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S T U D I A

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EDUCATIO ARTIS GYMNASTICAE

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THE RELATION BETWEEN MANAGERIAL COMPETENCES AND THE PERFORMANCE OF ROMANIAN SPORTS CLUBS

APOSTU PAULA, ȘANTA CRISTIAN,
DOBOȘI ȘERBAN & BACIU ALIN¹

ABSTRACT. The development of sport, continuously higher performances and well organized sports activities have been rendered possible by the scientific, technical and technological foundations of sports. Management – as science applied to sports - has also contributed to the development of the scientific foundations of sport. Management has become indispensable to any sports specialist as it helps organize sports structures and activities at the same time clearly and precisely establishing the duties of each institution and sports specialist.

Keywords: management, sports competition, competition management.

REZUMAT: Relația dintre competențele manageriale și performanța cluburilor sportive din România. Dinamica înregistrată de sport, depășirea rapidă a performanțelor, eficiența în organizarea activităților sportive au fost posibile datorită unor accepțiuni generale în privința lărgirii bazei științifice, tehnice și tehnologice a sportului. O mai bună organizare a structurilor sportive, o mai bună organizare a activității sportive, stabilirea clară și precisă a atribuțiilor fiecărui compartiment și a fiecărui specialist sportiv au făcut ca managementul să reprezinte un termen indispensabil oricărui specialist din domeniul sportului, un domeniu ce are menirea de a eficientiza activitatea.

Cuvinte cheie: management, competiție sportivă, managementul competițional

INTRODUCTION

Sports management contributes to the whole functioning of sports structures, human resources, numerous means, objectives and intentions. Sports management coordinates individuals' efforts to achieve a common aim. Thus, sports management helps control situations as well as complex systems by ensuring the continuous and efficient management of sports activities.

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The characteristics of sports management are also reflected in the fact that it applies to all forms of sports activities and branches, which ensures organized participation for better results.

Any competition organizer wishes for the most valuable competition possible in terms of both organization and athlete participation. Starting from this premise, successful organization of competitions is required from a managerial viewpoint as key part of sports, training and performance. Athletes want to take part in well organized competitions that offer nice prizes and many ranking points. This will please athletes, parents and the local community.

HYPOTHESES

The following empirical hypotheses were established within our research:

Hypothesis 1: The management of sports competitions is linked to the financial resources of the club organizing the competition.

Hypothesis 2: The success of the competition depends on the management of the club organizing it.

Hypothesis 3: The success of the competition depends on the material resources involved.

Hypothesis 4: The success of the competition depends on how often the club organizes competitions in that respective year.

SUBJECTS AND METHODS

The research was carried out in 50 subjects from the sports field. Most subjects in the studied group work for national sports clubs.

This group was administered two questionnaires: one questionnaire focuses on specific sports management issues and it contains 16 items regarding quantitative and qualitative aspects of sports management: the role of financial and material resources in sports, main success factors in sports, time and crisis management in sports organizations, organizing athlete participation in various level competitions.

The second tool used is the California Psychological Inventory (Gough, 1984, 1987, 1996).

RESULTS AND DISCUSSION

Data analysis and interpretation is an important stage as it is often regarded as the most significant stage in a research report. Data and statistical methods used for data processing are presented below, accompanied by data interpretation. Relevant graphs, tables and figures are used to illustrate the theoretical interpretation of the results.

Managers in the studied group consider that management at club level is more successful than at national level, as shown in Figure 1.

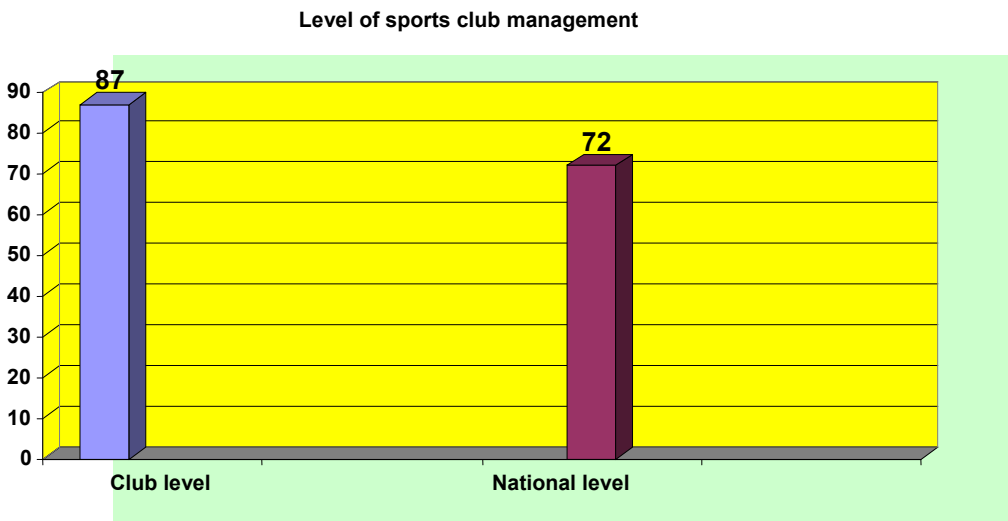


Fig. 1. Comparison diagram of total scores for assessing the level of sports club management at club and national level by managers included in the study

According to the managers participating in the study, budget and managerial strategy ensure the successful organization of competitions while coordination and control are regarded as least important, as presented in Fig. 2.

The material resources available in Romania are regarded as inappropriate for training and competition purposes. The sports infrastructure is perceived as rather average, as presented in Fig. 3.

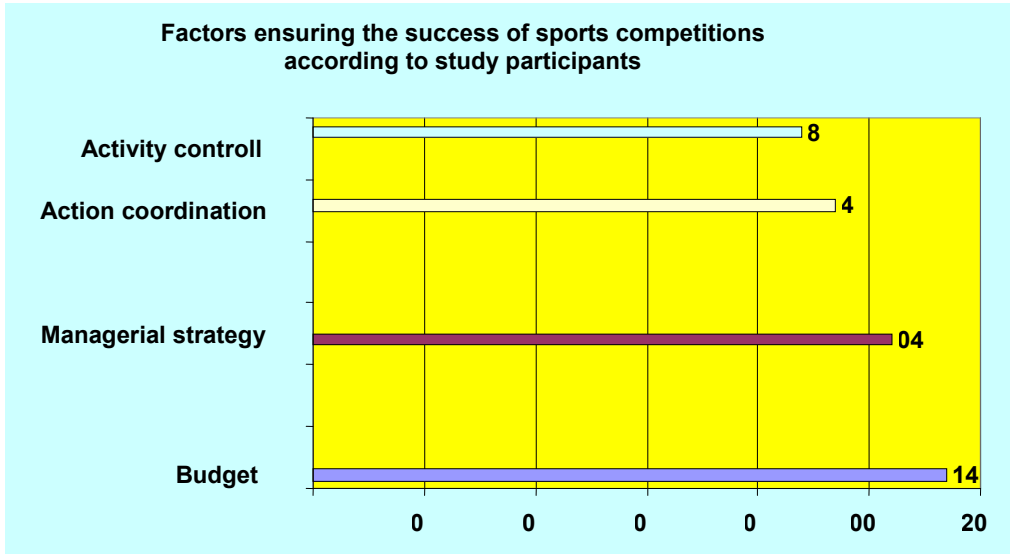


Fig. 2. Comparison diagram of total scores for assessing the factors ensuring the success of sports competitions at club level according to the managers included in the study

