs jumping and maintaining static position for 5 seconds, until the trail ends. Base peak should completely cover the mark, that it should not be seen. A subject can achieve the maximum 10 points for every brand, or a total of 100 points for the full path.

**Materials:** a stopwatch or clock with second, 11 marks of 2.54 cm x 2cm (can be made of gummed or adhesive) and a metric tape.

**The experiment: analysis and tabulation of data processing - IV<sup>th</sup>**  
A class – THE BALANCE TEST

**Table 1.**

The result of the Bass modified test and applied to IV<sup>th</sup> class, initial and final

Subjects	Initial score	Final score
1	42	50
2	61	70
3	88	97
4	85	90
5	76	83

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Subjects	Initial score	Final score
6	39	47
7	60	68
8	55	61
9	20	25
10	76	80
11	35	40
12	83	90

We can see the evolution of the balance of students in grades IV, from initial testing to final testing. To make it easier to compare results we have achieved the chart below.

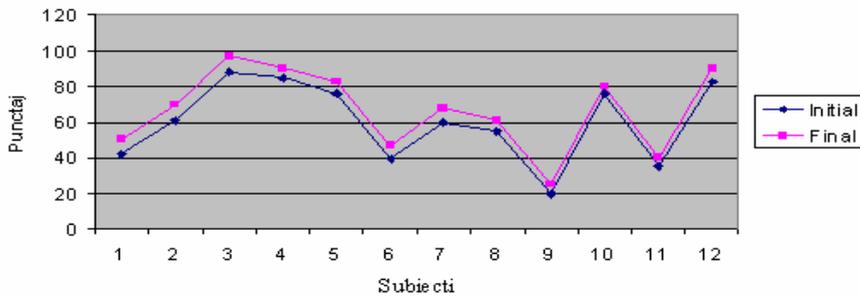


Figure 1. Graphic for the dynamic balance evolution

The Bass test results modified and applied on the IV<sup>th</sup> class

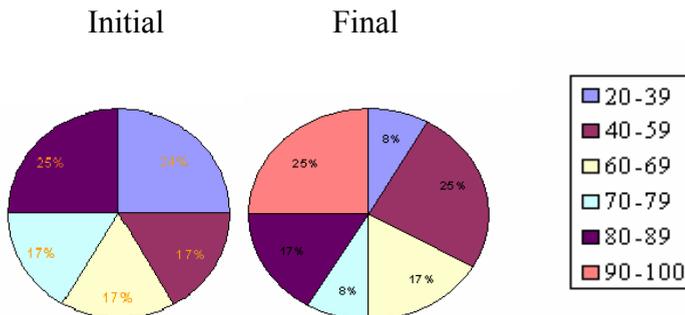


Figure 2. The evaluation of the modified Bass test according to the score

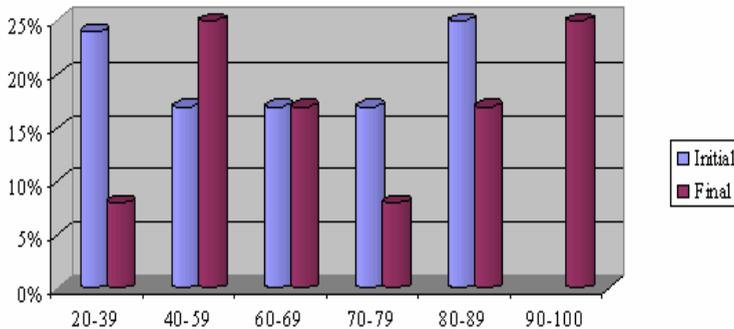
As regards the percentage of students who had at a lower score, which subsequently changed, increasing by practicing exercises (means of action) proposed a rigorous and repeat dosing. At the beginning a score between 20 and 30 points was given to a small 24% number of pupils, at the end of the year a large number of students come to achieve 25% and to reach 100 points.

**Table 2.**

The Bass test results modified and applied on the IV<sup>th</sup> class, initial and final

Score	Initial	Final
<b>20-39</b>	<b>24%</b>	8%
40-59	17%	25%
60-69	17%	17%
70-79	17%	8%
80-89	25%	17%
90-100		<b>25%</b>

On the following graphic we have exemplified the described values



**Figure 3.** Graphic concerning the evolution in time of dynamic balance

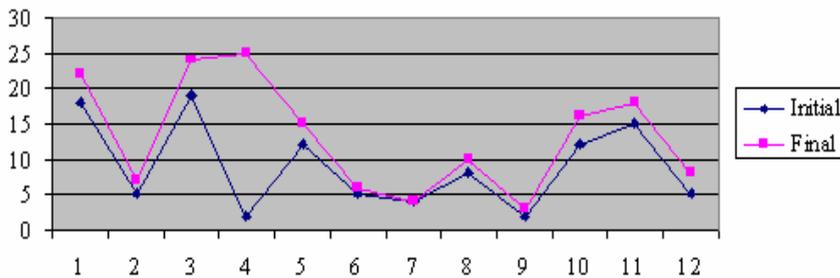
Coordination test in IV<sup>th</sup> A class

**Table 3.**

The results of the tennis ball throwing test in IV<sup>th</sup> class, initial and final

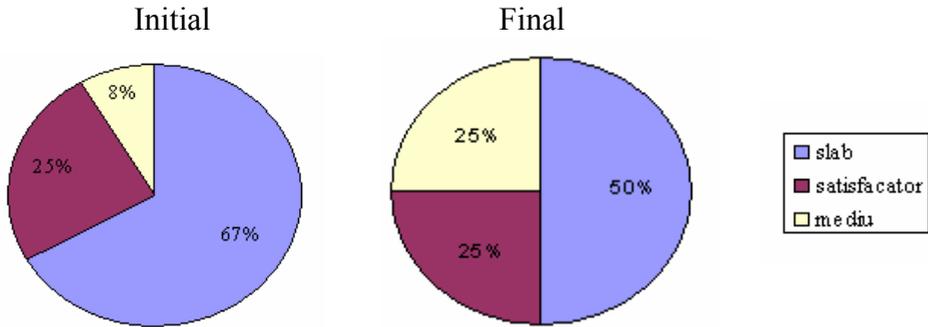
Subjects	Initial score	Final score
1	18	22
2	5	7
3	19	24
4	22	25
5	12	15
6	5	6
7	4	4
8	8	10
9	2	3
10	12	16
11	15	18
12	5	8

In this table is initial and final test data coordination in IV<sup>th</sup> class. We may notice the following important aspects in these tables and charts below. Initially there were a total of 67% of students with low grade and only 8% of average grade, at the end of the school year, 25% of students receive an average grade, 50% poor and the other 25% a satisfactory grade.



**Coordination evaluation**

**Figure 4.** Coordination evolution in time



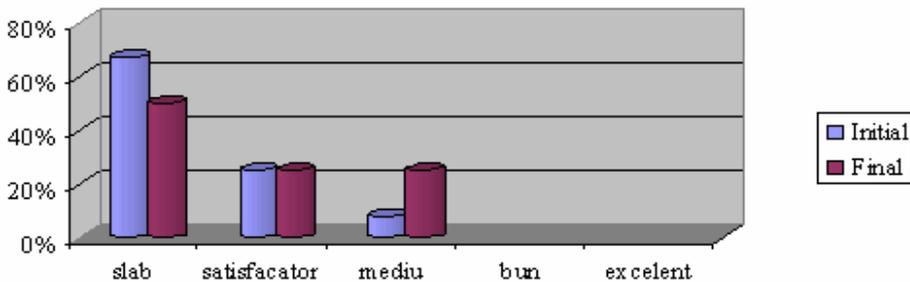
**Figure 5.** Coordination evaluation initial and after training

**Table 4.**

The percentage of initial and final values of the coordination test

Score	Evaluation	Initial	Final
<15	week	<b>67%</b>	50%
15-19	satisfactory	25%	25%
20-29	medium	<b>8%</b>	<b>25%</b>
30-35	good		
>35	excellent		

If we analyze the test results of coordination, we can see that initially 67% of students had a poor outcome and only an 8% average result, and finally passed the test preparation process with an average result 25% of the students.



**Figure 6.** Evolution in time of coordination

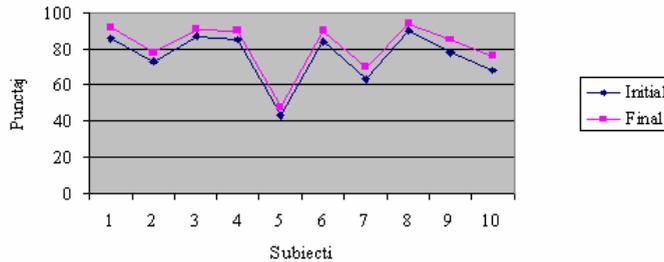
BALANCE TEST IN VII<sup>TH</sup> CLASS

**Table 5.**

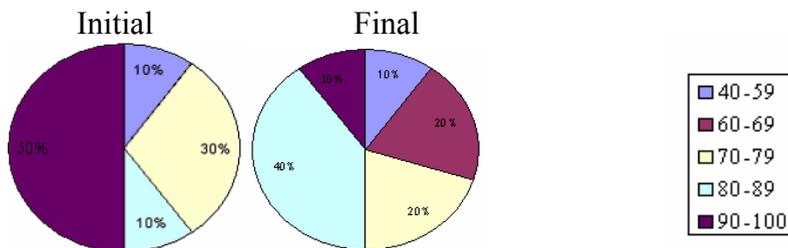
Initial and final Bass test results as applied to the VII<sup>th</sup> class.  
 We had to modify the original Bass test because students scored very very weak.

Subjects	Initial score	Final score
1	86	92
2	73	78
3	87	91
4	85	90
5	43	48
6	84	90
7	63	70
8	90	94
9	78	85
10	68	76

In this table are the initial and final test results of equilibrium achieved by the students of VII<sup>th</sup> class. We can note an increase in the indices at all students. The lowest score was registered as the 43 points, while the highest score was originally recorded to 90 points. In the final test result the lowest recorded value was of 48, and the best result with 94 points value.



**Figure 7.** Evolution in time of the dynamic balance



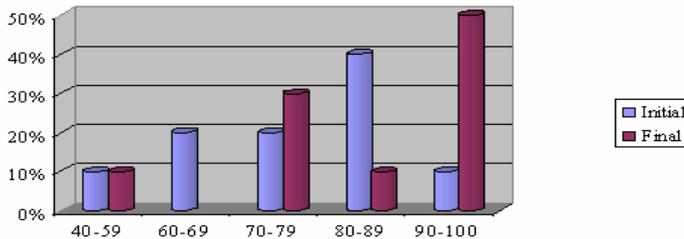
**Figure 8.** Evolution of the dynamic balance

**Table 6.**

The Bass test results modified and applied in VII<sup>th</sup> class, initially and at the end of the training period

Score	Initial	Final
40-59	10%	10%
60-69	20%	
70-79	20%	30%
80-89	40%	10%
90-100	<b>10%</b>	<b>50%</b>

From the data analysis we can notice the following: if only 10% of students initially registered between 90 and 100 points, in the final test 50% of the students recorded the maximum score (90-100 points).



**Figure 9.** Evolution in time of the dynamic balance

## THE COORDINATION TEST

**Table 7.**

Initial and final results of the tennis ball throwing test at the wall

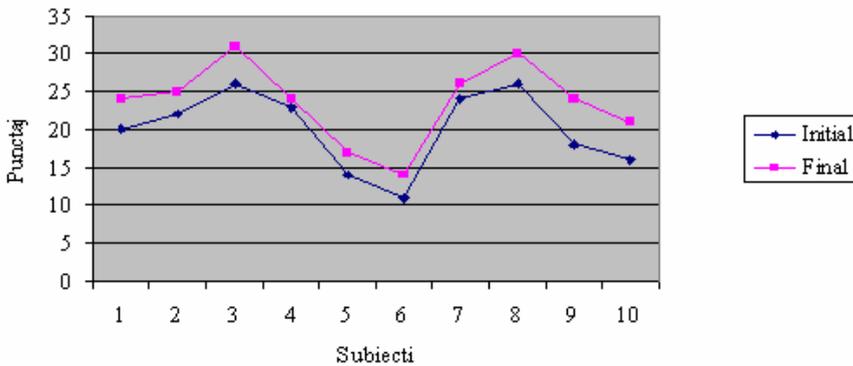
Subjects	Initial score	Final score
1	20	24
2	22	25
3	26	31
4	23	24
5	<b>14</b>	17

ASSESSMENT OF COORDINATION OF STUDENTS IN PRIMARY AND SECONDARY SCHOOLS

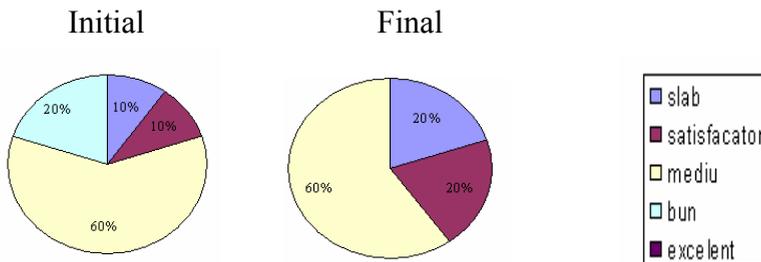
Subjects	Initial score	Final score
6	<b>11</b>	14
7	24	26
8	26	30
9	18	24
10	16	21

In this table are the entire initial and final test results from the seventh grade and we can notice the following important aspects: the students have a better motility than those in fourth grade, but still insufficient. If in the initial testing there are 3 students less than 14 points, on the final test there is a single student with 14 points and all others with points up to 31.

On the vertical we can see the points and on the horizontal the subjects.



**Figure 10.** - Evolution in time of coordination



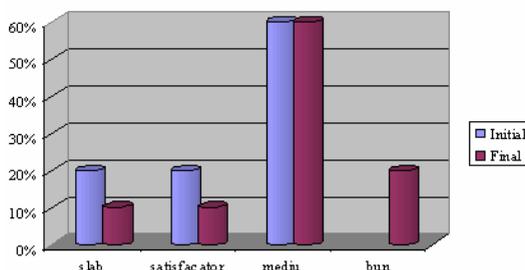
**Figure 11.** – Percentage evaluation of the coordination test

By analyzing the above graphics we may notice the followings: from the 20% of weak students at the end of the year 10% of them were promoted to the superior group of students with satisfactory coordination. We can see that there is neither a student in the group "excellent ", which means that we have much work in the coordinative chapter, but it is gratifying that 20% of students were rated "good."

**Table 8.**

The percentage of the initial and finale values of the coordination test

Score	Interpretation	Initial	Final
<15	week	20%	10%
15-19	satisfactory	20%	10%
20-29	medium	60%	60%
30-35	good		20%
>35	excellent		



**Figure 12.** Evolution in time of coordination

What we concluded above about coordination with the development of seventh grade students can be seen in the chart above.

### Conclusions and proposals

We have noticed an increase in coordinative capacity: balance and coordination (between September 2009 and June 2010) in forth and seventh class students with special exercises. Even if the initial level was low and a

big part from the students had initially very low results, at the end of the year the results shown big improvements.

We consider that the efficiency of the physical education training process on motric capacity and physical development can be increased by using action systems (operational models), separated by sex and age. These models consist of a special means to realize the proposed objectives (optimizing the physical development, development of motric capacity- especially coordinative capacity and motric qualities, also motor skills and practical-utilitarian); and on the other hand, from an algorithmic programming - quantitative in lessons systems. What you need to consider is that physical education has permanent goals (strengthening health, harmonious physical development, with emphasis on the development of coordination abilities) and regular targets corresponding to a cycle of education, lessons, etc.