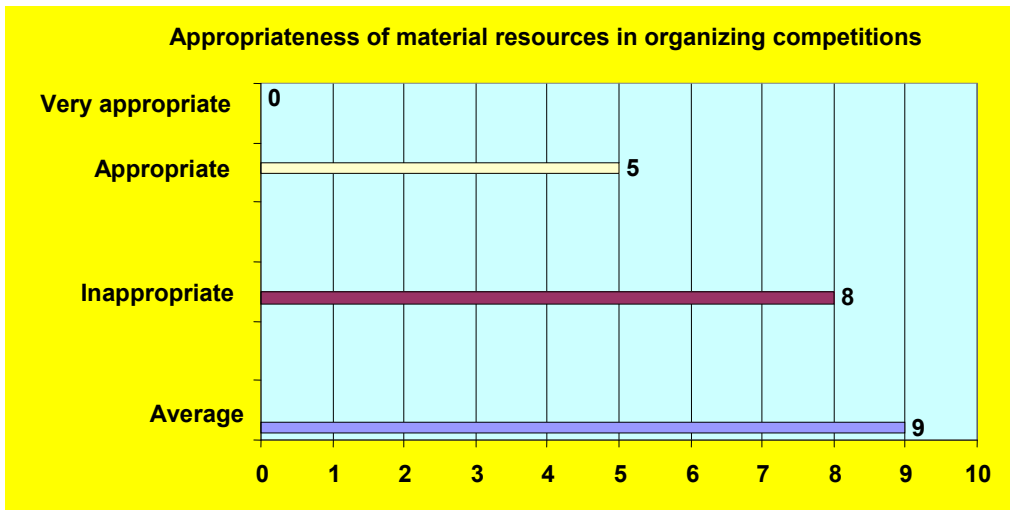


Fig. 3. Comparison diagram of total scores for assessing the quality of material resources available to the study participants

Lighting and the sports hall are the most important technical factors in the successful running of a table tennis competition, while the playing area is regarded as the least important, as shown in Fig. 4.

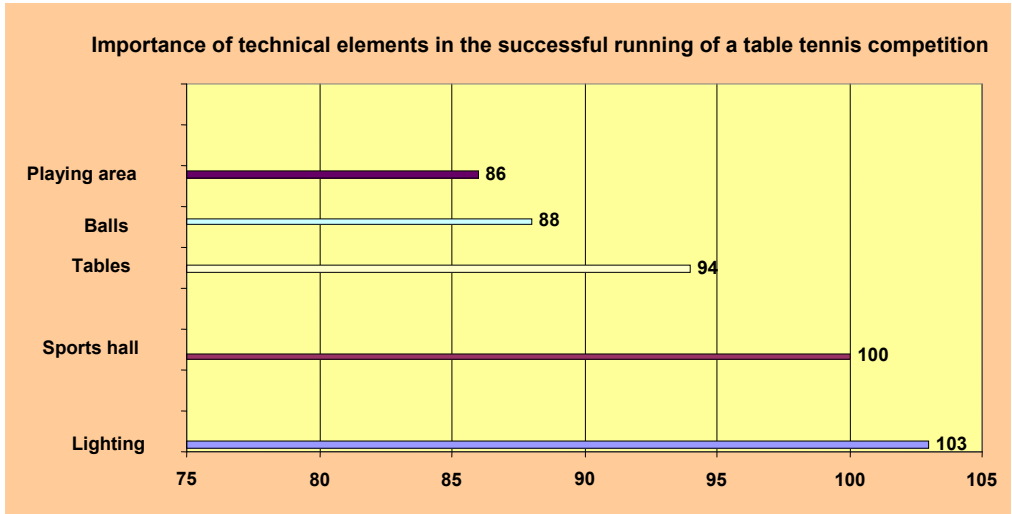


Fig. 4. Comparison diagram of total scores for assessing the factors influencing the successful running of table tennis competitions according to the managers participating in the study

State subsidies and sponsorships represent the main income sources for Romanian table tennis clubs, while donations and other sources are ranked lowest, as presented in Fig. 5.

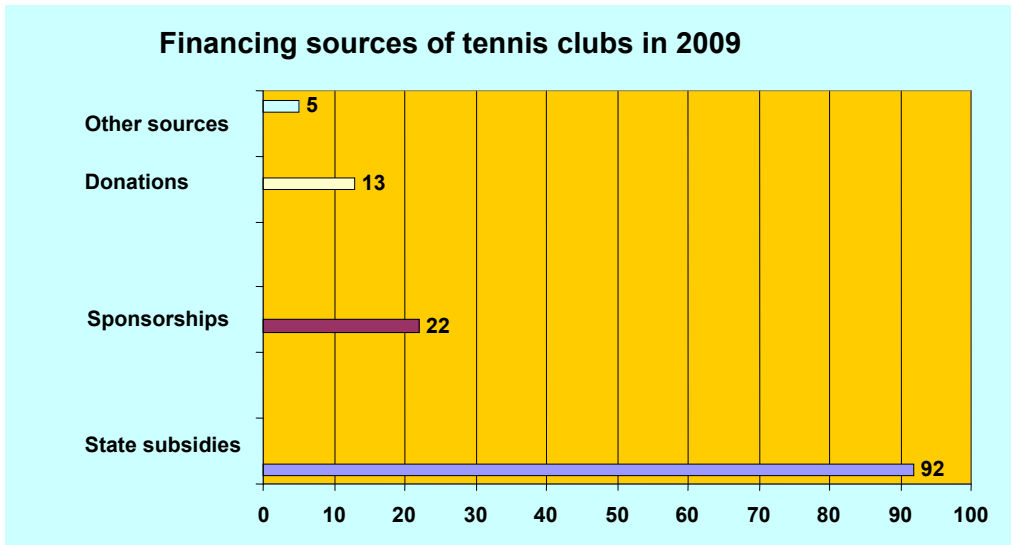


Fig. 5. Comparison diagram of total scores for assessing the financing sources of Romanian tennis clubs in 2009 according to the managers participating in the study

Success in sports achieved through activity coordination carried out within sports clubs is directly proportional to the managerial potential of the sports managers in the studied group.

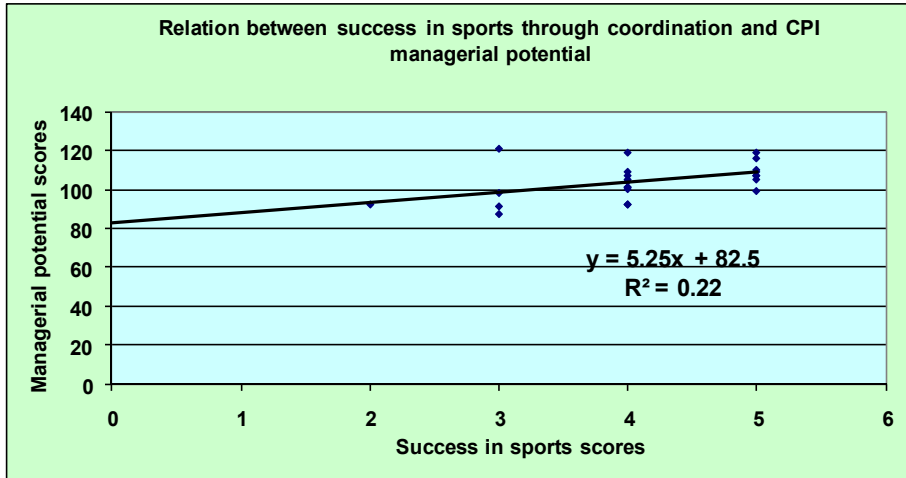


Fig. 6. Dispersion diagram showing the relations between success in sports through coordination and CPI managerial potential of the sports managers participating in the study ($r = 0.47$, $p = 0.02$)

The success of sports activities through control is directly proportional to the managerial potential, as observed in Figure 7.

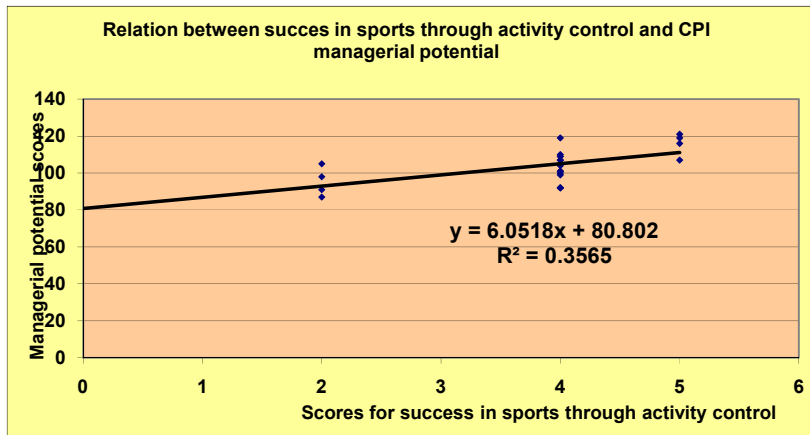


Fig. 7. Dispersion diagram showing the relations between success in sports through activity control and the CPI managerial potential of sports managers participating in the study ($r = 0.60$, $p = 0.002$)

CONCLUSIONS

This study carried out using two specialized questionnaires revealed numerous aspects of sports management in Romanian sports clubs.

The results obtained in sports competitions are clearly influenced by the managerial potential of the sports managers.

The managerial activity of sports managers is validated by the number of sports competitions organized at child, junior and senior level and which, in their turn, ensure the success of departments and sports clubs in national and international competitions.

A few important results generated by inferential statistical analysis of data obtained from the two questionnaires are mentioned below.

The assessment of regular and crisis management quality coincide for the three levels: club, county and national level.

Management through activity control and coordination at club level is directly proportional to the managerial potential reported by the participants included in the study.

Management quality proved higher in cases of sports club managers with a higher educational level, who also possessed better organizational skills. Experience in the sports field and experience as a sports manager also had a positive influence on the quality of sports management. More experienced managers obtained better managerial results.

The value of this research is also supported by Cronbach α internal consistency indices of over 0.70, which indicates that the tool used – MPS measured the managerial potential of table tennis club managers with reasonable accuracy.

PROPOSALS

The data obtained indicate that the managerial training of Romanian sports managers needs improving as far as both their financial and organizational skills are concerned.

- the managerial training of Romanian sports managers needs improving as far as both their financial and organizational skills are concerned;
- sports managers could improve within exchange programs with table tennis departments from other countries with a long tradition in this sport;
- managers should participate in sports management training courses;

- the material resources should improve for a better organization of table tennis competitions according to the requirements of international regulations;
- other financing sources should be found in order to support table tennis.

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EXERCISE AS A DIAGNOSTIC AND THERAPEUTIC TOOL

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ABSTRACT. Exercise is used both as a diagnostic and therapeutic tool. Depending on its characteristics physical effort can determine eustress or distress. To use exercise as a therapeutic tool is necessary to know as much as possible of all aspects, especially physiological. Oxi/nitrosative stress is linked to the relationship between exercise and disease and thus is certainly possible that an optimal level of reactive oxygen and nitrogen species to be a way to improve health, possibly through the antioxidant defense mechanisms. Exacerbation of oxidant production that exceeds the optimum level, in turn, may overcome the antioxidant defense mechanisms and thus appear irreparable oxidative damage, potentially generating disease. The specific amount of physical exertion that induces favorable changes in the oxidants/antioxidants balance is currently undefined and finding a modality to prescribe the amount of physical exertion could be useful both in sport and therapeutic field. This study cumulates information about changes induced in human and animal organism by oxi/nitrosative stress in physical effort according to recent researches.

Keywords: reactive oxygen/nitrogen species, oxi/nitrosative stress, physical effort

REZUMAT. Exercițiul fizic este folosit atât ca instrument de diagnostic cât și ca mijloc therapeutic. În funcție de caracteristicile sale, exercițiul fizic poate determina eustres sau distress. Stresul oxidativ apare conectat la relația dintre boală și exercițiul fizic și astfel este cu siguranță posibil ca un nivel optim de creștere a producției de specii reactive ale oxigenului și azotului în timpul exercițiului fizic să reprezinte o modalitate de îmbunătățire a sănătății, eventual printr-o hiperreglare în apărarea antioxidantă. Cu toate acestea, exacerbarea producției de oxidanți ce depășește nivelul optim, la rândul său, poate depăși mecanismele de apărare antioxidantă și în consecință apar leziuni oxidative ireparabile, potențial generatoare de boală. Cuantumul specific al efortului fizic care induce modificări favorabile în ceea ce privește balanța oxidanți/antioxidanți nu este în prezent clar definit și găsirea unei modalități de a-l defini ar putea fi utilă atât în sport cât și în domeniul terapeutic. Acest studiu cumulează informații despre schimbările induse de efortul fizic în organismul uman și la animale de experiment în ceea ce privește stresul oxi/nitrozativ conform cercetărilor recente.

Cuvinte cheie: specii reactive ale oxigenului și azotului, stress oxi/nitrozativ, efort fizic

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Physical effort (aerobic, anaerobic and mix) generates an increased production of reactive oxygen and nitrogen species closely related to the intensity of muscle activity and duration and may alter the dynamic balance between formation and inactivation of oxidants (oxidants / antioxidants balance).

Depending on the energy system involved, physical effort may be anaerobic (ATP + PC, glycolysis) and aerobic (Krebs cycle, β -oxidation, electronic transmission system) (14).

Oxi/nitrosative stress represents an imbalance between the production of reactive oxygen and nitrogen species and a biological system's ability to readily detoxify the reactive intermediates or to repair the resulting damage. Disturbances in the normal redox state of tissues can cause toxic effects through the production of reactive oxygen and nitrogen species (RONS) that damage all components of the cell, including proteins, lipids, and DNA. Some oxidative species can even act as messengers through a phenomenon called redox signaling (17).

Reactive oxygen and nitrogen species are redox derivatives of O_2 and N_2 :

a. radicals: hydrodioxyl radical (HO_2^\cdot), hydroxyl radical (OH^\cdot), alkoxy radical ($R-O^\cdot$), alkylperoxyl radical ($R-O_2^\cdot$ sau $R-OO^\cdot$), hydroperoxy radical ($ROOH^\cdot$), nitric oxide radical (NO^\cdot), superoxide anion ($O_2^{\cdot-}$)

b. nonradicals: ozone (O_3), triplet oxygen (3O_2), singlet oxygen ($^1O_2(1\Delta gO_2)$), hydrogen peroxide (H_2O_2), hypochlorite (ClO^-), peroxyxynitrite ($ONOO^-$) (13).

RONS are endogenous (from the aerobic respiration process, metabolism, inflammation, strenuous exercise) and exogenous (from pollution, radiations, smoking and alcohol).