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## EVALUATION WAYS OF THE EFFORT'S CAPACITY – PHYSICAL CONDITION BY USING THE FUNCTIONAL TESTS DURING THE PHYSICAL EDUCATION CLASS

FINICHIU MARIN<sup>1</sup>

**ABSTRACT.** The physical condition supposes the solid knowledge of the possibilities of which the human organisms disposes across his life that consists a morphological and functional synthesis in full dynamic and that requires a careful research in order to determine the components, the medium values and characteristics, also their inter-relations. The American Medics Association defines the physical condition as being: the general capacity to adapt oneself and to answer favorably at a physical effort. Determining the manifestation level of the physical condition, conditioned by the health state, does not consist only in the appreciation by comparison among individuals and norms, but also the evaluation of the physical condition of youths, defined by the report of direct proportionality among its components, such as: strength and segmentary muscular endurance, power, musculature and articular flexibility, speed and a harmonious development of the body, such as the connection between the different anatomical and physiological systems, that determine the possibility to the individual to move. Knowing the human being, in general, must centre on the appreciation of its defining characteristics with the most significant ones and that distinguish him from the other, of same age and sex, so that to make possible the explanation of the nature of manifestation during the physical activity that he develops, in the social attitude, such as his anticipation of the ulterior development.

**Key words:** evaluation ways, effort's capacity, physical condition, functional tests, class.

**REZUMAT.** Condiția fizică presupune cunoașterea temeinică a posibilităților de care dispune organismul uman pe parcursul vieții, ce constituie o sinteză morfologică și funcțională în plină dinamică și care necesită o cercetare atentă pentru a putea determina componentele, valorile medii și caracteristicile, precum și inter-relațiile acestora. Asociația Medicilor Americani definește condiția fizică ca fiind: capacitate generală de a te adapta și a răspunde favorabil la un efort fizic. Determinarea nivelului de manifestare a condiției fizice, condiționată de starea de sănătate, nu constă numai în aprecierea prin comparație dintre indivizi și norme, ci și din evaluarea condiției fizice a tinerilor, definită de raportul de directă proporționalitate dintre componentele acesteia, cum sunt: forța și duranța musculară segmentară, puterea, flexibilitatea musculară și

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articulară, viteza și dezvoltarea armonioasă a corpului, precum și de legătura dintre diferite sisteme anatomică și fiziologice, ce determină posibilitatea individului de a se mișca. Cunoașterea ființei umane, în general, trebuie să se axeze pe precizarea caracteristicilor sale definitorii cu ce au ele mai semnificativ și care îl deosebesc de alții, de aceeași vârstă și sex, așa încât să facă posibilă explicarea naturii manifestărilor în activitatea fizică pe care o desfășoară, în atitudinea socială, precum și previziunea dezvoltării sale ulterioare.

**Cuvinte cheie:** modalități de evaluare, capacitate de efort, condiție fizică, teste funcționale, lecție.

## **Introduction**

Expressing the manifestation level of the physical condition on the base of evaluating the power and anaerobe and aerobe effort's capacity by knowing the values of the functional parameters is found in all actions of an individual, no matter of their nature: quotidian, habitual, professional etc. The content of the article is addressed to everyone that can allow a health state by increasing the manifestation level of the functional parameters. The research results will present the necessity of a new approach of the physical education class imposed both by the new reforms but also by the evolution of the society and individual, but also the society and individual's evolution without offering a general valid alternative. The purpose of this research is to know the efficiency of the used methods during the physical education class in order to anticipate the possible errors, also the manifestation level of the physical condition of the subjects that are to be investigated; the subjects' attitude vis-à-vis the applied operational didactic program, especially, and the movement as a mean of strengthening the health state, in general.

## **Research objectives**

Realizing a research project in connection with the improvement of the physical condition of youths during the instructive-educational process. The discovery and establishment of the limitative factors and favorable for the improvement of the physical condition by applying the means specific to the physical education. Argument for maintaining/improving the optimum health state by the effects of the motor activity. Knowing the specific personality characteristics, certain aspects of the quotidian life and personal and homely antecedents.

### **Research hypotheses**

Knowing the manifestation level of the physical condition of the students can direction the methods and means used during the physical education class?

Knowing the significance of the correlation between the motor parameters, the functional parameters and the physical development indices can represent an improvement mean of the health state?

### **The used research methods and techniques**

The used research methods and techniques are part of the category of proper investigation methods – the observation method, the questionnaire method, the experimental method and of the processing methods, obtained data analysis and interpretation by applying the functional tests (the statistic-mathematical method, the graphic method) [Dragnea, A., 1984, pg. 21]. The study of the connection between two different variables of the same pattern is realized by calculating the correlation coefficient the Pearson test ( $r$ ); estimation problems – significance tests: 1. The significance interval of an arithmetic mean; 2. The significance of a correlation coefficient [Niculescu, M., 2002, pg. 491]; 3. The simple dispersion ANOVA analysis [Thomas, J.R. & Nelson, J.K., 1996, pg 116]. The “t” test – the test dependent in the aim of checking the null hypothesis [Thomas, J.R. & Nelson, J.K., 1996, pg. 184].

### **Research organization and presenting the applied tests**

The development of the research has been realized in the conditions of the didactic process, during the practical classes pf physical education of the students from the 1<sup>st</sup> year, Petroleum and Petrochemical Equipment specialty – experiment pattern (68 students), Electro mechanics specialty – reference pattern (33 students), in the university year 2008 – 2009, contained in the education curriculum (14 hours/week) of the Mechanical and Electric Engineering Faculty, The Petroleum and Gas University of Ploiesti. Respecting the analytical program specific to the domain, to the groups that form the experiment patter, have been introduced additionally in each lesson 10 – 15 minutes, physical exercises specific to the sport branch – athleticism, through which we looked to develop the combined motor capacity, strength-speed and general resistance. The components of the two patterns have been tested at the beginning of the university year and also after applying the working program (the experiment pattern), respectively October 2008 and May-June 2009. Parallel with the motor test for knowing the manifestation

level of the physical condition by evaluating the strength and anaerobe and aerobic effort's capacity anthropometric measurements have been made in order to know the physical development, calculating the nutrition indices, the body harmony and respiratory, but also by applying certain questionnaires aiming the psycho-social evaluation and knowing the health state and the probable life span.

The used functional tests have been: The Harvard Test - the physical condition index (ICF) is calculated applying the formula:

$$ICF = \frac{durataexercitiului}{2 \times sumavalorilorpulsului} \times 100.$$

The appreciation scale [Barrow, H. & McGee, R., 1973, pg. 37-49]: excellent <90; good between 80 – 90; medium between 65 – 79; sub medium between 55 – 64; Weak >54.

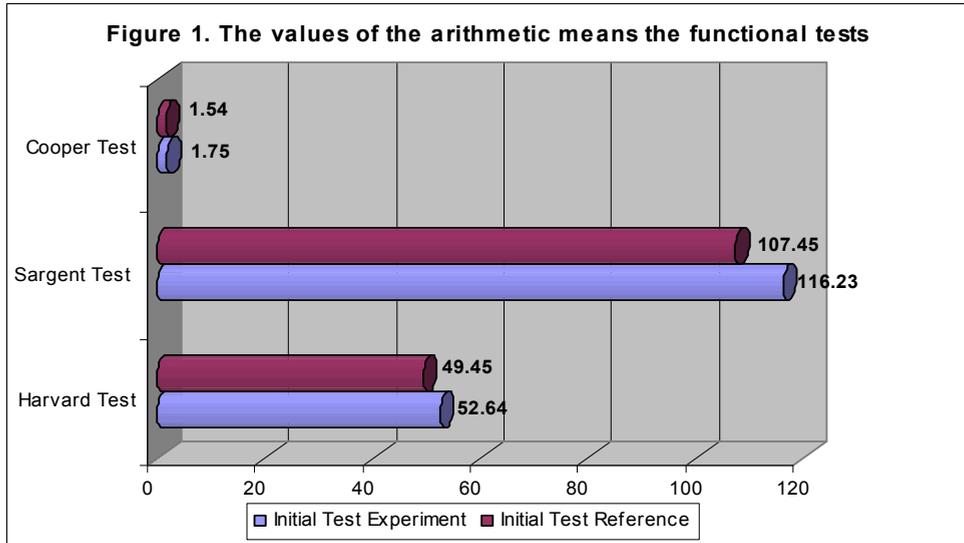
The Sargent Test - using the formula:  $P = \sqrt{4,95 \times G} \times \sqrt{D}$ , where: P = the strength in kg/s; G = the body weight; D = the detent on vertical, in cm. The appreciation scale [Bota, C., 2000, pg. 133] weak <113; satisfactory between 113 – 149; medium between 150 – 187; good between 188 – 224; very good > 224.

The Cooper Test has as purpose to estimate the maximum consumption of oxygen (VO<sub>2</sub>) depending on the realized performance by running time of 12 minutes over a distance as long as possible; the student has been advised to maintain a constant running speed that would allow him to cross a distance as long as possible in 12 minutes. Based on the appreciation scale the VO<sub>2</sub> is being established but also the correspondence between the distance crossed in 12 minutes and the VO<sub>2</sub> [Bota, C., 2000, pg. 140] and the physical condition level: weak <1,52 km; mediocre between 1,60 – 1,98 km, medium between 2,00 – 2,38 km; good between 2,40 – 2,62 km; excellent > 2,80 km [Bota, C., 2000, pg. 141].

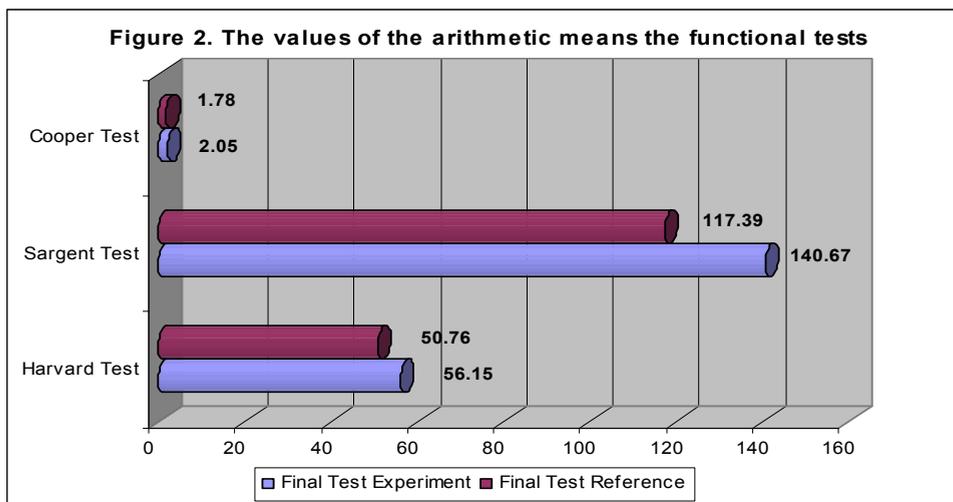
The Anthropometric Measurements: body height (cm), body weight (kg), bust height from standing (cm), arms span from standing with arms at the wall (cm), biacromial diameter (cm), bitrohanterian diameter (cm), thoracic perimeter in relaxation (cm), thoracic perimeter in profound inhale (cm) and thoracic perimeter in forced exhale (cm) and that allowed us to calculate the indices of the physical development: the nutrition indices (the Quételet indices and of body weight), the harmony and proportionality indices (Erissmann, Amar and Adrian Ionescu indices) and the respiratory indices (the Demeny respiratory index and the thoracic elasticity).

## Research results and their interpretation.

**Functional tests.** *The Harvard Test:* the calculated arithmetic mean after the second test indicates an improved performance in the second test of 3,51 points (figure 1 and 2); amplitude, standard deviation and the variability coefficient presents us a collective with an average homogeneity.



Estimation of the average error indicates that the pattern mean confidence limits are at the threshold of significance  $p < 0,01$  (99%); the significance of the difference between the averages of two patterns, reference and experiment, assigns us that the percentage is significantly different, 99% for both tests (table 1); the significance of correlation coefficient -  $\epsilon$  test (table 1) calculated indicates that it is important to the significance threshold  $p < 0,05$  (1,96), so the research hypothesis is validated and the results can be generalized; the performance that determine the effort's capacity after the cardiac frequency changes and blood pressure in the periods of recovery after effort by applying the Harvard test presents a positive correlation, according to table 1. Simple ANOVA (table 2), calculated value for the ratio  $F(1, 101) = 17,29$ , the significance threshold  $p < 0,05$  is significant at 0,05 level of significance, value tabulated 0,05 for the significance level is 3,98; test "t" dependent (table 2)  $t = 24,66$ ,  $p < 0,05$ . The null hypothesis can be rejected; the teaching program of athletics operational means produces a significant increase in the level of expression of maximal exercise capacity.



*The Cooper Test:* the arithmetic average calculated by the two tests indicates a performance after the second test (figure 1 and 2); the amplitude, standard deviation and the variability coefficient presents us a group with an average homogeneity at the two tests and a normal distribution of the results; the estimation of the average error indicates that the pattern mean confidence limits are at the threshold of significance  $p < 0,01$  (99%); the significance of the difference between the averages of two patterns, reference and experiment, assigns us that are significantly different, with a confidence of 99% for both tests (table 1); the performances through which we tested the indirect determination of the maximum  $VO_2$  by applying the Cooper test has positive correlation, according to table 1.

The significance of a correlation coefficient -  $\epsilon$  test (table 1) calculated, we acknowledge that it is significant at  $p < 0,05$  (1,96), and the research hypothesis can be validated and the results can be generalized, simple ANOVA (table 2) the amount calculated for the ratio  $F(1, 101) = 15,76$ , for  $p < 0,05$  (F with 1 and 101 degrees of freedom is significant at 0,05 level of significance), the test "t" dependent (table 2)  $t = 32,02$ ,  $p < 0,05$ . Null hypothesis can be rejected, the operational teaching program of athleticism means produces a significant increase of the maximum  $VO_2$ , according to the performance achieved from running time of 12 minutes.

*The Sargent Test:* calculated arithmetic average by the two tests indicates a performance increase after the second test of 24,44 kg/s (figure 1 and 2); the amplitude, standard deviation and coefficient of variability presents us a group of average homogeneity at the two tests and a normal distribution,

mean estimation error indicates that the pattern mean confidence limits are at the threshold of significance  $p < 0,01$  (99%); the difference's meaning between the averages of the two patterns, reference and experiment, assigns us that there are significantly different, with a confidence of 99% for both tests; the performances through which we evaluated the maximal anaerobic alactacid power by applying the Sargent test presents a positive correlation, according to table 1.

**Table 1.**

Calculated statistical indicators, correlation coefficient value and its significance

Initial Testing									
Experiment Pattern	Testul	X	S	Cv%	Med	Min	Max	W	Semnificația X
	Harvard	52,64	6,94	13,18	50,50	42,1	69,7	27,6	52,64±0,84
	Sargent	116,23	15,89	13,67	113	91	156	65	116,23±1,92
	Cooper	1,75	0,24	13,97	1,66	1,45	2,45	1	1,75±0,029
Reference Pattern		X	S	Cv%	Med	Min	Max	W	Semnificația X
	Harvard	49,45	4,32	8,74	49,1	42	60,3	18,3	49,45±0,75
	Sargent	107,45	12,24	11,39	104	89	135	46	107,45±2,13
	Cooper	1,54	0,058	3,77	1,54	1,43	1,64	0,21	1,54±0,008
Experiment Pattern		Correlation			The significance of the correlation coefficient				
		Harvard	Sargent	Cooper	Harvard	Sargent	Cooper		
	Harvard		0,89	0,91		7,28	7,44		
	Sargent	0,89		0,87	7,28		7,11		
	Cooper	0,91	0,87		7,44	7,11			
Reference Pattern		Correlation			The significance of the correlation coefficient				
		Harvard	Sargent	Cooper	Harvard	Sargent	Cooper		
	Harvard		0,88	0,92		4,94	5,19		
	Sargent	0,88		0,84	4,94		4,74		
	Cooper	0,92	0,84		5,19	4,74			
Final Testing									
Experiment Pattern	Testul	X	S	Cv%	Med	Min	Max	W	Semnificația X
	Harvard	56,15	7,13	12,70	55,1	45,6	72,3	26,7	56,15±0,86
	Sargent	140,67	15,56	12,35	118	107	164	57	140,67±1,88
	Cooper	2,05	0,29	14,40	1,97	1,64	2,78	1,14	2,05±0,035
Reference Pattern		X	S	Cv%	Med	Min	Max	W	Semnificația X
	Harvard	50,76	4,66	9,19	50,3	43,1	60,5	17,4	50,76±0,82
	Sargent	117,39	12,52	10,67	113	97	145	48	117,39±2,18
	Cooper	1,78	0,11	6,22	1,78	1,56	2,01	0,45	1,78±0,019
Experiment Pattern		Correlation			The significance of the correlation coefficient				
		Harvard	Sargent	Cooper	Harvard	Sargent	Cooper		
	Harvard		0,92	0,94		7,52	7,68		

Initial Testing							
	<b>Sargent</b>	0,92		0,89	7,52		7,28
	<b>Cooper</b>	0,94	0,89		7,68	7,28	
<b>Reference Pattern</b>		<b>Correlation</b>			<b>The significance of the correlation coefficient</b>		
		<b>Harvard</b>	<b>Sargent</b>	<b>Cooper</b>	<b>Harvard</b>	<b>Sargent</b>	<b>Cooper</b>
	<b>Harvard</b>		0,90	0,93		5.08	5.25
	<b>Sargent</b>	0,90		0,85	5.08		4.80
	<b>Cooper</b>	0,93	0,85		5.25	4.80	

The significance of a calculated correlation coefficient -  $\epsilon$  test (table 1) indicates that it is significant for  $p < 0,05$  (1,96), and the research hypothesis can be validated and the results can be generalized. Simple ANOVA (table 2) the amount calculated for the ratio  $F(1, 101) = 19,09$  for  $p < 0,05$  ( $F$  with 1 and 101 degrees of freedom is significant at 0.05 level of significance; the “ $t$ ” test dependent (table 2)  $t = 27,14$ ,  $p < 0,05$ ).

The null hypothesis can be rejected, the operational didactic program on the basis of the athleticism means produces a significant increase of the manifestation level of the maximum anaerobe alactacid power. Introduction, additional curriculum requirements in each lesson of 10-15 minutes during exercise specific branch of sports - athleticism, which has sought to develop combined motor ability, strength-speed and overall strength is illustrated by the significant increase arithmetic mean values of functional tests used and beneficial by improving the manifestation level of the physical condition of the students from the experiment pattern.

**Table 2.**

Simple analysis of dispersion values calculated for the ANOVA ( $F$ ) test and the “ $t$ ” - test-dependent

<b>The Harvard Test</b>	<b>Anova (F)</b>	$F = 17.29$ at $p < 0.05$
	<b>The „t” test</b>	$t = 24.66$ null hypothesis is rejected
<b>The Cooper Test</b>	<b>Anova (F)</b>	$F = 15.76$ at $p < 0.05$
	<b>The „t” test</b>	$t = 32.02$ null hypothesis is rejected
<b>The Sargent test</b>	<b>Anova (F)</b>	$F = 19.09$ at $p < 0.05$
	<b>The „t” test</b>	$t = 27,14$ null hypothesis is rejected

**Physical development indices** (table 3). *Nutritional indices calculated:* Quételet index indicates a poor nutritional state, but near the lower limits of the normal values; by calculating the body weight index, based on the arithmetic means of the experiment pattern, it appears that they fall within the normal range, scale of assessment according to this index.

*Harmony and proportionality indices:* index calculated Erissman indicates a lack of harmony between the increase in thickness and increase in body length of subjects' pattern studied; the calculated Adrian Ionescu index presents, after Adrian Ionescu the normal limits are 5 to 6 cm, a lack of proportionality between trunk length and body height; index calculated Amar seeking harmony between body height and torso length falls within the normal range.

*Respiratory indices:* Demetry's respiratory index (of resistance) and elasticity chest shows us that the arithmetic averages calculated for the two pattern measured values fall within the normal range, so students have a good lung coefficient.

**Table 3.**

## Physical Development Indices

Physical development indices	Assessment scale	Experiment Pattern		Reference Pattern	
		Initial test	Final test	Initial test	Final test
<b>Quételet index</b>	Normal values 400–500 gr/cm	387,6	395,3	388,7	395,17
<b>Body Mass Index</b>	Normal values 10÷25	21,92	22,54	21,91	22,48
<b>Erissman index</b>	Normal values 3.8	1,23	1,79	1,14	1,76
<b>Adrian Ionescu index</b>	Normal values 5÷6 cm	4,74	4,75	4,99	4,73
<b>Amar index</b>	Normal values 0.52	0,52	0,52	0,52	0,52
<b>Respiratory index Demeny</b>	Values 7 ÷ 9 very good	7,64	7,27	7,77	7,41
<b>Thoracic elasticity</b>	Normal values over 7 cm	10,62	9,66	9,81	9,52

Knowing the significance of the correlation coefficient (table 4) of the motor parameters, functional parameters and indices of physical development was obtained using  $\epsilon$  test after final testing between the motor tests used in this experiment, functional parameters by the application of the three functional tests and parameters most representative anthropometric, body height and body weight.

**Table 4.**

The significance of the correlation coefficient the test  $\epsilon$  – Experiment Pattern

Tasks	50 m	Detent	Jump in length from standing	1000 m	Harvard Test	Cooper Test	Sargent Test	Body height	Body weight
Speed running 50 m		4,78	4,13	2,15	-	-	5,66	-	-
Detent on vertical	4,78		7,45	-	-	-	8,28	4,49	-
Jump in length from standing	4,13	7,45		-	-	-	4,88	4,09	-

Tasks	50 m	Detent	Jump in length from standing	1000 m	Harvard Test	Cooper Test	Sargent Test	Body height	Body weight
Resistance running 1000 m	<i>2,15</i>	-	-		<b>3,34</b>	-	-	-	-
The Harvard test	-	-	-	<b>3,34</b>		<b>7,68</b>	<i>2,34</i>	-	-
The Cooper test	-	-	-	-	<b>7,68</b>		<i>2,41</i>	-	-
The Sargent test	<b>5,66</b>	<b>8,28</b>	<b>4,88</b>	-	<i>2,34</i>	<i>2,41</i>		<b>3,22</b>	-
Body height	-	<b>4,49</b>	<b>4,09</b>	-	-	-	<b>3,22</b>		<b>2,66</b>
Body weight	-	-	-	-	-	-	-	<b>2,66</b>	

*Note:* the number of bold represent the fact that are significant at the significance threshold  $p < 0,01$ ; the numbers italic represent the fact that are significant at the significance threshold  $p < 0,05$ .

Test value calculated for  $\epsilon$  between Harvard and motor test the 1000 m distance running is higher than the value of "t" spreadsheet - Fischer's table [Dragnea, A., 1984, pg. 44] at the significance threshold  $p < 0,01$  (2,58 ); with the Cooper and Sargent test is higher than the value of "t" tabulated at the significance threshold  $p < 0,05$  (1,96); between test Sargent - motor tests - running speed on the distance of 50 m, detent vertical and standing long jump and anthropometric parameters - body height is higher than the value of "t" tabulated at the significance threshold  $p < 0,01$ ; with the Cooper test is higher than the value of "t" tabulated at the threshold significance  $p < 0,05$ ; the results are significant between them in motor tests at each threshold of significance  $p < 0,01$ ; parameter values anthropometric – body height are significant at the significance threshold  $p < 0,01$  with motor tests and flashing vertical jump long standing and Sargent and also the body weight test. The correlation coefficient of the  $\epsilon$  test is significant and the research hypothesis is verified and the results obtained in research carried out can be generalized.

## Conclusions

The complexity of the reference range, physical education, by the large number of related links, necessary to achieve a continuous selection of the most useful and effective ways and means used in physical education lessons, to increase the expression of physical condition. Usefulness of exercise performance at least one hour per day, especially by young people, is generally considered a gain for the physical activity by improving health and of the capacity to accomplish certain activities with a higher efficiency for a longer period time. The improvement of the physical condition is achieved by reference to future state licensed person, the optimal health being the one that establishes

the evolution over time and can form an individual optimal physical condition. Supporting an adequate attitude to promote continuous and systematic physical activity to maintain optimal health and improve the level of expression of physical condition. The promotion of certain decisions of social significance under the National System of Physical Education and Sport for creating analytical structured models from the athleticism training. Athleticism specific means and methods may support a change in muscle and joint adapted to future profession. Physical education lesson ensures continuity of training, achieving an optimum between individual fitness and learning motor skills specific to athleticism, and a gradual gradation of the physical effort. By knowing the expression level of the students' physical condition, it is possible to select the most effective ways and means to increase the efficiency of the physical education lessons. Ways and means specific to the sports branch athleticism, used in the physical education lesson for combined motor capacity improvement, strength-speed and of overall strength have proved their efficiency, as confirmed by the increased power and anaerobic and aerobic exercise capacity in general. Calculation of statistical indicators, based on sports performance record, after the final testing for the experiment pattern, presents a significant increase of the arithmetic average of the motor parameters and functional parameters compared with the initial testing and the reference pattern that used only the means contained in the analytical curriculum. Applying the three functional tests leads to the conclusion that operational didactic program by means of athleticism, produces a significant increase in power and students' effort capacity undergoing the experiment, compared with those who used only the means listed in the analytical curriculum. The calculation of the correlation coefficient and significance of correlation coefficient analysis but the results of the simple dispersion test ANOVA and "t" - test dependent, in order to verify the null hypothesis, shows us that results are significant at the threshold of significance  $p < 0,05$  (1,96), so the research hypothesis is verified and the results can be generalized. Physical development indices indicate a poor nutritional status, a lack of harmony between the increase in thickness and increase in body length, a lack of proportionality between trunk length and body height, harmony between the torso length and body height and also a good lung coefficient of the subjects from the studied pattern. The application of the psychosocial assessment questionnaire indicates that the investigated subjects present at the four features (behavior, social activism, communication and specific features of personality) a high intensity that manifests itself in every part. The questionnaire on health knowledge and probable life span and that aims at different aspects of everyday life presents us with a sample

belonging to the younger generation who occasionally practices physical exercise, have an unbalanced diet, the body weight is located below the age limits, do not consume excessive alcohol and tobacco and are interested in their health applying preventive measures through an annual medical examination.

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## OVERWEIGHT AND OBESITY AND THE INFANT-JUVENILE: CAUSES, PREVENTION AND TREATMENT

PERROTTA FRANCESCO<sup>1</sup>

**ABSTRACT.** From OMS-World Health Organization-out is a worrying sign: in the ' European Health Report 2002, report on health in Europe in 2002, published by 'Regional Office for Europe, obesity is defined as an epidemic that extends throughout the European Region. "In many European countries more than half of the adult population is" overweight "and about 20-30% of adults and 'accordingly obese (clinically obese). The illness of the' obesity in subjects in 'evolution is in increasing in European countries, one child in five is obese and / or overweight. negatvo A signal is represented by a continued increase in childhood obesity in adulthood with serious risks to health. Another negative indicator is the psychological fallout In fact, childhood obesity often leads to a dizzying set of self-esteem with syndromes depressive. The Conference held in Copenhagen on 11 and 12 September 2002, obesity, a challenge for the European Union, the theme has been addressed in its extreme gravity with this overview of data: about 300 million people are obese in the world The number already 'high' is intended to increase still more and more, with serious consequences for the health Reality ' is more serious in North America and Europe, but has spread to areas where, in the past, was not present except in very small quantities (Asia, India, China, Japan and even parts of Africa and South America, including as well as some countries in the developing world); in recent years the number of people with obesity has doubled in many countries; in Europe has increased by 10-50% in the last 10 years; According to a study by the International Obesity Task Force, about 4% of all children in Europe and obese and this number is markedly increased It is estimated that between 2-8% of overall costs for health care is linked to obesity; The dimension of the problem in the U.S. is double in Europe, but the rate of increase is higher in European countries, The key elements for the prevention and treatment of obesity and is 'now clear that key elements are identified in' Proper nutrition, the role of families and physical activity; COUNTRYSIDE information widely distributed media, school, family, and sports are considered necessary to raise awareness of the problem in all sectors of society, including the medical staff who often is not sufficiently prepared to deal with the problem and patients are less willing to seek help.

**Keyword:** childhood overweight, nutrition, hypokinesia, quality of life

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The research, at present, aims to eliminate the environment that some factor has changed from the war years on ensuring that the potential diabetic, genetically speaking, are transformed from potential to reality. 'S hypothesis is related to increased caloric intake, a time our ancestors ate much less. New research, for the treatment of diabetes, are represented by the artificial pancreas, portable insulin pumps and transplants. Those at risk for diabetes type 1 (the infant-juvenile, which requires insulin) are those who have a family history of diabetes behind. for type 2 diabetes, however, adversely affect the sedentary hypokinesia and increased body weight. In particular, the mode of distribution of adipose tissue on the abdomen appears to play a dangerously heightened role of risk.

### **Introduction**

Childhood obesity is the result of a prolonged positive energy balance over time in practice for a long time you introduce more calories than you consume.

The definition of overweight / obesity in children is more complex than in adults, whose ideal weight is calculated based on the BMI (Body Mass Index or Body Mass Index)

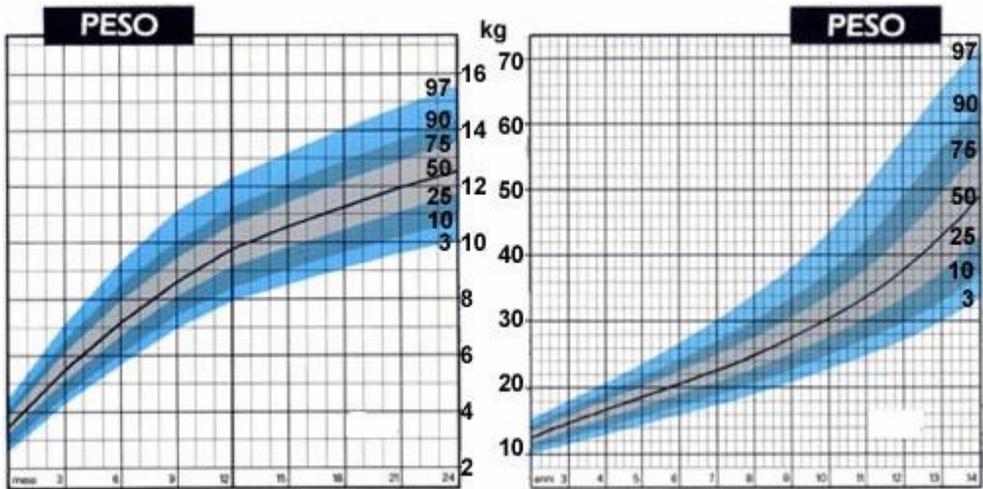
$$\text{BMI} = \frac{\text{the subject's weight in Kg}}{\text{the height in meters squared}}$$

Waiting to find the most appropriate benchmark, the BMI has also been proposed for children by applying the correction tables that take into account gender and age (range 2-18 years). after applying the correction is defined as:

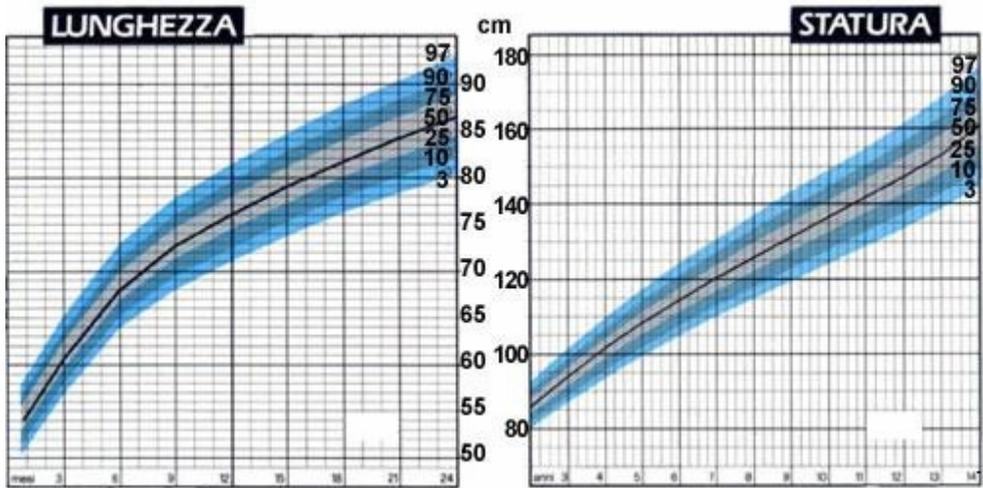
Overweight: a BMI between 25 and 30 The degree of obesity: a BMI between 30 and 40

Grade III obesity: a BMI greater than 40

Alternatively, knowing that the growth of children is assessed by reference to the tables of the percentiles, charts, bringing together the percentages of weight and height of children, broken down by sex and age.