RONS have paradoxical effects, both harmful and beneficial. Adverse effects occur at high concentrations and cause oxi/nitrosative stress. Beneficial effects occur in physiological concentrations.

Favorable effects of RONS are:

- control of proliferation, differentiation and cell transformation
- regulation of vascular tone
- inflammation: arachidonic acid metabolism, phagocytosis
- cellular immunity: T-cell activation
- synthesis of thyroid hormones: iodine oxidation
- progesterone synthesis
- xenobiotics metabolism: cytochrome P-450
- thermogenesis and cold adaptation: peroxisomes
- adhesion and platelet aggregation
- cell signaling

Unfavorable effects are:

- biochemical effects: oxidation of molecules (proteins, lipids, carbohydrates, nucleic acids, substances containing SH group); reduction or loss of enzyme activity; synthesis of stress protein 32 kDa (HO -1); lipofuscin accumulation
- effects at the cellular level: destruction and damage of cellular and subcellular membranes; capillary permeability changes; cell malignant transformation; cell death- apoptosis (13).

Cutler et.al (2005) states that at the individual level the lesions produced by oxidative stress (OS) are defined as the patient oxidative stress status (OSS). To recommend a customized treatment to reduce OS requires a reliable means to measure several different components that contribute to an individual's OSS. This procedure is called oxidative stress profile (OSP) and represents a new strategy to simultaneously evaluate an individual's OSS and to identify key physiological parameters, such as hormones, lipids, antioxidant, or iron profile, which can be responsible for the OSS. OSP strategy provides information for an accurate diagnosis of the patient's condition and for recommendation of specific types of treatment based on scientific data. The procedure is based on measuring levels of oxidative lesions in nucleic acids, proteins and lipids and also the mechanisms of protection and defense processes of these components using blood, urine and exhaled air samples. Testing individuals before and after a controlled amount of exercise (70% VO_2) can also help to achieve greater sensitivity and reproducibility(3).

Effects of exercise resemble characteristics of the process "hormesis." In addition, it appears that the effects of oxidative stress caused by exercise are systemic. Musculoskeletal, liver, nervous system have very different metabolic rates during exercise, but responses are very similar: increased antioxidants, increased "repair" enzyme activity, reduced oxidative lesions and increased resistance to oxidative stress, due to changes in redox homeostasis. It is very possible that the beneficial effects of exercise due to exercise capacity to produce high levels of RONS. In other words, it appears that the body vulnerability to oxidative stress and disease is significantly increased in a sedentary lifestyle, compared with a physically active lifestyle (11).

Chronic exercise has a dual effect: causes formation of oxidants and oxidative stress but also induce synthesis of antioxidant enzymes and endogenous antioxidants.

1. Oxi/nitrosative stress on musculoskeletal system

Articular cartilage is an avascular tissue and diffusion processes depend mainly on the synovial fluid for its metabolic requirements. Cartilaginous tissue oxygen levels are low, estimated between 1 and 6%. Metabolism is largely if not entirely, glycolytic, with a small capacity of oxidative phosphorylation. Tissue requires O and consume O₂, but at low rates. Changes in blood O₂ also have profound effects on chondrocyte: affects the phenotype, the expression of genes and morphology, the response to cytokines and cytokine production. Although chondrocytes can survive prolonged anoxia, low levels of O₂ can have significant metabolic effects such as inhibition of glycolysis (negative Pasteur effect). Ion homeostasis responds to changes in O₂ tension, so as to produce significant effects on cellular function. To this end, O₂, probably act by altering levels of reactive oxygen species. Gibson et.al (2008) discusses the hypothesis that tissue is forced to consume O₂ to maintain levels of ROS, which are then used as a physiological intracellular signaling device. This postulate may explain why tissue is dependent on O₂ and the disposal of O₂ has so pronounced effect (5).

In the skeletal muscle RONS production adversely affects muscle contractile proteins (actin and myosin) and regulating proteins (tropomyosin and troponin), the number of active motor units, muscle contractility, mechanical work and muscular force biochemical factors: energetic substances reduction and accumulation of lactic acid and potassium ions (12).

Effects of RONS in skeletal muscle are:

- a. modulating contractile processes by altering excitation-contraction coupling;
- b. decrease metabolism and indirectly decrease muscle contractility;
- c. influencing cellular redox status, which can often precedes SO and SN.

Other effects are: mediation of cellular interactions, control of vascular tone and blood flow in large and small resistance vessels (eg NO[·] and [·]OH - vasoconstriction / vasodilation and hyperemia), neuromuscular transmission; satellite cell activation, neutrophil invasion; nerve endings depolarization (15).

Oxidants can be detected in the muscle, in small quantities during the rest period, and increased quantities during contractions. Reactive nitrogen species reduce muscle strength, while reactive oxygen species formed in the muscles contribute to fatigue installed as loss of function. Thiol groups have an important role in the biological processes leading to oxidation of glutathione.

2. RONS-induced changes in physical effort on the cardiovascular system and blood

Heart is an aerobic organ and has one of the highest rates of oxygen consumption thus supports high levels of oxidant production and oxidative stress. Myocardium has four times lower (compared to liver) superoxide dismutase activity and catalase activity is also extremely low. A single acute session of exercise can't lead to significant oxidative stress in myocardial tissue due to effective action of antioxidant systems but the daily augmentation of exercise duration leads to cumulative effects of oxidative stress. At least 30 minutes of moderate intensity physical activity, preferably daily is considered the minimum necessary to reduce the risk of developing cardiovascular disease.

Epidemiological data suggest that, paradoxically, a high volume of exercise is associated with a decrease in cardiovascular health. Endurance training increases the antioxidant defense and thus provides a protective effect against oxidative stress. Increased oxidative stress may contribute to the development of atherosclerosis through oxidative modification of low density lipoprotein (LDL). Longitudinal studies are needed to assess whether antioxidant defense mechanisms are adequate to prevent LDL oxidation, which may occur as a result of increased production of free radicals during very high volumes of exercise (7).

Cardiac muscle tissue has a high rate of oxidative metabolism and a relatively low activity of antioxidant enzymes which could increase susceptibility to oxidative damage after acute exercise. Physical training could be considered an important stimulus for antioxidant systems like GSH and the related activities of major antioxidant enzymes in protecting the myocardium, such as SOD and GSH-Px. Endurance training seems to induce positive adjustment in certain antioxidant defense mechanisms, protecting the heart muscle in potentially harmful situations that induce further oxidative stress (1).

3. RONS –induced changes in physical effort on the respiratory system

Lung tissue could be the favorite target organ for cellular damage, since it is directly exposed to high concentrations of oxygen. Acute exercise and aging are an additional challenge and, therefore, appear deterioration of major lung antioxidant enzymes: Mn-SOD, Cu-Zn-SOD, GSH-Px, CAT, TrxR. Lung oxidative stress indicators are: xanthine oxidase (XO), mieloperoxidaza (MPO)

and malondialdehyde (MDA) and antioxidative defense systems are superoxide dismutase [(SOD), catalase (CAT), glutathione peroxidase (GSH- Px), glutathione reductase (GSH-R) and glutathione (GSH). (6)

Research data (Nieman, 1997) suggests that in time, acute or chronic exercise may increase the risk of unusually intense upper respiratory tract infections, while regular episodes of moderate physical activity can reduce risk of infection in the upper respiratory tract (10).