Tables of Percentiles weight boys 0-24 months and 2-14 years



Tables of Percentiles height males 0-24 months and 2-14 years

**Then define a child:**

Overweight when their weight exceeds the ideal of 10-20% reported at as a child and 'obese when his weight exceeds by more than 20% than the ideal.

The infant-juvenile obesity is widespread and growing in Western countries, such as to be regarded as a real social disease. Obesity in childhood predisposes the adult. The obese child has an almost doubles the risk of becoming an obese adult, compared with normal-weight peer. Obesity is a

condition that can expose the body to the onset of degenerative diseases such as cardiovascular and metabolic disorders.

It is therefore essential to know the extent of the problem in schools for the purpose of a preventive intervention aimed to reduce it and to be carried out especially in children.

According to statistical studies conducted by the International Obesity Task Force, the prevalence of overweight and obesity is growing proportions "epidemic" is reaching alarming proportions in developed countries than in developing countries.

In the U.S., representing the country just a symbol of obesity, the prevalence has increased dramatically since 1998. To date, in fact, 24 of 50 states have an obesity rate of around 20-24%.

In Europe, the prevalence of obesity has increased by 10-50% in most countries over the past 10 years: males 10-20% of the population, females 10-25% of the population.

Childhood obesity affects an age ranging between 6 and 13 years with interest to the male.

Italy is one of the European countries with the highest number of overweight children (20%) and obese (about 4%).

The causes are many, and it covers the bad food habits, physical inactivity, genetic factors, inheritance or predisposition and environmental factors.

The consequences for obese children are fatigue, joint and skeletal abnormalities (varus or valgus deformity of the limbs, flat feet), gastrointestinal disorders and inevitably psychological problems (difficult relationship with his own body, easy isolation, difficulty to socialize).

### **Etiopathogenesis**

Regardless dall'eziopatogenesi overweight is always a consequence of a positive energy balance. The intake of energy nutrients exceeds the caloric expenditure resulting in an increase of the body reserves.

### **Multifactorial Etiopathogenesis.**

The predisposing factors can be divided into:  
= genetic factors that predetermine the number of fat cells and alterations in feeding behavior;  
Environmental factors = drug use, ethnic and socio-cultural, dietary factors, physical inactivity, psychological factors.

### **The survey methods and protocols related**

Obesity as a health problem, it begins to attract interest from the early years of last century with the studies of American insurance companies.

Since then, many researchers have done their utmost to realize detection methods based on height-weight indicators, defining for each method, the limit beyond which a person was considered obese and at risk to health.

Among these, the anthropometric indices were used in between the past and still play an important role in epidemiological studies, both for the high reproducibility of the measures for their ease of detection.

The most important are: The relative weight percentage and body mass index.

### **Percent share**

It is based on the calculation of the ratio between the actual and the ideal weight, calculating it on the tables of the growth curves, as the value given by the percentile weight corresponding to that of the stature of the subject. According to some methods, the child with an excess weight of 20% or 30% over ideal weight is defined as obese.

However, the validity of this index is influenced by the standard of reference, some of which are based on growth data of a group of children lived in 60 years. Another problem is that the relative weight percentage of this index is overly influenced by the stature of the subject.

### **Body mass index**

Another index of weight that avoids the limits of precedent is the BMI or Body Mass Index (BMI) or Quetelet index, named after Belgian anthropologist who proposed the use, which is scarcely influenced by the stature.

It is calculated using the formula:  $BMI = \text{weight (kg)} / \text{height (m}^2\text{)}$ .

### **Individual BMI**

Underweight  $< 18.5$

Normal weight  $> = 18.5 < 25$

Overweight  $> = 25 < 30$

Obese  $> 30 =$

### **The determination of body composition**

The methods previously handled are not able to quantitatively define the concept of obesity appears to be physiologically dependent on the

concept of lipid present in each adipose cell and the total number of fat cells. According to some studies, obese subjects were compared with their normal weight peers, a greater number of adipocytes with increased lipid content.

For these reasons in recent years are being adopted into clinical practice those methods which, considering separately the various parts of the body, allowing a more direct estimate of the percentage of fat. These methods are based on a model called "two-compartment model, whereby it is assumed that the human body is composed of two compartments of different composition: fat mass (Fat Mass) and the mass alipidica (Fat-Free Mass). The latter is formed from the apparatus and skeletal muscle, blood and other organs.

### **The anthropometric measures**

Among the anthropometric measures, a simple method for determining the percentage of fat in the body is to measure the circumference of some of its parts (abdomen, buttocks, thighs and right calf, right arm and forearm).

Appropriate conversion tables, broken down by sex and age, then allow to determine the percentage of body fat through simple mathematical calculations. This method is widely used in sports, in conjunction with the skinfold thickness to determine the level of muscle from different tissues of the athlete.

### **The skinfold**

A good compromise between the anthropometric measures is the skinfold thickness is a simple, non-traumatic, not only the evaluation of body composition analysis but also for the total district subcutaneous fat. the thickness of subcutaneous fat is measured using the calipers (Harpenden, Holtain) by lifting the skin and subcutaneous tissue with the thumb and index finger, excluding the underlying muscle tissue. The seats are more standardized in the triceps skinfold, subscapular, suprailiac and calf.

In Italy is available for the pediatric age percentile curves for the triceps and subscapular skinfold, by which obesity is defined as the triceps skinfold measurement exceeds the 85th percentile.

In addition to the predictive value of the percentage of fat, have been established on the benchmarks for defining obesity. According to Lohmann fact, when the percentage of adipose tissue of subjects in pre-pubertal, pubertal and post-pubertal, exceeds 25% and 32% in males and females the subject is considered obese. This method also has its limitations, first of all,

it is operator dependent. Also it can be difficult to detect folds in a very obese person, because the mantle subcutaneous fat can be so abundant as to prevent correct measurement, and the fact that the locations chosen for measuring skin, do not necessarily reflect the average thickness of the coat fat.

### **Prevention and treatment**

The lifestyle and a sedentary lifestyle, in addition to the various factors considered, appear to have a significant importance in determining the causes of obesity. In this regard, an important research was conducted by the Institute of Sports Science CONI in 1993, a young population aged between 9 and 14 years attending the school in all countries, namely dell'Agroromano Roccagorga.

Sezze Romano, Bassano and Privett. The sample consisted of 864 students, divided in 444 males and 420 females. To evaluate obesity has used the skinfold at triceps and subscapular. It was considered as a benchmark for the determination of obesity, the actual body weight exceeding 20% of that ideal. The objective of this study was to identify a possible incidence of obesity among the sedentary compared to sports. From our observations this is not shown. It resulted in a rather high percentage of obese subjects in all groups considered.

To not have overweight children, the only real weapon is prevention, about the Italian Society of Pediatrics has highlighted the following ten commandments so as to prevent the risk of overweight and obesity:

- Be a good breakfast;
- Take regular meals and avoid the "fuoripasto";
  - Consumption fruits and vegetables;
- Drink plenty of water by limiting sweetened drinks;
- Reduce the fat in food, particularly meats, fried foods, condiments and desserts;
- Avoid using food as a "bonus";
- Focusing on outdoor play, possible at least one hour per day;
- Walk walk on all possible occasions;
- Apply a sport regularly. It does not matter at all costs to be champions, but to exercise and have fun;
- Limit the "videodependence" during leisure time (up to 2 hours a day).

### **Conclusions**

An analysis of Italian literature, related to obesity in school-age shows how the phenomenon has grown since the war. The lack of homogeneity

of data, unfortunately, prevents us from determining exactly what the growth of the phenomenon.

This variability is attributable to the different definitions of obesity, methods, protocols and tables Auxologico reference used by the studies reviewed.

However, the results of all the works are to be consulted in establishing agreed that obesity is already present in significant proportion of students in early grades of elementary school. It grows steadily with age reaching its peak in the lower secondary school students and decreases in later ages.

In this regard, the Ministry of Education could endorse a discovery protocol only at the national level to be managed by the teachers of Physical Education within their jurisdiction with regard to assessment of physical abilities of pupils. In so doing, the unique nature of the results would allow the creation of a database which better reflects the true extent of the phenomenon and thus a more effective monitoring of the entire school population Italian

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## DYNAMIC ENERGY SYSTEM LACTATE - LACTIC ACID SYSTEM IN MUSCLE SUPPORT PHYSICAL EFFORT

NICA-BADEA DELIA<sup>1</sup> & MONEA GHEORGHE<sup>2</sup>

**ABSTRACT.** The lactic acid system performance sport / lactate has seen many controversies concerning the positive and / or damage to muscle. The paper addresses the issue of lactic acid metabolism dynamics / lactate in the human body as an energy source to sustain anaerobic exercise sports. Are the results of biochemical research on the production, disposal and its absorption in muscle lactate during exercise as a dynamic variable depending on time depending on factors such as intensity of effort, muscle fiber type, blood circulation, uptake by other muscle groups not involved in effort. The positions of the main factors contributing to scientific research that explains the weight in blood lactate, stresses the correlation between the increase of acidity and the occurrence of fatigue in exercise sport support.

**Keyword:** lactic acid / lactate, muscular exercise, acidity, physical fatigue

**REZUMAT.** *Dinamica sistemului energetic acid lactic-lactat, în susținerea efortului fizic muscular.* În sportul de performanță sistemul acid lactic/lactat a cunoscut numeroase controverse privind efectele pozitive și/sau negative asupra mușchilor. Lucrarea abordează problematica dinamicii metabolismului acidului lactic/ lactat în organismul uman, ca sursă energetică anaerobă în susținerea efortului fizic sportiv. Sunt prezentate rezultatele cercetării biochimice privind producerea, eliminarea și absorbția acestuia în mușchi, dinamica lactatului în timpul efortului ca funcție variabilă în timp, depinzând de factori precum: intensitatea efortului, tipul de fibră musculară, circulația sângelui, absorbția acestuia de către alte grupe musculare neimplicate în efort. Pozițiile cercetării științifice privind contribuția principalilor factori care explică ponderea lactatului în sânge, subliniază corelația dintre creșterea acidității, și apariția oboselei în susținerea efortului fizic sportiv.

**Cuvinte cheie:** acid lactic/ lactat, efort fizic muscular, aciditate, oboseală fizică

### Introduction

In the world of sport performance, the system of lactic acid / lactate has seen many controversies concerning the positive and / or damage to muscles in physical effort. As is known, the primary source of energy in muscle

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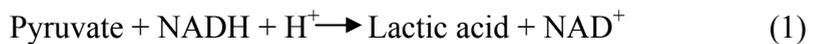
<sup>2</sup> Babeș - Bolyai University of Cluj-Napoca

contraction is ATP molecule. Its hydrolysis removes energy and a phosphate group. When effort is high but the intensity and duration longer time solution to produce energy anaerobically glycolitic system takes over. Lactacid anaerobic effort, energy substrate is glycogen (muscle) which breaks down to pyruvic acid and 2 moles of ATP. Pyruvic acid is lactic acid that accumulates locally. Ideally, the system glycogen-lactic acid can provide 1.3 to 1.6 minutes maximum muscular activity. Dynamics of lactate during exercise is variable over time, depending on factors such as intensity of effort, muscle fiber type, blood circulation, uptake by other muscle groups not involved in the effort, etc. Thus, these considerations become a controversial topic discussed in the literature field.

### **Biochemistry of lactic acid production in the human body**

Lactic acid from pyruvate formed in the body into accepting two H<sup>+</sup> in the reaction process of gluconeogenesis is used in the production of ATP. The liver is the principal organ in which it occurs less and kidney (Berg, J.M., Tymoczko, J.L. & Stryer L., 2003). AL circuit from the release of glucose by the liver and muscles to the muscles that need it is known as the Cori cycle.

Under normal conditions, lactic acid dissociates resulting salt formed when lactic acid: sodium lactate, commonly called milk. Between the two forms are influenced by the pH balance of muscles, blood and interstitial space. Energy in the form of ATP is formed mostly in mitochondria, where NADH + H<sup>+</sup> are oxidized. Oxidation and reduction reactions are transported through the permanent H<sup>+</sup> carriers NADH + H<sup>+</sup> and FADH<sub>2</sub>. Lactic acid formation occurs when lack of oxygen NADH + H<sup>+</sup> can not be oxidized in mitochondria and as a result, the amount of NADH + H<sup>+</sup> in the cytoplasm increases. In this case the temporary solution is accepted by H<sup>+</sup> pyruvate thus forming lactic acid (1 reaction).



The reaction is catalyzed by the enzyme lactate dehydrogenase. This is when the body burden of production of ATP is transferred to anaerobic glycolysis. Further, lactic acid is transported out of the cell via monocarboxylic transporters MCT1 and MCT4, which mediates transport of lactic acid and H<sup>+</sup> in a ratio of 1:1 (Juel, C., 1997). Based on this mechanism, it appears that increasing the concentration of lactic acid is associated with increased acidity in muscles engaged in the effort. From

another point of view, lactic acid is regarded as a buffer to reduce the acidity of the muscle cells during exercise due to co-transport system by which a molecule of lactic acid is released from the muscle cell with  $H^+$ . Hydrogen ion concentration which determines the acidity of the body are transported out of cells through various transport systems, but one that prevails is dairy -  $H^+$  (Juel, C., 1988; Juel, C. & Wibrand F. (1989). Based on these considerations, increased blood lactate, indicating increased acidity in the body. In this regard, efforts that rely predominantly on muscle glycogen consumption in muscle lactate production may be at maximum intensity and supramaximală efectutate, but for a short period of time.

### **Weight dynamics of blood lactate during exercise**

Pyruvate formation reaction, the precursor of lactic acid, is an important element in the exercise of metabolic flux. Scientific argument that is bound pyruvate once formed, may follow several routes such as the Krebs cycle decarboxylation to follow the path being oxidized to  $CO_2$  and water with energy production, to be eventually converted into acetaldehyde resulting alcohol to form lactate or transfer of amine groups are converted to alanine. Taking into account the law of mass that the chemical reactions, the quantity of substrate on whose behalf an enzyme determines the direction in which the reaction, by deductive reasoning under anaerobic conditions, when increasing amount of  $NADH+H^+$  pyruvate will not enter the cycle Krebs, following the path of aerobic metabolism, lactate will be formed by reaction with  $NADH + H^+$  lactate dehydrogenase enzyme.

Experimentally, it was demonstrated that the release of lactate in the blood increases with exercise intensity (Bangsbo J., Graham T.E. ,Kiens B., & Saltin B. , 1992).. The group of researchers have highlighted the effect of a carbohydrate-rich diet on glycogen lysis and glycolysis during exercise by increasing blood concentration of lactate increased the intensity of effort. It is reasoned finding that relatively short and intensive efforts such as: running speed of 200, 400 and 800 meters flat, alternating maximum and Sub-maximal efforts in sports like soccer, handball, basketball and other sports, increasing the lactate sanguine .

Elimination rate of blood lactate as a measure of its effectiveness in the cell membrane transporters, revealed a dynamic system adaptation to lactate under conditions of maximal intensity exercise (Pilegaard H. et al, 1999). The results are presented in Table 1. It was observed that under high-intensity training is highlighted by stakeholders in the effort increases, the

amount of enzymes characteristic of aerobic energy production and monocarboxylic transporters (TRM). This explains the reason for which an athlete has a lower level of lactate in the blood than a sedentary person for the same maximum intensity or Sub-maximal effort.

The same experiment shows the influence of high intensity exercise on skeletal muscle fiber conversion in terms of their type. It can draw a parallel between the percentage of type II muscle fibers (IIA > IIB) recruited into the effort and amount of blood lactate.

**Table 1.**

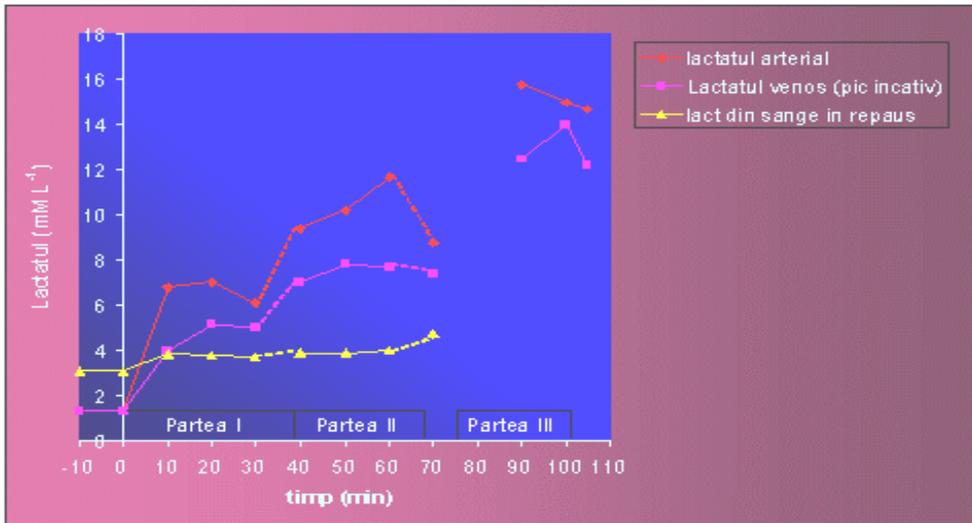
Adaptations produced by eight weeks of intensive training on fosfofructokinaza enzymes (PFK), citrate synthase (CS), lactate dehydrogenase (LDH) and lactate transporters, monocarboxylic transporter (TRM). (Pilegaard et al 1999).

	PFK	CS	LDH	TRM 1%	TRM 4%
Untrained	106 ± 6	38 ± 2	556 ± 60	100	100
Entrained	121 ± 15	45 ± 1	598 ± 107	170 ± 32	133 ± 10

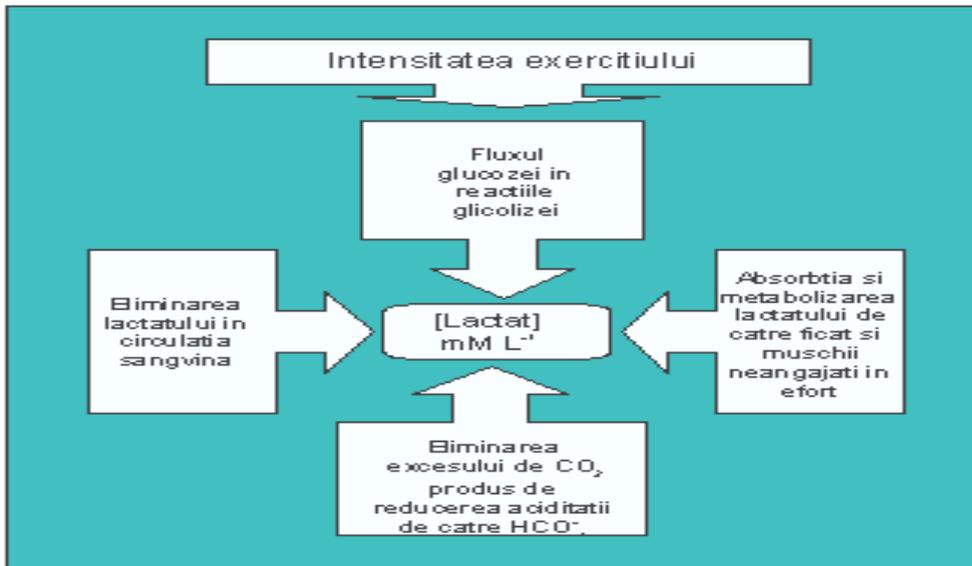
Study on the absorption of lactate by muscle groups are not involved in the effort during exercise (Bangsbo J. et al, 1995) demonstrated that lactate uptake in inactive muscles increased proportionally with the speed of blood flow and that lactate into muscle cells that takes place with the same magnitude as that of  $H^+$ , demonstrating TRM activity.

In the same experiment, subjects performed an exercise in the first two parts only with arms, following a second series of repetitions increased, the third part of the leg extension without a break was followed by four sets of arm work. Simultaneously with the execution of exercises, muscle activity were monitored and blood flow velocity in the leg inactive control. It was first recorded in muscle lactate accumulation of inactive, then a reduction in its staff, which indicates increased metabolism in the muscle, something explained by oxidation with energy production or its conversion to malate. Simultaneously, an increase of  $CO_2$  removed from the lungs in relation to  $O_2$  consumed, something that indicates the elimination of large quantities of  $CO_2$  produced by oxidation than normal cells. The explanation for this phenomenon is that the excess  $CO_2$  formed, comes from a combination of bicarbonate lactate- $HCO_3^-$  - reaction takes place to reduce the high acidity caused by the accumulation of  $H^+$ . By plotting the graph (Figure 1) show the evolution lactate concentration for the three types of exercises. Evolution of lactate concentration reached a plateau and even decreases in Uncommitted muscle cells showing that effort, they absorb and metabolize lactate.

Based on data from literature can summarize the main contributing factors explaining weight exercise blood lactate in muscle (Figure 2).



**Figure 1.** Elimination of lactate (red curved line) and uptake in inactive muscles (Pink curve line). (Bangsbo et al., 1995).



**Figure 2.** Factors that determine the blood lactate level during exercise

### **Positions for and against**

Dynamics of blood lactate is based on several variables, sparked much controversy in the world of specialists. Basically, the pros and cons are controversies about the association with increased accumulation of lactate acid in the body. Establishing the precise source of  $H^+$

Taking into account the sources of  $H^+$  can say that its origin is due to several reasons, lactate dissociation with elimination of  $H^+$  can be regarded as arguably a main cause of acidity in the organism growth. Acidification leads to fatigue, the effects that he carries along the whole length descending involving the transmission of the central nervous system to the effector, which is muscle.

Share scientific controversies on lactate, muscle fatigue involvement in the development and support of exercise are related to the names of Australian and Danish researchers. Getting support the idea that lactate has no negative effect to cause muscle fatigue, and it may be caused at any level of excitation contraction coupling muscle. Arguments of causality: the accumulation of  $K^+$  which depolarises cell membrane affecting asfel contraction of muscle [8], the force of contraction may be influenced by the release of calcium ions ( $Ca^{2+}$ ) of the reticulum sarcoplasmatic (Allen DG. Langnergren J. & Westerblad H. , 1995), causes of fatigue is the accumulation of products of metabolism as as  $Fi$ ,  $ADP$ ,  $Mg^{2+}$ , the kinetics of TRM ( if lactate would be harmful to the muscle cells,  $K_m$  was decreased in the case of type II fibers, thus împiedicându lactate accumulation in them). Danes claim Juelos Bangsbo and lactate effect on muscle fatigue largely presented in Chapter 3 (Bangsbo J., et al, 1992; Pilegaard H., et al., 1999; Bangsbo J., et al., 1995), bringing new counter (Bangsbo J., Madsen K., Kiens B.& Richter EA., 1996). They accept the argument that the acidity decreases intracellular  $Cl^-$  permeability of a transverse tube system, which spread the action potential triggers the release of  $Ca^{2+}$  in muscle cell, thereby causing contraction, despite the depolarization induced by  $K^+$  (Pedersen TH, de Paoli F. & Nielsen OB., 2005).

### **Conclusions**

1. The beneficial effects it is forming lactate allows investigation of share glycolysis anaerobic energy production, the source for energy production in the liver and muscles not employed in the effort by transporting him across the cell membrane and  $H^+$  are removed from the cell decreasing acidity intracellular.

2. In addition to the beneficial effects of lactate accumulation is associated with increased acidity inevitable.

3. Elimination of  $H^+$  is more intense than that of lactate in cells and is already very clear that, besides TRM there are other factors involved in their elimination.

4. Accumulation of lactate and decreased pH (increased acidity) are causes of muscle fatigue, among other factors.

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## THE EDUCATIONAL INTERVENTION AND INDIVIDUALIZED PROGRAMMED TAILORED FOR PERSONS WITH DISABILITIES

PERROTTA FRANCESCO<sup>1</sup> & FARSACI FABIO<sup>2</sup>

**ABSTRACT.** A real motor education should be interpreted as an action that synthesizes psychology into a person's versatility means, techniques, motivation and knowledge, it is short of a mood, a style of life, so a global exist, and they propose: essentially a creative interdisciplinary not only the first child's education, but there is always the same continuing education. The educational project based on locomotion will point to a recovery action individualized taking into account the actual condition of the subject – jet and aims to reduce as far as possible the differences with "normal".

**Keyword:** locomotion, body, the expressiveness, body language, promoting learning motivation

### INTRODUCTION

Educating the disabled is a duty which no society can escape. Speaking of education should be given to this term a wide meaning, in which medical, psychological, social and educational real tend to achieve the full potential of every disabled person. In this area, two attitudes can be wrong: one part skepticism bias facing any kind of treatment or policy "they are not c is nothing to do" on the other misleading optimism and the search for treatments miraculous, that the policy of denying a priori the same handicap. In fact for every disabled and can identify a treatment plan capable of developing its potential sensory, motor, mental and relational.

A real motor education should be interpreted as an action that synthesizes psychology into a person's versatility means, techniques, motivation and knowledge, it is short of a mood, a style of life, so a global exist, and they propose: essentially a creative interdisciplinary not only the first child's education, but there is always the same continuing education.

The educational project based on locomotion will point to a recovery action individualized taking into account the actual condition of the subject and

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aims to reduce as far as possible the differences with "normal". The educational intervention will be planned and individualized tailored to the individual concerned. For individualization of course we mean the adaptation quality and quantity of physical activities for individuals (or groups of individuals very similar) as a function of their psychic abilities, psychological, physiological and anatomical and functional, through appropriate choices of content items (exercises), an adequate education and adequate methodological approach.

The locomotion, the psychic and corporeal merge into a psychosomatic where everything is designed and analyzed under the totality, the whole person in his unit psychomotor, appearance existential and conceptual.

Wallon, Piaget and others, agree that the mental motor activity and the activity are not strangers to each other and therefore there is no dualism: "The human person is talking about biological unit, functional unit in which psychological and motility are no longer two separate fields or juxtaposed, but represent the expression of real relations of being and the environment. Before using verbal language to be understood, first, the child uses gestures, ie movements in relation to its needs and circumstances arising from his relationship with the environment 1.

The locomotion, even in its many variables, and recognizing its limitations, is now generally accepted: C. says Morosini that: "The law of locomotion, coined by Dupre in 1925, is widely recognized for some time, both by psychiatrists that psychologists, by educators, by educators, all say there is a close parallel, during the developmental age, between the development of motor function and development of psychological functions. Indeed during the developmental age sensory-motor development is the basic emotional and intellectual development. Not only that, but also during the second, third, childhood, adolescence, adulthood and age, it is now common assertion that motor and mental influence one another 2.

Physical activity and then, if considered in its entirety as an expression of psychic activity which is expressed by motor action can be defined locomotion.

### **AIMS EDUCATIONAL TEACHING**

The treatment is proposed for the following purposes: the acquisition value of the body, through the experiences of activities and sports, expression and relationship, depending on the formation of a stable and balanced personality; achieve complete development of body and motor of the person through the refining capacity to use the physical and neuromuscular function;

support forms of assertion of personal identity based on the perception of its possibilities and its limitations, but also with the desire to improve, doing physical activity with fun and serenity.

Create the conditions for which the student can experience a direct and practical, respects the interests and individual skills, enhancer their self-efficacy, self-esteem and autonomy, projected into a social exchange that enriches one another. Deepening theoretical and operational activities and sports that, even giving space to the personal attitudes and propensities, conducive to the acquisition of transferable skills outside of school (work, leisure, health); the evolution and consolidation) of a balanced social consciousness, which seeks to foster cooperation, respect of rules and assumption of responsibility.

EDUCATIONAL OBJECTIVES OF CONDUCT promote the acquisition of proper psycho-social behavior by promoting the conquest of autonomy, self-control, emotional balance and sociality; the ability to analyze practical situations; improve the expressiveness and body language; reduce anxiety, agitation, insecurity gradually restoring confidence in our abilities and within their means; increasing the hours of attention, promote learning motivation, stimulate curiosity; promote inclusive education and social to the student active protagonist of educational incentives to the discovery and understanding of the task; teach respect for social rules enhancing personal autonomy; correct and safe use of space and equipment and adoption of health behaviors in compliance.

## **OBJECTIVES**

### **Psychomotor**

To promote awareness and perception of the body (body schema) by the perception of size and body positions, the relationship between different body segments and the relationships between body segments and the environment (things and people); motor action to adjust its spatial parameters and time-space; learn the function of dominance and lateralization; capacity building conditional or physical mobility as joint mobility, strength organic general, speed, muscle strengthening osteo-dependent natural exercise control static and dynamic balance; improve traction even on a global educational activities using backing tracks, the eye-hand coordination and breech, the general dynamic coordination, basic motor patterns (walking, running, jumping, throwing, pulling, climbing etc.). Spread the practice of relaxation in physical activities including through educational knowledge and awareness of their breathing.

## CONTENT

The exercises used to achieve the objectives of the program will be those classic psychomotor educations. They start from the simplest to get to more complex, from easy to difficult, as known to the unknown, referring to what is already acquired.

The intensity of the exercises will be kind of mild - moderate by providing suitably long period of rest in a way not only to avoid excessive feeling tired but in particular strengthening the mental memory of the motor.

The choice of exercises will be guided not only by the main purpose that we try to achieve, even the current state and problems of students and the capabilities and potential of the same, whereas sometimes the spheres of interest.

Educational activities will allow children to be able to experience success and a feeling of competence (self-efficacy).

The exercises will be proposed through an integrated modular programming and microcycles macrocycles, since psychomotor area is extremely difficult for what regards the practical part, provide a tassonomizzazione strictly sequential and chronological content as psychomotor skills are closely related to one the 'other and pursue sometimes form simultaneously.

Therefore since the different fields of locomotion closely interconnected and inseparable, are present in all classes. Content referenced in the following table programming.