4. RONS induced changes in physical effort on the nervous system

Brain uses 20% of whole body oxygen consumption at rest. Oxygen consumption increases 10 to 15 times during exercise, however, oxygen consumption of brain is known to be constant during exercise. Thus, exercise is unlikely to induce an oxidative stress in brain. Lack of oxidative stress in brain during exercise is observed in animals exposed to chronic exercise, because the brain could be sensitive to lipid peroxidation processes due to high concentrations of polyunsaturated fatty acids and lower levels of antioxidant enzymes (SOD , catalase, GSH-peroxidase) and GSH present in normal conditions. Chronic exercise increases the levels of antioxidants and antioxidant enzymes in the brain, which helps protect the brain from oxidative damage. (9)

5. RONS – induced changes in physical effort on the endocrine system

a. Thyroid function

A number of specialized studies (LH Duntas et.al., 2005) reveal that there is a correlation between thyroid function and sports performance. Thyroid is heavily influenced by oxidative stress caused by physical effort. Thyroid function disorders are associated with increased ROS production and an inflammatory response and myopathy. The authors suggest the association of antithyroid medication with antioxidant supplements to reduce the adverse effects of oxidative stress. (4)

b. Insulin

D. Wright, L. Sutherland, (2008) studied the mechanisms by which insulin stimulates glucose use and mediators of the skeletal muscle insulin resistance induced by oxidative stress at this level. Skeletal muscle insulin resistance is considered a key factor in the pathogenesis of type 2 diabetes.

Traditionally recommended treatment includes exercise, weight loss and drugs that increase insulin sensitivity (thiazolidinediones TZD). Any intervention that prevents or corrects lesions produced in the skeletal muscle may have effects on glucose homeostasis in the body. To this end, the authors suggest that antioxidant supplements may have a favorable effect on improving insulin sensitivity in skeletal muscle. (16)

A recent study (Li TL, Cheng PY, 2007) suggests that prolonged acute exercise generates low plasma concentrations of glucose, increase number of circulating leukocytes, neutrophils and monocytes and changes last for approximately 9 hours. The researchers also found elevated concentrations of plasma cortisol during 6 h after exercise. The results of this study suggest that the impact of a single episode of prolonged exercise on endocrine responses would be recovered around 9 h post-exercise in fasting condition (8).

6. RONS – induced changes in physical effort on immunity

Immunology strain is considered a new area of research, with numerous articles published since 1990. More research sought to determine whether acute immune changes occurring during exercise have clinical importance.

In response to acute physical effort, there is a rapid exchange of immune cells from peripheral lymphoid tissues and circulation. The answer depends on many factors, including intensity, duration, and mode of exercise, concentrations of hormones and cytokines, changes in body temperature, blood flow, hydration status, and posture.

Of all immune cells, natural killer cells (NK), neutrophils, and macrophages (immune system) seem to be most susceptible to the effects of acute exercise, both in number and function. In general, episodes of acute exercise of moderate duration (<60 min) and moderate intensity (<60% VO_2max) are associated with fewer disruptions and less stress on the immune system than the long series of sessions of high intensity. In response to long-term training, there is a significant increase in NK cell activity. Changes in the function of neutrophils, macrophages and T and B cells in response to training were reported inconsistently, but there are indications that neutrophil function is suppressed during periods of high intensity exercise. Aging causes a decrease in most cell-mediated immune mechanisms and humoral response. The immune system is higher in the elderly with a good physical condition compared to sedentary elderly. Mental stress, malnutrition, rapid weight loss and poor hygiene conditions, each were associated with impaired immunity. Athletes who are in the intensive training regimes should be aware that each of these factors has the potential to influence their immune system (10).

Strenuous physical effort cause lasting changes in immune function. T and B cell function, neutrophil function in the upper airway, and the concentration of immunoglobulin A (IgA) in saliva was found to be suppressed for at least several hours during recovery after intense exercise and prolonged resistance training. During this "open window", antimicrobial defense of the host organism decreases and the risk of subclinical and clinical infections increase. Although this is an attractive hypothesis, needs to be demonstrated conclusively that athletes have an extreme immunosuppression and therefore suffer an infection. Immunologists have argued that immune changes occur after prolonged and intensive resistance exercise contributes to the occurrence of an increased risk of upper respiratory tract infection in athletes. Phagocytes from peripheral blood may react differently than those taken from the respiratory tract. Using nasal lavage showed a significant suppression of the ability of phagocytes to ingest *Escherichia coli* over a period of three days after running 20 km in athletes compared with controls. After a marathon, mucociliar nasal clearance is significantly slower for almost a week in athletes compared with control subjects. These data suggest that protection of the host organism in the upper airway passages is suppressed for a prolonged period after endurance exercise and suggests a link between the risk of respiratory infections and endurance training. Neutrophils infiltrate all metabolically active tissues after endurance exercise, including heart, liver, and skeletal muscles. Although cytokines are intended to mediate the immune response, various hormones, including cortisol, growth hormone, prolactin, thyroxine has been shown that adjustment may have some effect on phagocytes function. Taken together, these data suggest that the immune system is suppressed and subjected to stress, even if transient, intense exercise, supporting the hypothesis that protection is compromised in the host organism. This is especially apparent when athletes go through repeated cycles of endurance exercise and are exposed to pathogen agents and other immune system stressors, including lack of sleep, severe mental stress, malnutrition, or weight loss (6).

Immunodepression after intense and prolonged physical effort with altered resistance to infection occurs due to changes in immune status:

- a. changes in the relative proportion of blood components: lymphopenia, neutrophilia
- b. changes in leukocyte function: decreased lymphocytic response to mitogen, decreased neutrophil function, reduces non-specific immunity
- c. elevated serum levels of cytokines and anti - inflammatory (TNF- α , IL-1, IFN- γ , prostaglandins, etc.).
- d. chronic low levels of salivary Ig, in particular decreasing the amount of IgA (mainly IgA1) + / - IgM in saliva (2).

7. Antioxidant role of physical exercise

Oxidative stress research has focused on adverse effects of RONS production during physical exertion (decreased immunity and increased fatigue), but current research concerns the potential positive role of RONS production in the adaptation induced by physical effort. Physical exercise produces oxidative stress when exertion is of high intensity. Moderate intensity physical exercise activates antioxidant enzyme systems. Strenuous physical effort causes oxidation of glutathione, enzymes released from the cytosol and sign other damage at the cellular level. This evidence that reactive oxygen species are toxic but play an important role in cell signaling and gene expression (9).

Considering the principle of hormesis, a low-grade oxidative stress appears necessary for various physiological adaptations. A repeated exposure of the body to increase production by SRON in training leads to chronic upregulation in antioxidative defense system of the body and a change in redox balance (equilibrium), offering protection from RONS during subsequent training and oxidative stress conditions that are not induced by physical effort. Oxidative stress induced by exercise respect the physiology principles of adaptation therefore, for physiological adaptation to a particular condition (antioxidant defense, hypertrophy, strength), a stimulus applied (in this case production SRON) must exceed a certain threshold thus giving rise to an actual loading of the system. If the load is at an appropriate level then the body will adapt physiologically which will further improve the health and performance (11).