**Table of Programming**

OBJECTIVES	MODULES	TEACHING	TIME
Personal awareness of psychomotor skills	ENTRANCE TESTS	Evaluation of psychomotor performance through objective standardized tests	October
Perception, knowledge and awareness of the body Knowledge of the differentiation between body still and moving Learning and listening to your body to express feelings and emotions	Body image	Recognition and description of the various body parts - an indication of the parties implemented with body contact - contact your body with the ground or other objects - activities imitation of postures and attitudes or gestures-type - associated with voluntary muscle relaxation breathing	From October to November
Acquisition of spatial concepts (up, down, sideways, around, near, far, inside, outside, big, small, front, rear, left, right..) and temporal (range, simultaneity, succession, duration, slow, fast ) Adaptation of trips to space and time	ORGANISATION SPACE - TIME	Exercises direction, distance and range, height and depth - Use of gymnastic routes with large and small tools	from December to January

OBJECTIVES	MODULES	TEACHING	TIME
Awareness of changes in muscle tone - reduce muscle tension and psychological, of sincinesie and paratonic	RELAXATION AND GLOBAL segmental	Techniques of contraction and deconcentration of the different parts of the body (Jacobson method)	From October to May
Self-monitoring of respiration rate and heart - anxiety reduction and improvement in attention	RESPIRATORY EDUCATION	Awareness of nasal breathing, diaphragmatic, abdominal, thoracic and complete in different postures. Associated with relaxation exercises overall and segmented	From October to May
Affirmation of laterality and consolidation of dominance Organization of physical space and graph a function of writing	Eye-hand coordination, breech segmentary DRIVING 'END	Manipulative activities with small items, tools, game, launch and reception, overcoming obstacles	From October to May
Refinement of kinesthetic sensations and perceptions and movement as a whole	COORDINATION GENERAL DYNAMICS	Motorical basic (walking, running, jumping, rolling, sliding, climbing, throwing, receiving, etc. ...) - changes in movement patterns as a function of space-time parameters	From October to May
Education of plantar sensation - reducing anxiety and self-improvement	FIXED AND DYNAMIC EQUILIBRIUM	Using tools destabilizing / oscillating transport of objects in balance, reducing or raising the base, removal of visual cues and auditory	From October to May
Active participation in the game both individually and collectively, and observing the rules, working within the group and enhancing the skills of others	GAME - SPORT INDIVIDUAL AND COLLECTIVE	Giochi d'imitazione, d'immaginazione, giochi individuali e di squadra	From October to May

## METHODOLOGICAL ORIENTATION

The meaning that a correct methodology of physical activities can have in the recovery of a disabled person is denied because the difficulties, as late even in some respects closely related his handicap on the levels of maturity, it needs to retrace those steps that others have crossed more quickly, steps that are most corporeal.

The success of any educational intervention is subject to the condition necessary to activate a process of exchange and communication is also based on the report body. And 'the quality and intensity of the relationship that achieves the overall objectives of communication, independence, socialization.

Style report will be based on educator preparation to communication and instant gratification of the subject, on the estimation, respect, empathy and a sense of mutual trust, all feed good interpersonal relationships.

In dealing with diversity, attention must be focused on the qualities it has in common with normal people. Place the center of his abnormal condition

report only serves to reduce his chances to lead a normal life. The disabled, despite its limitations, has the same basic needs of its peers. The mainspring of success, recognition, approval, applies to all regardless of physical looking. The different but needs opportunities for self-exploration and the achievement of results need to be involved and accepted.

The method of training based on mechanical repetition of the gesture, with the aim of reaching the imitation of a model defined a priori, we prefer a methodological approach that enhances the personality of the pupil, aiming to create interest and intrinsic motivation specific useful to target personal skills.

Regarding the relational methodology, we must promote, research, trials and errors of the boy. Should not be the teacher thinks and the boy to run. The educator's task is to animate problems in respect of which the child in person, by trial and error search for the various possibilities of solution.

To stimulate the active search of the boy, often articulate the proposals as problematic.

The way to approach the subject will often ask:

you are able to ..? Others want to try.? I challenge you to try if .. Can Help.? etc..

Recalling that the student placed in front of the problem will be much more mentally active than the one who obeys commands management.

Faced with persistent refusals to execute the exercises, you should also study the possibility of directly helping the boy to unlock a situation that just does not know answer: you may need to guide him by holding his hand, make him exercise. After some of these exercises helped, he will find a way to try and repeat the action until the complete assimilation.

In the case of negative behavior problem that the teacher speak calmly and firmly to avoid accusations and verbal, words full of nervousness or disappointment, this would increase the intensity of behavior.

The punishment should be avoided and will be used only in case of absolute necessity!

The recreational activity responds to the need for a primary pupil and rewarding form of business reasons, but must be well organized and above moderate as it may cause a temporary instability attentional and behavioral.

To increase the effectiveness and validity of the exercises, strengthen the body-kinesthetic sensations, check the psychomotor acquisitions constantly encouraging students to verbalization of motor actions produced.

## **STRATEGIES FOR ACTION**

In our work we will use the following strategies:

- reinforcements or enhancers and feedback
- Aid (prompts)
- fading
- verbal instructions
- modeling

Using these strategies allows children in need of feeling responsible for the direct nell"educatore that are favorable for a reference not prejudice the outcome of the activity, blocking the front of some obstacles.

With these techniques to facilitate different operations in a satisfactory condition to be considered as independent players in the result.

## **RECIPIENTS**

The project is aimed at all students with disabilities present in the Institute.

## **DURATION**

The annual work plan will take place during the hours and curriculum will have a duration of 4 hours per week during the school year divided.

## **GOODS AND SERVICES**

The classroom will be implemented at which the annual plan of work will be the laboratory of an autonomous college. Methodologically Necessary teaching materials for project managers

**HUMAN RESOURCES** prof Francesco Perrotta phd –University off Perugia Italy

Tutor Fabio Farsaci degree in physical education and specialized activities for prevention and rehabilitation.

## **ASSESSMENT AND VERIFICATION**

The attention paid to the personal circumstances of each student, is expressed in the provision of educational opportunities, taking into account the starting level will call for the gradual attainment of skills and behaviors evolved.

The regular observations and tests carried out during class, give the opportunity to provide any assistance or recovery to a better adaptation of the methodology (not forgetting that the success of a psychomotor task allows you to know simultaneously achieve multiple objectives).

The verification process will be organized: observation and guided behaviours and attitudes in place by the students; diagnostic and prognostic test, useful to check the levels psychomotor early, so as to ensure that the conditions for learning activities proposed and planned activities adapted to the student by providing individualized help to overcome difficulties; test control function, useful for evaluating the degree of learning and achievement of planned targets to be made by fortnightly or monthly. Index gradibilità by pupils, to assess the validity of education; feedback from students, staff of the learning process. At the end of each lesson will also be recorded for each student comments relevant to the overall assessment.

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## COMPARATIVE STUDY ON THE RECOVERY OF PATIENTS POST STROKE

MATEI ELENA-MARIA<sup>1</sup> & CIOCOL-POP RARES D.<sup>2</sup>

**ABSTRACT.** This is a study and aims to compare the degree of recovery of patients after stroke female and male. Study duration of 8 months (January-August 2010). The exercises were active and passive mobilizations, walking, educate the posture and the balance. Evaluation consisted of three tests at the beginning and end of study, Berg balance Assessment, PASS Assessment and Fugle-Meyer Test. Results: The female patients had a more pronounced trend towards the male in all three tests. Women are more persistent than men, more active, eager and ambitious to do exercises.

**Keywords:** stroke, rehabilitation, physical therapy, women, men

**REZUMAT.** *Studiu comparativ privind recuperarea pacienților post accident vascular cerebral.* Lucrarea este un studiu și are ca scop compararea gradului de recuperare a pacienților post Accident Vascular Cerebral de gen feminin și masculin. Exercițiile au constat din mobilizări active și pasive, reeducarea mersului, posturii și echilibrului. Durata studiului de 8 luni (ianuarie-August 2010). Evaluarea a constat din 3 teste efectuate la începutul studiului și la sfârșitul lui, Testul pentru echilibru Berg, Testul Posturii PASS și Testul Fugle-Meyer. Rezultate: pacienții de gen feminin au o evoluție mai pronunțată față de cei de gen masculin, la toate cele 3 teste. Femeile sunt mai perseverente decât bărbații, mai active, dornice de mișcare și ambițioase.

**Cuvinte cheie:** Accident Vascular Cerebral, recuperare, kinetoterapie, femei, bărbați

### Background

The brain is without question the most important organ in the human body. It is responsible for our movements, feelings, moods, thoughts and perceptions, and it enables our unique personal characteristics, abilities and failings, intelligence, feelings, and our personalities. Our brain makes us what we are.

Stroke is the leading cause of neurological disability #3 cause of death in adults. 7-30% mortality in first 30 days following stroke. The incidence of stroke in the world is 40.000-50.000 every year.

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According to the National Stroke Association:

10% of stroke survivors recover almost completely

25% recover with minor impairments

40% experience moderate to severe impairments that require special care

10% require care in a nursing home or other long-term facility

15% die shortly after the stroke

Approximately 14% of stroke survivors experience a second stroke in the first year following a stroke.

Paralysis is one of the most common disabilities resulting from stroke. The paralysis is usually on the side of the body opposite the side of the brain damaged by stroke, and may affect the face, an arm, a leg, or the entire side of the body. This one-sided paralysis is called *hemiplegia* (one-sided weakness is called *hemiparesis*). Stroke patients with hemiparesis or hemiplegia may have difficulty with everyday activities such as walking or grasping objects.

Some stroke patients have problems with swallowing, called *dysphagia*, due to damage to the part of the brain that controls the muscles for swallowing.

Damage to a lower part of the brain, the cerebellum, can affect the body's ability to coordinate movement, a disability called *ataxia*, leading to problems with body posture, walking, and balance.

Successful rehabilitation depends on:

- Amount of damage to the brain
- Skill on the part of the rehabilitation team
- Cooperation of family and friends. Caring family/friends can be one of the most important factors in rehabilitation
- Timing of rehabilitation – the earlier it begins the more likely survivors are to regain lost abilities and skills

Therapy allows the brain to go through a restructuring process and relearn the movement control with the remaining neurons.

## **Objective**

The aim of this study was to compare the recovery on men and women, whom will have a better recovery, how they will respond to exercises.

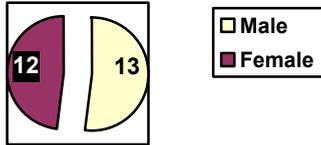
## **Methods**

Study participants:

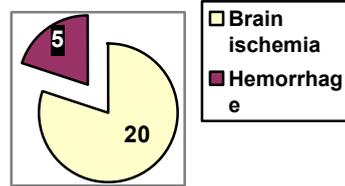
25 patients (13 Men, 12 women, age = 57-87 years) with hemiparesis / hemiplegia after Stroke participated in the study. All study participants suffered stroke since December 2009. Five patients with hemorrhage stroke and 20 patients with brain ischemia. 12 patients shows left hemiparesis / hemiplegia and 13 patients shows right hemiparesis / hemiplegia

COMPARATIVE STUDY ON THE RECOVERY OF PATIENTS POST STROKE

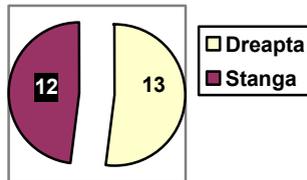
**Graph. 1. Patients representation by gender**



**Graph. 2. Comparison on type of stroke**



**Graph. 3. Comparatios on affected side**



Types of exercises:

- Passive and active mobilizations in bed
- Sitting to standing
- Walking
- For posture
- For balance
- Climbing stairs
- Dressing
- Get in and out from the bathtub
- Writing, reading

## Measurement

Before and after the treatment patient was assessed with the Berg Balance Scale, The Postural Assessment Scale for Stroke (PASS) and The *Fugl-Meyer* Assessment of Motor Recovery after Stroke

The Fugl-Meyer motor assessment includes items dealing with the shoulder, elbow, forearm, wrist, and hand in the upper extremity and the hip, knee and ankle in the lower extremity. Reflex activity is assessed in the upper and lower extremities. Balance is examined in sitting and standing. Sensations, evaluated by light touch, are examined on two surfaces in both the upper and lower extremities, and position sense (kinesthesia) and range of motion are tested on eight joints, four in each extremity. Fugle-Meyer assigned motor function scores to items that assessed motor function alone, with a total possible score of 100 points. Scores were grouped as follows: < 50 points = severe motor impairment, 50-84 points = marked motor impairment, and 96-99 points = slight motor impairment (Fugl-Meyer AR., 1980).

Assessing the balance was important to evaluate the functional level of patient. For this purpose, Berg Balance Scale (BBS) was used for the assessment of calance in different activities such us reaching, balancing on one limb, and transferring. The BBS is a 14-item test (56 points maximum) using a 5 point (0-4) scale to rate each item, with 0 indicating an inability or need for maximal assistance to complete the task or performs task with safety concerns and 4 indicating independent and safe ability to perform task. Concurrent validity of data for the BBS has been examined in people with stroke (Berg KO, Wood-Dauphine'e SL, & Williams JL, 1995).

The PASS was developed to be applicable to all stroke patients, even those with very poor postural abilities. It contains 12 items, each scored between 0 and 3, that grade postural abilities of increasing difficulty in lying, sitting, or standing posture ( total score from 0 to 36). Two postural domains are scanned: the ability to mentain a given posture and the ability to ensure equilibrium in changing positions (Barnes, M. Dobkin B.,& Bogousslavsky J., 2009).

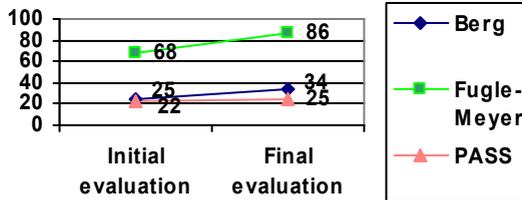
## Results

**Table 1.**

Comparison between both evaluations

Evaluation	Berg	Fugle-Meyer	PASS
Initial	25	68	22
Final	34	86	25

**Graph. 4 Comparison between both evaluations**

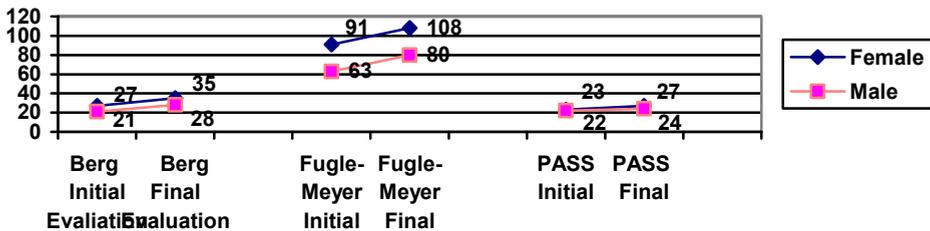


**Table 2.**

Recovery comparison by gender

Gender	Berg Initial/Final		PASS Initial/Final		Fugle-Meyer Initial/Final	
	Female	27	35	23	27	91
Male	21	28	22	24	63	80

**Graph. 5 Recovery comparison by gender**



Evolution of female patients is more pronounced than those of male, although in the first two months and half were not seen improvements, however, consistently and correctly effectuate exercises led to significant results. Degree of evolution is higher in women than in men because women are more physically active are more socially involved, go shopping, organizing household, while men are watching television, they live a passive life, physically speaking.

**Conclusion**

It is important for every patient who had a stroke to do exercises, to want to get better, to have a purpose for future, also is important what kind of life he or she lived before, active or passive one.

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## PROFESSIONAL SWIMMING FOR VISUALLY IMPAIRED AND/OR BLIND CHILDREN IN ROMANIA

MANIU DRAGOS ADRIAN<sup>1</sup> & MANIU EMESE AGNES<sup>2</sup>

**ABSTRACT.** From the first Paralympic Games in Rome in 1960, swimming has represented one of the main sports within the Paralympics. Like in the Olympic Games, competitors measure their skills in free style, backstroke, butterfly and Medley. The present paper presents a project whose purpose is to teach blind children how to swim and then to select the best of them in order to participate in international competitions. Romania never had a swimming team for blind children, and during the first 6 months these children had an excellent performance in international competitions. It is evident that swimming for visually impaired children is an activity which can positively change their lives.

**Keywords:** visually impaired, paralympic swimmers, Romania

**REZUMAT.** *Înotul de performanță pentru copii cu deficiența vizuală și sau nevăzători din România.* De la primele Jocuri Paralimpice de la Roma din 1960, înotul a constituit unul din sporturile principale din cadrul Paralimpicelor. Ca și la Jocurile Olimpice, concurenții își măsoară aptitudinile la stilul liber, spate, fluture, bras și mixt. Lucrarea de față își propune să prezinte un proiect al cărui scop este de a-i învăța pe copiii nevăzători să înoate și apoi, de a-i selecta pe cei mai buni dintre ei pentru a participa la competiții internaționale. România nu a avut niciodată o echipă de înot pentru copiii nevăzători, iar în primele șase luni acești copii au avut o comportare excepțională la competiții internaționale. Este evident că înotul pentru copiii cu deficiențe vizuale este o activitate care poate modifica în mod pozitiv viața acestora.