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WHOLE BODY VIBRATION TRAINING EFFECTS IN RUGBY PLAYERS: A PILOT STUDY

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ABSTRACT. Introduction: Whole Body Vibration (WBV) is considered a new revolutionary strength training method. The purpose of this pilot study is to provide preliminary data on the effects of WBV training on maximum isometric knee extensor strength in rugby players. **Materials and methods:** Data were collected from 10 male rugby players with ages ranging from 18-36 years randomly recruited from the “Universitatea” Cluj-Napoca rugby team. They were equally divided into two groups: a Control group and a Vibration group. The subjects from the Vibration group were trained on the Fitvibe Excel Pro® vibration platform for three weeks (three times per week, 7 minutes per session). Pre and post training measurements of the maximum isometric knee extensor strength of both legs for all participants were performed on the KIN-COM® isokinetic dynamometer. **Results:** Mean age of the participants was 22.40 (± 0.476) years. Mean height was 184.40 (± 1.939) cm. Mean weight was 97.90 (± 4.925) kg. After three weeks of WBV training, there was an increase in the maximum isometric strength of the right leg ($P=0.020$) of subjects from the Vibration group. A significant increase in maximum isometric knee extensor strength for both right leg ($P=0.004$) and left leg ($P=0.006$) was found in the rugby players exposed to WBV when compared with a Control group. **Conclusions:** The hypothesis of this pilot study was confirmed. Still, more research is needed, involving a larger number of participants, on the effects of long-term WBV training on the muscular performance of athletes.

Keywords: vibration training, rugby players, strength, knee extensors.

REZUMAT. Efecte ale antrenamentului obținut prin vibrarea întregului corp în cazul jucătorilor de rugby: un studiu pilot. Introducere: Vibrația întregului corp (WBV) este considerată o nouă metodă revoluționară de antrenare a forței musculare. Scopul acestui studiu pilot este acela de a furniza date preliminare referitoare la efectele pe care antrenamentul prin vibrarea întregului corp le poate avea asupra forței izometrice maxime a extensorilor genunchiului în cazul jucătorilor de rugby. **Materiale și metode:** Datele au fost obținute de la 10 jucători de rugby cu vârsta cuprinsă între 18-36 ani aleator selecționați dintre jucătorii echipei “Universitatea” Cluj-Napoca. Aceștia au fost împărțiți, în mod egal, în două grupe: o grupă de control și o grupă experimentală. Subiecții din grupa experimentală au fost supuși unui program de antrenament cu durata de trei săptămâni (de trei ori pe săptămână, câte 7 minute pe ședință) pe platforma de vibrații Fitvibe Excel Pro®. Înainte și după cele trei săptămâni de antrenament s-a măsurat forța izometrică maximă a extensorilor genunchiului pentru ambele membre inferioare ale tuturor

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participanților cu ajutorul dinamometrului izokinetic KIN-COM®. **Rezultate:** Media de vârstă a participanților a fost de 22.40 (± 0.476) ani. Înălțimea medie a participanților a fost de 184.40 (± 1.939) cm. Greutatea medie a participanților a fost de 97.90 (± 4.925) kg. După trei săptămâni de antrenament cu vibrații, s-a observat o creștere a forței izometrice maxime a membrului inferior drept ($P=0.020$) aparținând subiecților din grupa experimentală. O creștere semnificativă a forței izometrice maxime a extensorilor genunchiului, atât în cazul membrului inferior drept ($P=0.004$), cât și în cazul membrului inferior stâng ($P=0.006$), s-a observat în cazul subiecților repartizați în grupa experimentală atunci când s-au comparat rezultatele măsurătorilor cu cele ale grupeii de control. **Concluzii:** Ipoteza acestui studiu pilot a fost confirmată. Totuși, este nevoie de mai multe studii, cu un număr mai mare de participanți, care să investigheze efectele pe termen lung ale antrenamentului prin vibrații asupra performanței musculare a sportivilor.

Cuvinte cheie: antrenament cu vibrații, jucători de rugby, forță, extensorii genunchiului.

INTRODUCTION

Vibration effects on the human body have been studied since the beginning of the 1960s. Whole body vibration (WBV) is a concept which implies the exposure of the entire body to vibration. Whole body vibration platforms are currently used in sports, fitness, rehabilitation, medical therapies and aesthetics. Used as training tools, vibration platforms may elicit immediate, short term and long term effects on various physiological systems. Scientists have investigated the effects of whole body vibration exposure on skeletal muscles (Blotner et al., 2006; Belavy et al., 2008; Rees et al., 2008), on cartilage (Liu et al., 2001; Takeuchi et al., 2006; Novak and Novak, 2006; Turbanski et al., 2005; Schuhfried et al., 2005; Ebersbach et al., 2008), on tissue perfusion (Kersch-Schindl et al., 2001; Lohman et al., 2007; Stewart et al., 2005; Maloney-Hinds et al., 2008), on hormonal responses (Erskine et al., 2007; Bosco et al., 2000; Cardinale et al., 2010; Di Loreto et al., 2004; Kvorning et al., 2006) and on body composition (Da Silva et al., 2007; Garatachea et al., 2007; Roelants et al., 2004a).

When considering the effects of long term WBV training on muscle performance, the great majority of scientists seem to reach the same conclusion: long term exposure to WBV increases muscular performance (Bosco et al., 1998; Delecluse et al., 2003; Roelants et al., 2004a; Roelants et al., 2004b; Russo et al., 2003; Rønnestad, 2004; Salvarani et al., 2003; Torvinen et al., 2003; Verschueren et al., 2004; Fagnani et al., 2006; Rees et al., 2008; Trans et al., 2009;

Tihanyi et al., 2010). Still, there are studies who have found no improvement in muscle performance after long term exposure to WBV (Bautmans et al., 2005; Cochrane et al., 2004; Delecluse et al., 2005; de Ruiten et al., 2003). From the existing studies who have investigated the effects of chronic exposure to WBV (Rehn et al., 2007), it could be concluded that long term WBV exposure can have positive effects on the leg muscular performance among elderly women (Roelants et al., 2004a; Russo et al., 2003; Verschueren et al., 2004) and untrained individuals (Bosco et al., 1998; Delecluse et al., 2003; Roelants et al., 2004b; Rønnestad, 2004; Torvinen et al., 2003).

Only a few studies have investigated the effects of long term WBV exposure on the leg muscular performance of athletes (Delecluse et al., 2005; Fagnani et al., 2006). The present pilot study was built around the following hypothesis: a Whole Body Vibration intervention of 3 weeks will improve the maximum isometric knee extensor strength in male rugby players.

MATERIALS AND METHODS

Participants

Data were collected from 10 male rugby players with ages ranging from 18-36 years randomly recruited from the “Universitatea” Cluj-Napoca rugby team. They were informed about the possible health risks associated with vibration training and written informed consent was obtained from all of them. None of the subjects had any chronic diseases or contraindications with vibration exposure. All subjects participated at their usual training sessions with the rugby team throughout the entire duration of the study.

Procedures

The present study is a randomized-controlled trial and was meant to assess the effects of a 3-week whole body vibration intervention on the isometric knee extensor strength. Half of the participants were randomized to the whole body vibration group and half to the control group. The vibration protocol consisted of a 3-week whole body vibration training with 3 training sessions per week. The duration of one whole body vibration training session was 7 minutes (rest included). The vibration platform used in this study was Fitvibe Excel Pro®, GymnaUniphy NV, Belgium. The platform generates vertical vibrations, with frequencies ranging from 20 to 60 Hz, and with amplitudes of 2 & 4 mm. Isometric tests were performed initially (before randomization) and after 3 weeks.

The tests were performed with both legs (right and left). Three different angles were used to test the maximum isometric strength for each leg. The isometric tests were performed on a KIN-COM®, Chattanooga Group Inc. isokinetic dynamometer. None of the participants withdrew from the study.