**Cuvinte cheie:** deficient de vedere, inotatori paralimpici, Romania

### SHORT HISTORY OF SPORTS FOR DISABLED PERSONS

Sports for disabled persons exists for more than 100 years. In the 18<sup>th</sup> and 19<sup>th</sup> centuries contributions were made which provide proof that sports activities were very important for the reeducation and rehabilitation of disabled persons. After the First World War physiotherapy and sports medicine have been more present in the prophylaxis, therapy and recovery process.

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Sports for physical disabled persons was introduced in the Second World War in order to satisfy the medical and psychological needs of a great number of ex-soldiers and civilians who had suffered injuries. In the attempt to find new methods to minimize the consequences of their immobility, the reactualization of idea that sports is a treatment and rehabilitation method, has crystallized as a new and excellent possibility.

On the 28<sup>th</sup> of July 1984, the opening day of the Olympic Games in 1984 in London, the German doctor Guttmann organized the first competition for athletes in wheelchairs which he named Stoke Mandeville Games. In 1952 Dutch ex-soldiers joined this movement and this is how the International Stoke Mandeville Games came into existence. In 1960 the first Paralympic Games took place immediately after the Olympic Games in Rome, Italy. The event used the same venue and format as the Olympic Games and mobilized 400 athletes from 23 countries. This event continued to take place in this manner every 4 years, guiding itself after the Olympic cycle. Groups with different disabilities were reunited in the competition in 1976 and in the same year the Winter Paralympics were organized.

## **PARALYMPIC GAMES**

The word "Paralympic" derives from the Greek preposition "para" (next to, alongside) and the word – Olympic (The Paralympics being the parallel games of the Olympic Games) The word Paralympic was initially a word pun combining "paraplegic" and "Olympic", but, with the inclusion of other groups of disabilities and the close association with the Olympic movement, at present it stands for "parallel" and "Olympic" in order to illustrate how the 2 movements coexist.

Today the Paralympics are elite sports events for disabled athletes. But these events are focused on the athletic achievements of the participants and not on their disabilities.

## **SWIMMING, About Sports**

From the first Paralympic Games in Rome in 1960, swimming has represented one of the main sports within the Paralympics. Like in the Olympic Games, competitors measure their skills in free style, backstroke, butterfly and mixed style (Medley). In 2008 athletes from over 80 countries participated in this sport, masculine as well as feminine, being either physically or visually disabled. Swimming is governed by IPC and coordinated by the Technical

Swimming Committee IPC, which incorporated the rules of the International Swimming Federation (FINA). The FINA regulations are adopted with just a few modifications, like for instance optional platform and start from the water for certain races and the use of signals and tapping for blind/visually disabled swimmers; nevertheless no prosthesis or aiding materials are allowed in the competition.

### **Description of the competition**

For the competitions from the Paralympic Games a swimming pool of FINA standard, 50 meters long with 8 lanes, is necessary. The races take place in series of 8 competitors on classes and with the fastest 8 competitors within a class competing in the final. There are a variety of forms for the swimmers to start the race, from the water, by jumping, from a seating position from the starting block or the classical start from a standing position. During the swimming race, the blind swimmers must have an assistant who helps them when they are getting close to the margin of the pool either for turning or at the end of the race. This method is called tapping and is performed by a tapper. These swimmers have to wear dark colored goggles in all the competitions they participate.

### **Eligibility and categories of visual deficiency**

A visually disabled swimmer is defined as a person who has been classified according to the IBSA system (International Blind Sports Association) for visual deficiencies.

The classification is a simple structure for the competition. It is not similar to the case of wrestling, boxing, where the categories are determined by the weight of the player. In our case the classification is done according to the degree of deficiency.

In order to participate in a Paralympic level competition, the visually impaired swimmers are divided in three categories: S11 (B1), S12 (B2), S13 (B3). The profile of the deficiency classes is based on visual acuity, visual field and light perception.

The acknowledged classes for visual deficiencies are the following:  
S11 – from not perceiving the light with neither eyes up to perceiving light but incapacity to recognize the shape of the hand from any distance or any direction.  
S12 – from the capacity to recognize the shape of the hand at a visual acuity of 2/60 or a visual field of less than 5 degrees.

S13 – from a visual acuity greater than 2/60 up to a visual acuity of 6/60 and/or a visual field larger than 5 degrees but smaller than 20 degrees.

The classification will be done on the better seeing eye and the best correction.

While a normal seeing person can read a printed text from a distance of 100 cm, a swimmer S13 will see it from a distance of 10 cm, S12 from 4 cm and S11 cannot read it at all.

### **Professional Swimming for Visually Impaired and/or Blind Children in Romania**

The present paper presents a project initiated by Sally Wood Lamont, the president of the National Paralympic Committee.

The purpose of this project is to teach blind children how to swim and then to select the best of them in order to participate in international competitions. Romania never had a swimming team for blind children, and during the first 6 months these children had an excellent performance in international competitions. It is evident that swimming for visually impaired children is an activity which can positively change their lives.

The final objective is to form a swimming team of 5 to 8 children, who will participate in the Paralympic Games in London in 2012.

Carol Bellamy, the former UNICEF Executive Director, said: „UNICEF has recognized that sport and development go hand-in-hand. We would be foolish to overlook sport as a tool in convening people, in reaching out to people, in breaking down barriers between people, and in encouraging the values of dignity, respect, fair play, and peaceful conflict resolution. Athletic competition and friendly play are in our DNA for a reason; we’ve got to tap into that spirit.”

Sally Wood Lamont, the president of the National Paralympic Committee, said: “Focusing our attention towards the minority group of disabled persons, we are trying to participate in the development of a more inclusive society, which is an ongoing process in Romania. Our aim is to create conditions for excellence in Paralympic games for everybody, regardless the disability and depending on the individual capacity of each person, in order to rediscover the independence of movement, in order to create auto motivation, emotional stability and in order to gain self-confidence. Our objectives are: active participation in the worldwide movement in favor of disabled persons; increase of awareness and initiating programs which encourage individual talent recognition; reuniting the members of the national

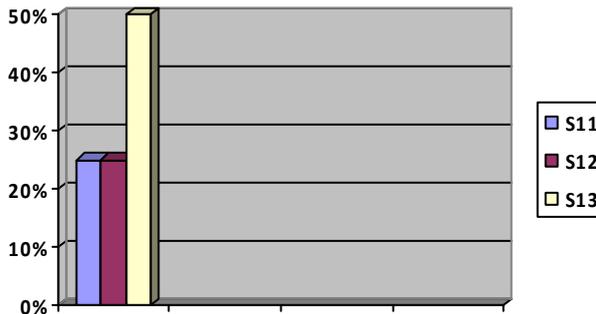
and international communities, which share the same goal and vision and the promotion of Paralympic sports in Romania, by actively supporting the participation in international Paralympic competitions throughout the world.“

By swimming, a visually impaired child learns to use all his senses and to gain information which a child with normal sight has ready at his disposal. A swimming program presents numerous learning possibilities how to efficiently utilize sensorial information. After accommodating to the water environment, elimination of fear and control of breathing the child feels safe and more relaxed in water, by understanding the water dynamics and due to the fact that he is in a relatively small and limited area. In the pool the child can gain information about the corporal image and space by using some actual reference points, like water level, the surfaces from one wall to the other and the stairs. Learning some correct swimming techniques is important not only for the students to be socially accepted and approved by their colleagues, but also to allow the children to participate in competitions in a segregate as well as integrate context.

### MATERIAL AND METHOD

In the performed study a number of 150 students from the High School for the Visually Impaired from Cluj Napoca have participated in the period September 2008 – June 2009. Out of these students we have selected 8 students with potential for professional performance in this sport. Since June 2009 we have started the training progressively reaching at present 9 swimming training sessions and 3 land trainings during one week.

#### Classes



**Graphic 1.** 25 % (2) student – S11 , 25% of students(2) – S12 ,50% of student (4) – S13

### Competitions they attend

1. 29th International Sportfest for People with Disabilities Wilhemshaven, Germany 29 August – 6 September 2009
2. 31st Slovakia Open Swimming Championships for Athletes with Disability Bratislava, Slovakia
3. The Dolphin Cup, Open Swimming Championships for Athletes with Disability, Nove Zamky, Slovakia
4. 31. Wr. Meisterschaft / Schwimmen für Behinderte Vienna 15 November 2009
5. Wales Disability Long Course International Championships in Swansea, Wales, 11-12 December 2009
6. National Championships for the Disabled Debrecen, Hungary 22-23 May 2010
7. 24th International German Swimming Championships Berlin, Germany 17-21 June 2010
8. Brno Youth games in the Czech Republic, iune, 2010
9. 32nd edition of the Slovakia Cup Bratislava, 17-19 September 2010

**Table 1.**

Results, first and last competition they attend

NUME	50 CRAUL First Compet.	50 CRAUL Last Compet.	100 CRAUL First Compet.	100 CRAUL Last Compet.	100 BACK First Compet.	100 BACK Last Compet.	100 BREAST First Compet.	100 BREAST Last Compet.	100 FLY First Compet.	100 FLY Last Compet.
C.S.(MASC)	43,45	29.23	1,30,30	1,10,14	1,35,22	1,29,34	1,43,33	1,27,29	1,34,86	1.29.32
C.N.(FEM)	48,21	37.64	1,42,23	1,31,02	1,40,33	1,35,23	1,55,11	1,50.07	1,48,91	
P.P.(MASC)	1.00,43	30.10	1,33,23	1,13,63	1,40.34	1,31,34	2,00.23	1,56,53	1,39,10	1.36,43
V.V.(MASC)	45,12	39.31	1,38,52	1,35,41	2,01,86	1.46.20	2,17,52	1,57,95		
D.A.(MASC)	48,25	43.21	1,40,01	1,30,23	2.03.35	1,54,20	2,34,38			
B.A.(MASC)	48,31	41.21	1,59,51	1,32,21	2,11,32	2,02,45	2,34,07			
C.A.(FEM)	48,22	37.21	1,45,11	1,32,12	1,50.33	1,34,23	1,48,25	1,40,43		

### CONCLUSIONS

1. In the case of disabled children and young persons, sports is one of the means for methodical practicing physical exercise which develops the body and trains the will, courage and initiative.

2. Through sports these persons become motivated and the shame for their own disability is replaced by the **pride for their capability**.
3. Water is an efficient learning environment for a visually impaired child.
4. Visually impaired persons can swim at a professional level.

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## A COMPARATIVE STUDY ON PHYSICAL EDUCATION STUDENTS' STATE OF HEALTH WITH HUNGARIAN, ROMANIAN AND SPANISH SAMPLES

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**ABSTRACT.** In our research we measured the effects of environmental and psychosocial factors on the physical education students' from Győr, Iași and Granada. We also compared the self-evaluation indicators of their physical and mental state of health. The standard questionnaires were completed by 396 university students from three different countries (Hungary, Romania, Spain) during the 2008/2009 and 2009/2010 academic years. Based upon the interpretations of the results gained from the SF-36 questionnaire, physical education students' general physical state of health showed an 83,32% correspondence with the appropriate level, while their mental state of health proved to be adequate in 79,97%. As compared to the Hungarian and Romanian students, a lot more Spanish students had a positive self-image regarding health. In conclusion those students who received encouragement from their parents and college teachers has better physical and mental state of health, they has more life-willing and think more positive.

**Keywords:** physical and mental state of health, psychosocial factors.

**REZUMAT.** *Starea de sănătate fizică și psihică generală a viitorilor profesori de educație fizică și sport din cadrul grupurilor-țintă din Ungaria, România și Spania.* În cadrul activității de cercetare am evaluat efectele factorilor de mediu, respectiv cele cu caracter psihosocial în rândul studenților facultății de educație fizică din orașele Győr, Iași și Granada. Am comparat valorile de autoevaluare a stării fizice și psihice a acestora. Chestionarele standardizate au fost completate de un efectiv de 396 de studenți din Ungaria, România și Spania în anii universitari 2008/2009 și 2009/2010. Conform rezultatelor măsurătorilor din chestionarul SF-36 starea de sănătate fizică și psihică a studenților s-a dovedit a fi satisfăcătoare într-un procentaj de 88,32%, respectiv 79,97%. În comparație cu studenții români și maghiari spaniolii s-au autodeclarat a fi mai sănătoși. În consecință acei tineri ai căror părinți și profesori i-au îndrumat în direcția activității sportive, s-au bucurat de o stare generală mai bună, cu o gândire pozitivă și o motivație net superioară.

**Cuvinte cheie:** sănătate fizică și psihică, factori psihosociali.

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## Background

When practising sports in adulthood, people can regenerate those abilities and skills alone, which they had acquired beforehand, in their younger days. Since the favourable conditions offered by youth have an expiration date, it is of utmost importance to obtain the elementary physical knowledge and level of health in our younger years. Previously developed habits and attitudes form the basis of a healthy lifestyle in adulthood.

Especially teachers are the ones to teach and educate children in the most delicate period of their development. They stand as living examples in front of them. Their patterns of behaviour and attitude will be imprinted deep in the children's memories. If teachers do not emphasize healthy lifestyle and the importance of physical exercise, and help children grow fond of it – perhaps because they themselves do not consider it essential –, the inactive population rate will show an enormous increase (Jung, 1988).

As for the agents of changing the lifestyle, should we assign a vital role to a certain group of the intelligentsia, namely the teachers, it seems rightful to ask: what are teachers' opinions on health and physical culture, and what priority does physical exercise have in their own lives? Their personalities being the very tools of their job, further concerns could refer to their stability, as well as, their mental and emotional health (Pápai - S. Lóczi, 2002).

According to different surveys, very few students choose to go in for sports in high school, but especially during their university years. According to a national survey including the institutions of higher education, 36% of the students never practised any sport (Aszmann et al., 1997), although physical exercise is indispensable in counterbalancing the sedentary intellectual activities. National surveys have been indicating for at least 15-20 years now that the state of health of our youth is not by far in proper condition (Arday 1971, Köbölkuti – Hajdú 1981, 1992). Deficiencies can be observed firstly on the most relevant areas concerning health: physical condition and stamina (Maros – Nádori 1981, Pápai 1997).

Young people's physical development, condition and health are one of the best indicators of social conditions since their level of development is inevitably reflected in society (Tanner 1990, Eiben 1988). Whenever health is pushed into the background of social values, its concomitant results are the spreading of malnutrition and inactive lifestyles lacking physical exercise, as well as, an increased number of smokers, alcohol and drug consumers. As a consequence, mental health disorders will also appear. The failing health conditions of the adult age-group have to do with their

inadequate lifestyle adopted right after the onset of their carrier, which entails inactivity, self-exploitation and poor mental health.

To reverse this unfavourable tendency, the entire lifestyle has to be changed, physical culture and sports elements have to be introduced into daily activities, and we need to develop an aspiration towards practising sports throughout our lifetime. Higher education is one of the territories, where these unfavourable trends could be ameliorated.

In consistence with the above-mentioned factors, we considered important to investigate university students' self-value judgements of their general state of health, how they look at their own physical and mental conditions. We made an analysis of the norm values of physical activity (PA) frequency, measured in hours and minutes, with the help of the widely used International Physical Activity Questionnaire (IPAQ). A separate chapter is dedicated to the social status of college students, as well as, the factors influencing the social background. We made inquiries into their everyday sports and nutrition habits, lifestyle, self-image, and their opinions on their own physical abilities.