Analyses

Means, standard deviations and standard errors were calculated for all subjects in each group for each parameter and were given as descriptive statistics. A statistical analysis with a paired Student's *t* test was used to compare before and after training values of right and left leg isometric knee extensor strength. A $P < 0.05$ was considered statistically significant. A statistical analysis with an unpaired *t* test was used to compare vibration and control group mean values. A $P < 0.05$ was considered statistically significant. All analyses were executed using the statistical package SPSS version 15.0 (SPSS Institute, Chicago, IL).

RESULTS

Mean age of the participants was 22.40 (± 0.476) years. Mean height was 184.40 (± 1.939) cm. Mean weight was 97.90 (± 4.925) kg. Table 1 presents the descriptive statistics results for maximum isometric strength of knee extensors for both groups (Vibration and Control) and both legs (right and left) of participants.

Table 1.

Descriptive statistics results for maximum isometric knee extensor strength

	Group	Mean force (N)	Standard deviation	Standard error
Initial test – right leg	Vibration	748.7320	123.02128	55.01679
	Control	645.9300	63.94657	28.59778
Final test – right leg	Vibration	843.2640	116.83476	52.25009
	Control	596.9960	78.36273	35.04488
Initial test – left leg	Vibration	668.1980	113.64580	50.82395
	Control	586.1960	34.99328	15.64947
Final test – left leg	Vibration	734.3300	110.46802	49.40280
	Control	545.1300	20.74848	9.27900

Table 2 presents the results of the unpaired *t* test for the mean values of maximum isometric knee extensor strength measured pre- and post-intervention for both legs and both groups. Since a $P < 0.05$ was considered statistically significant, the results of the unpaired *t* test show significant increases in the isometric knee extensor strength in the case of Vibration group post-intervention.

Table 2.

Unpaired *t* test values for Vibration and Control mean values pre- and post-training

	<i>t</i>	<i>p</i>
Initial test – right leg	1.658	0.136
Final test – right leg	3.914	0.004*
Initial test – left leg	1.542	0.162
Final test – left leg	3.764	0.006*

* statistically significant ($P < 0.05$)

Table 3 and Table 4 present paired Student’s *t* test values for both legs of subjects from the Vibration group and the Control group, respectively. Since a $P < 0.05$ was considered statistically significant, the results of the paired Student’s *t* test show a significant increase in the isometric knee extensor strength of the right leg of subjects from the Vibration group and a significant increase in the isometric knee extensor strength of the left leg of subjects from the Control group .

Table 3.

Paired Student’s *t* test values for both legs (Vibration)

	<i>t</i>	<i>p</i>
Initial test – right leg	-3.725	0.020*
Final test – right leg		
Initial test – left leg	-2.534	0.064
Final test – left leg		

* statistically significant ($P < 0.05$)

Table 4.

Paired Student's *t* test values for both legs (Control)

	<i>t</i>	<i>p</i>
Initial test – right leg	1.918	0.128
Final test – right leg		
Initial test – left leg	3.617	0.022*
Final test – left leg		

* statistically significant ($P < 0.05$)

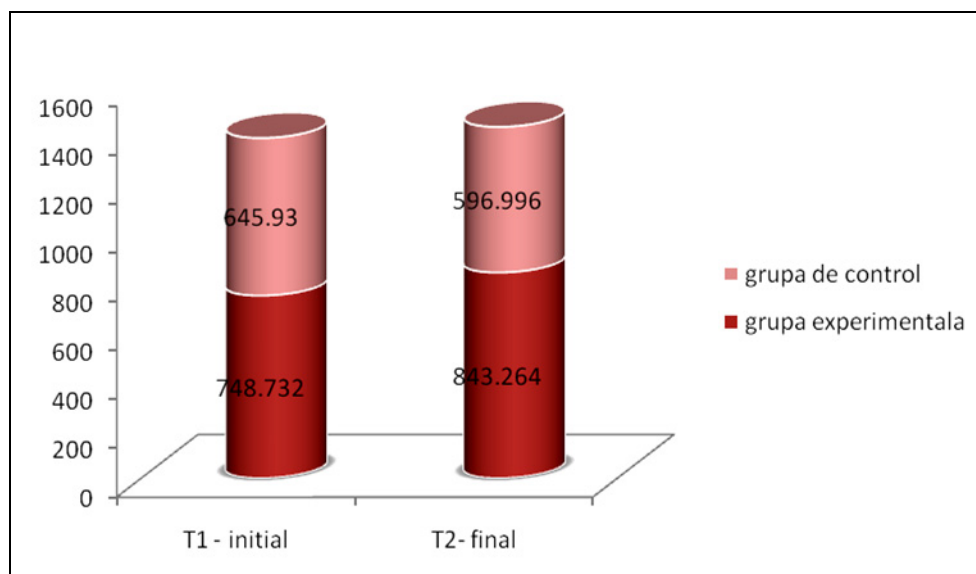


Figure 1. Comparison between initial and final test results for right leg for both groups

Figure 1 presents a comparison between the initial and the final maximum isometric knee extensor strength test results for the right leg of participants from both Vibration and Control groups.

Figure 2 presents a comparison between the initial and the final maximum isometric knee extensor strength test results for the left leg of participants from both Vibration and Control groups.

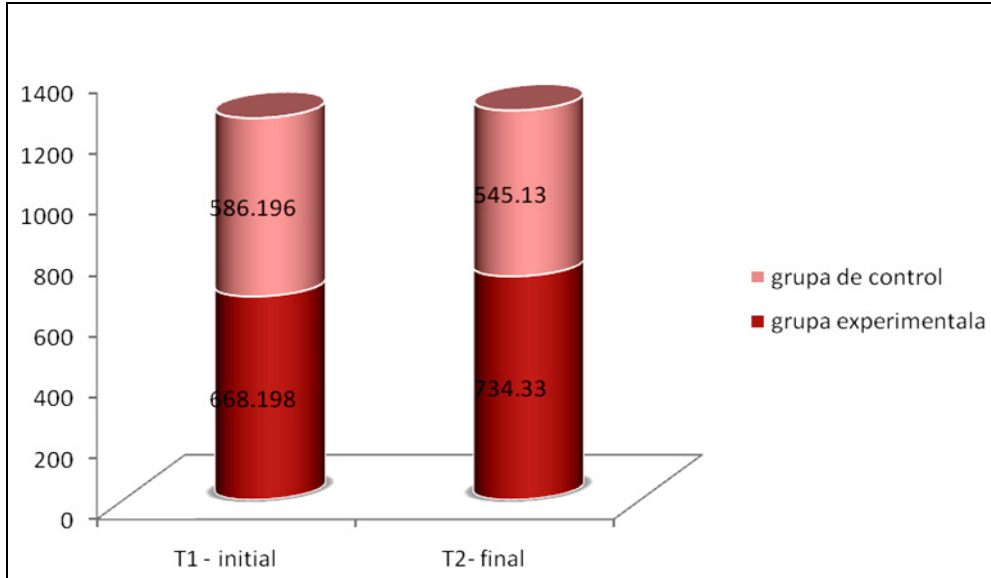


Figure 2. Comparison between initial and final test results for left leg for both groups

CONCLUSIONS

The hypothesis of this pilot study was that 3 weeks of WBV training will increase isometric knee extensor strength in male rugby players. The results show an increase in the maximum isometric strength of the right leg ($P=0.020$) of subjects from the Vibration group and significant increases in maximum isometric knee extensor strength for both right leg ($P=0.004$) and left leg ($P=0.006$) of rugby players exposed to WBV when compared with the Control group. Thus, the initial hypothesis of this pilot study was confirmed.