Teachers – together with their health-related skills and attitudes – are also the members of the value system transmitted by the school. Teachers being the examples for students at all points, including health attitude, the health-related knowledge and attitude of the entire teaching staff may have either a positive or a negative impact on the students' development of health attitude (McGuire-Phye, Szabó et al., 2006).

Educational institutions are more and more recognized to be the “hot spots” for developing health attitudes. This is supported by the fact that several international surveys are systematically investigating the health attitudes of young people participating in public education – though a part of them treat just specific dimensions (smoking, alcohol consumption, physical exercise, mental health, etc.) of health attitude (Health Behaviour in School-Aged Children; The European School Survey Project on Alcohol and Other Drugs; Global School-Based Student Health Survey). In addition, it would be necessary to have a sort of an overview map of the teachers' health attitudes as their behaviour is an integral part of the hidden curriculum, which can either promote or inhibit reaching the objectives set by the health-related programmes and interventions in the school. The efficiency and the teachers' state of health could be greatly improved by exploring and realizing the elements of the hidden curriculum. Notwithstanding, both national and international literature on the subject provide us with extremely scarce information on this social subgroup.

Having the proper data at our disposal, we could find the right directions where to drive the training of students' in order to keep in view the development of an authentic health attitude based upon modern principles. Though still immersed in the process of studying, these young people will soon have the power to shape the opinion of the future youth, not only with their factual knowledge, but also with their personality and attitude. In the process of developing health-related student attitudes, beside the few that are actually in charge of teaching hygiene, each and every teacher has to do their share. Therefore it is advisable to investigate and improve future teachers' health attitude, since all data on the Hungarian population point to a very unfavourable situation: 44% of the male and 32% of the female population aged 18-34 is a smoker (National Health Survey, 2003); approx. one quarter of the 14-16 -year-old adolescents have already tried out some kind of narcotics (Varga, 2004); almost one fifth of the teenager population is obese, or overweight (EU Platform on Diet, Physical Activity and Health, 2005).

Both national and international data collection serving the health monitoring system provide us with very scarce information on educators. The state of health of those studying in institutions of higher education cannot be regarded as one of the main concerns of epidemiology. In foreign literature, we can find a few relevant researches, although these surveys rather highlight some of the areas of health attitude, such as: smoking, alcohol consumption, physical exercise, as well as, mental health. Over the last one and a half decade, mental health issues have risen above all other concerns.

According to one survey carried out at the renowned Massachusetts Institute of Technology (MIT) in 2001, the traffic of the university mental health centre had increased with 50%, while the rate of students requiring psychiatric in-patient care had increased with 69% over the previous five years. On national level, in 2001-2004, Paksi et al. carried out in-depth studies on the mental health of teachers. Results demonstrated that despite a lack of confidence in teachers, on the one hand, and the loss of value regarding the role of school as a socializing medium, on the other, teachers were still found to be less predisposed to depression as compared to other members of adult population having similar status.

As for teachers and student teachers, who play a basic role in shaping the health attitude of future generations, it is of high importance to investigate their state of health and the possibilities of changing their health attitude for the better. By virtue of their status and age, student teachers are

easier to be addressed and directed towards a prosperous future as compared to their older peers, who have an already developed personality. Investigating students' health attitude may contribute to the identification of such problems, whose proper treatment can take part in influencing the health attitude of this social group in an efficient way. A continuous examination of mental health is also vital as teachers' job involve a significant and constant mental loading, urging teachers to be always on the alert.

### Methods

Our cross-sectional survey was carried out with the participation of 396 students' altogether (39.72% male, 59.75% female, and 0.53% missing data). The inquiries took place on an international level with the collaboration of three countries. The survey population consisted of university and college students (mostly full-time) of the institutions of higher education from Győr (Hungary), Iasi (Romania) and Granada (Spain).

**Table 1.**

Distribution by sample- and age-groups.

	A.Cs.J.F. - Győr	A.I.C.F. - Iasi	G.F. - Granada	
18,01 – 19,00	3	5	23	
19,01 – 20,00	54	79	12	
20,01 – 21,00	35	23	21	
21,01 – 22,00	19	27	22	
22,01 – 23,00	1	4	25	
23,01 – 24,00	4	-	9	
24,01 – 25,00	1	2	3	
> 25,01	1	7	9	
Missing data	3	3	1	
Total	<b>121</b>	<b>150</b>	<b>125</b>	<b>396</b>

Our survey in Hungary focused on the student population specialized in physical education and recreation at the Apáczai Csere János Faculty, The University of Western Hungary situated in Győr. The sample group was made up of 121 (71 female, 47 male, and 3 missing data) full-time college students, including three third-year, eight second-year and 110 first-year students (2009/10 academic year), whose average age was 19.89 years.

The Romanian population consisted of the physical education students at the Alexandru Ioan Cuza University in Iasi. 150 first-year students were inquired (44% female and 56% male) during the 2008/09 academic year – the average age was 20.03 years.

As for Spain, 83 students from the University of Granada and 42 students from the Physical Education College were asked to fill in the questionnaires. In total, the research carried out during the 2008/09 academic year comprised 19 female (28%) and 106 male (72%) participants, whose average age was 20.92 years at the time (76% first-year and 24% second-year students).

Regarding the questionnaire, one of the most fundamental principles was that the instrument should contain validated questions and groups of questions in all areas covered. Such kind of questionnaire was not available; therefore we used the self-completed Short Form-36 Health Survey (Ware et al., 1992) as a starting point, which contains validated and independently applicable items. In addition, the survey instrument was completed with the short forms of the IPAQ (Booth et al., 2000), the Physical Self Description Questionnaire (Marsh et al., 1994) and the Body Image Assessment Scale (Thompson and Gray, 1995).

Following the instructions, a few demography-related (age, sex, specialization, year of study) questions were listed on the introductory page of the questionnaire. The final form included 48 questions in total.

The first part of the questions (questions 1-36) was made up of the officially translated and validated version of the SF-36 questionnaire, which took aim at measuring physical and mental state of health. The second part of the questionnaire (questions 37-41) made use of the IPAQ in order to measure light, moderate and intensive physical activity, as well as, time spent on resting/sleeping and sedentary activities.

The questions referring to the interpretation of physical activity level/inactive lifestyle (questions 42 and 47), the importance of physical education (43), teachers' influence (44), parents' physical activity (45), parental influence (46), and body image (48) were tailored to fit the forms of self-completed questionnaires.

Using the *Physical Self Description Questionnaire* (PSDQ), we evaluated high school students' relation with environment. Four independent questions let us know about how frequent the inquired individuals practise sports together with their parents and/or other family members, as well as, how often parents urge their children to do physical exercise and emphasize the role of physical education and sports for the sake of a healthy development. Furthermore, we made inquiries into both the father's and the mother's past and present sports activities. Another vital aspect is the encouragement from the part of the university teachers to lead a healthy way

of life and practise sports on a regular basis. Last, but not least, in order to gain a picture of the active lifestyles, we asked about the quantity of the physical activity carried out during free time (in the afternoons).

The survey questions were rated on a Likert scale of 1-4 with both low and high values in direct proportion to the results.

When applying the *Body Image Assessment Scale* (BIAS), we made use of a drawing with nine figures, where the participants had to mark the one they could identify themselves with. The aligned figures stood for the slimmest (Fig. 1) to the most corpulent (Fig. 9) constitution, starting from the left side.

Microsoft Excel was the programme used for data processing, which contains the variable names, their description, range of values, and value labels. We used abbreviated value labels in the database. The spot-test method was applied – every tenth record was picked for examination and compared with the questionnaires – to check against the accurateness of the entered data. The Stata 8.2 programme served for data analysis. We added up the point values of the answers for the SF-36 questionnaire, which were used as constant variables further on. Additional constant variables were the indicators obtained from adding up the answers for the items – treating the abovementioned topics – of PSDQ and BIAS questionnaires. The method of descriptive statistics was applied in characterizing the variables.

## **Results and discussion**

Students' state of health is a strongly influential factor regarding physical activity. We recorded the inquired participants' self-image of physical and mental state of health, as well as, the emotional and functional problems issuing in social adaptability changes.

Health judgements are of many types. Beside the relatively objective-based health indicators, health self-assessment becomes more and more recognized as a valid measurement method. The self-evaluation of health shows strong correlation with the state of health measured via different methods. Therefore this is an already accepted method for measuring the state of health.

The relationship between the quality of life and health conditions urged us to measure physical health in the first place – this was ulteriorly interpreted with the indicators of the *physical components* (PC) pertaining to the SF-36 questionnaire.

Physical function (PF) is qualified for measuring the physical state of health indispensable for carrying out necessary everyday activities, such

as: walking, climbing stairs, carrying, and moderate and intensive physical activities. Based upon the summarized results obtained from the three countries, 83.9% of the students have no problems in carrying out the physical tasks mentioned in the questionnaire – these students reached values above 95%. These results are not surprising at all since we are talking about physical education students. 2.4% of the students experienced some difficulties in carrying out these activities ( $PF \leq 80\%$ ), which might be due to the fact that this very function can be related to a high body mass index [BMI; ( $r=0,127$ ,  $p=0,013$ )], adaptability changes originating from physical problems [PP; ( $r=0,287$ ,  $p=0,000$ )], or even poor health conditions [GH; ( $r=0,275$ ,  $p=0,000$ )].

Correlation coefficients show that when significance  $p=0.000$ , there is usually a medium correlation between the different items of the *mental component* (MC). The general mental state of health, including depression, anxiety, losing control, and general well-being may depend on the degree of vitality [VT; ( $r=0,602$ ,  $p=0,000$ )], namely, the energy level, joy of life, or might as well just the very opposite: sense of tiredness and exhaustion. Similarly, it can also be contingent on either the social activity level [EF; ( $r=0,439$ ,  $p=0,000$ )], or adaptability changes [EP; ( $r=0,369$ ,  $p=0,000$ )] determined by emotional and functional problems.

Based upon the interpretations of the results gained from the SF-36 questionnaire, physical education students' general physical state of health showed an 83.32% correspondence with the appropriate level, while their mental state of health proved to be adequate in 79.97%. As compared to the Hungarian and Romanian students, a lot more Spanish students had a positive self-image regarding health. As for the obtained results, we considered them realistic since the development of sports culture in Spain surpasses the majority of the Central and Eastern European countries in this respect.

In addition to a very high significance ( $p < 0,001$ ), the items of physical function, physical problem and general state of health, revealed that the Granadian students obtained much better results than those from Iasi; as for the mental-related items ( $p < 0,001$ ), they proved to be a lot healthier, more balanced, and head a more positive self-image as compared to the students in Győr.

Physical education students at the University of Győr disposed of a better physical activity level ( $p=0,000$ ) and more flexible adaptability ( $p=0,040$ ) than those in Iasi with much lower energy levels and vitality [( $p=0,005$ ) (Table 2)].

**Table 2.**

Percentage distribution of samples regarding the items of physical and mental state of health.

	A.Cs.J.F. - Győr		A.I.C.F. - Iasi		G.F. - Granada	
	%	SD	%	SD	%	SD
PF	98,22	±4,84	94,57	±9,37	99,22	±1,75
RP	93,85	±13,06	90,83	±15,23	95,70	±11,89
BP	82,73	±12,77	83,43	±11,94	81,05	±16,29
GH	77,24	±13,47	77,59	±11,59	80,57	±12,15
VT	67,44	±12,86	71,89	±14,18	73,38	±12,16
SF	79,25	±18,12	80,69	±18,47	90,71	±9,86
RE	87,19	±18,49	90,78	±15,87	92,79	±14,43
MH	71,82	±15,32	72,96	±14,78	79,04	±10,80

Having made a thorough analysis of the PSDQ, we can declare that despite Granadian students' better physical activity level and more suitable physical and mental state of health, the students from Győr considered physical education and practising sports ( $p=0,000$ ) significantly more important as compared to their foreign peers. The students from Győr received encouragement from their teachers more frequently ( $p=0,000$ ), and also did more sports in their free time ( $p=0,687$ ) than their Granadian counterparts. The students from Iasi carried out surprisingly little physical activity in the afternoons, all the same, their parents had lead a very active sports life and encouraged them frequently to do physical exercise (Table 3).

In order to analyze the *Body Image Assessment Scale Questionnaire*, we made use of a drawing with nine figures, where the participants had to mark the one they could identify themselves with. The aligned figures stood for the slimmest (Fig. 1) to the most corpulent (Fig. 9) constitution, starting from the left side. The table below shows that the Granadian students have a body image closest to the ideal build, whereas the students both from Győr and Iasi have a general tendency to see themselves slimmer.

**Table 3.**

Percentage distribution of the psychosocial factors based upon the results obtained from the three universities.

	A.Cs.J.F. - Győr		A.I.C.F. - Iasi		G.F. - Granada	
	%	SD	%	SD	%	SD
Importance of PE	3,89	±0,33	3,28	±0,97	3,16	±0,93
Lesure time sport	3,18	±0,80	1,85	±0,95	3,04	±0,90
Teachers encouragement	3,33	±0,92	2,98	±0,86	2,54	±1,10
Parents encouragement	2,55	±0,71	2,94	±0,60	2,77	±0,75
Body image	4,33	±1,34	4,28	±1,61	4,68	±1,23

Gender-related physical and mental health indicators revealed differences in almost every sample group. Boys had a more positive image of their own physical state of health than girls ( $p=0,028$ ). However, there is a more striking difference between the gender representatives' mental state ( $p=0,001$ ), which lets us conclude that boys are much calmer and more balanced emotionally than girls. Of course, the explanation is that boys have a more favourable level of social adaptability and activity ( $p=0,013$ ); additionally, these sorts of problems never caused as much trouble for boys in their daily activities as they did in the case of the girls [ $p=0,006$ ] (Table 4).

**Table 4.**

Percentage distribution of genders regarding the items of physical and mental state of health.

	Male		Female	
	%	SD	%	SD
PF	97,67	±5,54	96,50	±8,02
PP	93,75	±14,05	92,73	±13,30
BP	83,67	±13,04	80,80	±14,42
GH	79,74	±12,02	76,63	±12,73
VT	71,58	±14,43	70,31	±11,88
EF	85,26	±16,15	81,08	±17,46
EP	92,08	±15,38	88,18	±17,28
MH	76,37	±14,20	72,06	±13,74

## Conclusions

Having compared the results obtained from all three universities, we can state that physical education students from the Granadian university disposed of a significantly better general state of health as compared to their peers in Iasi and Győr ( $p<0,001$ ). 96% of the students were not hindered by their health conditions in carrying out the moderate and intensive physical activities listed in the questionnaire. Since we measured the lowest physical activity level at the University of Iasi, it is not surprising that these students, beside having frequent and intensive physical pains, and other problems of the kind, disposed of poorer workplace adaptability than their peers in Győr and Granada.

In addition to a much higher level of vitality and energy, Spanish students had a rather positive self-image also on mental and emotional levels. They gave proof of much better coping skills than their Hungarian and Romanian peers ( $p\leq 0,001$ ) in overcoming job-related and daily activity problems originating in emotional disorders. The students from the University

of Győr gave evidence of an astonishingly low level of energy and little joy of life as compared to the students from Granada and Iasi ( $p \leq 0,005$ ). They felt rather tired, exhausted, anxious and dispirited during the pre-inquiry period.

According to our survey results, 80.41% of the Hungarian students, 71.33% of the Romanian students, and 47.15% of the Spanish students aged above 18 were encouraged by their teachers to go in for sports. This led to a surprising result, considering the fact that physical education and sports was very essential for the Spanish college students (75%).

It is worth noticing that our survey results point to the fact that in the case of the students from Győr, 63% of the parents had practised or was still practising sports, while 71% of them encouraged their children to do the same. However, merely one quarter of the students does regular physical exercise on weekdays together with other family members. Unlike those from Győr, more than 75% of the students from Iasi practise sports together with their families, who encourage them in 77% to do physical exercise on a regular basis; these parents also had a satisfactory physical activity level in their past.

As results have demonstrated, children's physical activity level is not necessarily dependent on parents' past or present sporting habits.

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