Whole body vibration (WBV) training was proved to have beneficial effects on muscular performance among untrained people and elderly women. When it comes to athletes, though, there are controversial results regarding the long-term effects of WBV exposure on muscular performance (Delecluse et al., 2005; Fagnani et al., 2006). This is the reason why more research is needed, involving a larger number of participants, on the effects of long-term WBV training on the muscular performance of athletes.

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THE EFFECTS OF PSYCHOLOGICAL NEEDS SATISFACTION AND MOTIVATIONAL REGULATIONS ON EXERCISE BEHAVIOR

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ABSTRACT. The purpose of our study is to investigate the relationship between fundamental psychological needs and the types of motivational regulation governing the exercise behavior. A number of three questionnaire (BREQ, LTEQ and BNSWS) were administrated to 150 participants in a strenuous exercise program. A number of seven variables contribute independently predicting the strenuous physical activity (gender, age, competence, relatedness, identified regulation, integrated regulation, introjected regulation).

Conclusions: Results of this investigation supports absolutely the constructs of Self-Determination Theory in context of strenuous physical activity and the importance of the most self-determined forms of behavioral regulation.

Keywords: Self-Determination Theory, strenuous physical activity, psychological needs, behavioral regulation, exercise behavior.

REZUMAT. *Efectele nevoilor psihologice și reglărilor motivaționale asupra comportamentului de exercițiu fizic.* Scopul studiului nostru este investigarea relației dintre nevoile psihologice fundamentale și reglările motivaționale care influențează comportamentul de exercițiu fizic. Un număr de trei chestionare (BREQ, LTEQ și BNSWS) au fost administrate la 150 de subiecți care participau la un program de exerciții fizice viguroase. Șapte variabile contribuie independent la predicția exercițiului fizic viguros (gen, vârsta, competența, relaționarea, reglarea identificată, reglarea integrată, reglarea introiectată).

Concluzii: Rezultatele cercetării susțin constructele Teoriei auto-determinării în contextul exercițiilor fizice viguroase și importanța formele mai auto-determinate ale reglărilor comportamentale.

Cuvinte cheie: Teoria auto-determinării, activitate fizică viguroasă, nevoi psihologice, reglări comportamentale, comportament de exercițiu.

INTRODUCTION

Physical activity has a strong connection with prevention of diseases, premature death and maintaining a high quality of life that we must pay as much attention as other public health problems. More research is needed to

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determine the most effective ways to motivate people to participate in an adequate physical activity to a level that would provide benefits for health and wellness. Despite the fact that there are a large number of research that demonstrated the link between physical activity and health, over 70% of Romanian are sedentary or do too little exercise to benefit from this activity.

Researchers have developed various theories and models to explain exercise behavior. In light of these theories, the investigators examined the influence of physical activity to factors such as attitudes, intentions, self-efficacy, intrinsic and extrinsic motivation. Motivation to exercise is a critical contributor to the level of physical activity by an individual.

The Self-Determination Theory (Deci & Ryan, 1985, 2002) is an effective theoretical framework for investigating the behavior of exercise motivation. An important feature of this theory is a multidimensional conceptualization of intrinsic and extrinsic motivation. Various forms of motivation are forms by which human behavior is regulated. Self-determination theory argues that these forms of control are placed on a continuum starting from completely free form of self-determination and ending with extremely complex forms of self-determination. The six different forms of control are: amotivation, external regulation, introjection, identification, integration and intrinsic motivation. Intrinsic motivation is the most self-determined form of the continuum and involves pleasure and satisfaction experienced in engaging in a behavior. The part of the extrinsic motivation continuum is made of four distinct behavioral regulations. Integrated and identified regulations are the most autonomous forms of extrinsic motivation, while introjection and external regulations are the forms of the least self-determined motivational continuum. Self-Determination Theory argues that external regulations and amotivation are less adaptive while intrinsic motivation has positive motivational consequences. In general, research in the context of exercise support these allegations. Individuals who tend to exercise regularly are more self-determined regarding motivation (Duncan et al., 2010). However, research in the field of physical activity (Wilson et al., 2004) emphasize the positive implications of other forms of self-determined regulation. For example, identified regulation is considered a stronger predictor of exercise behavior than intrinsic motivation. In addition, introjected regulation seems to be (in some studies) positively correlated with vigorous exercise.

Self-determination theory argues that human beings have three basal psychological needs: the needs for competence, autonomy and relatedness. The need for competence requires that the individual has a tendency to interact with the environment through which he can obtain the desired results and

prevent undesirable events (Deci and Ryan, 1985). The need for autonomy reflects a desire to engage in activities chosen by the individual while he is at the origin of his own behaviors. The need for relatedness implies being member of a social group, being connected with people around whom the individual lives. In fact, Self-Determination Theory argues that the most self-determined forms of behavioral regulation occur when these needs are met. Low self-determination is a consequence of disregarding these three basic psychological needs.

An additional postulate of self-determination theory reveals the importance of social context in which the individual evolves. Contexts that promote autonomy and are supportive met the fundamental psychological needs ensuring self-determined motivation. Such contexts are characterized by minimizing the control exercised, understanding the ideas of others and choosing the options that help to ease the decision making process.

The main objective of our study is to investigate the relationship between fundamental psychological needs and the types of motivational regulation governing the exercise behavior. Taking into account the literature (Wilson et al., 2004) we formulated the hypothesis according to which there is a positive relationship between fundamental psychological needs and identified and intrinsic regulations. The second hypothesis is the existence of a negative relationship between fundamental psychological needs and introjected and external regulations.

METHODS

Participants

Participants (N = 148; n = 68 men, n = 80 women) aged between 18 and 65 (M = 33.56, SD = 10.23). All participants were regular exercisers engaged in a variety of vigorous exercise classes in a fitness club from Cluj city. The level of physical activity in the sample was characterized by great variability (men : M mets = 65.43, SD = 34.23; women: M mets = 78.34, SD = 45.67). The level of physical activity was measured with Leisure Time Exercise Questionnaire (LTEQ, Godin, G., Shepherd, R., 1985).

Measures

Behavioural Regulation in Exercise Questionnaire (BREQ; Mullan et al.,1997). Is an questionnaire with 15 items assessing exercise regulation. The instrument consist in four subscale for different motivation regulation:

external, introjected, identified and intrinsic. Participants indicated their option on a scale with five points, from 1 (false) until 5 (“very true for me”). We added four additional items designed to assess integrated regulation. These items were created in line with theoretical fundamental of Self-Determination Theory (Deci & Ryan, 1985, 2002). The adaptation to Romanian norms was done with authors permission (Wilson et al., 2010).

Leisure Time Exercise Questionnaire (LTEQ, Godin, G., Shepherd, R., 1985). This instrument was used to assess the intensity of exercise behavior. There are three questions evaluating mild, moderate and strenuous exercise during a typical week. The score for exercise behavior could be calculated using the sum of each exercise intensity according to the following formula: (mild X 3) + (moderate X 5) + (strenuous X 9).

Basic Need Satisfaction at Work Scale (Deci et al., 2001). This scale was created for organizational context being adapted for physical activity. The instrument contain 21 de items, six items assessing competence, eight for relatedness and seven items assessing autonomy. The items are affirmations to which participants must respond on a scale in seven steps from 1 (“not true for me”) to 7 (“very true for me”).

RESULTS

Internal consistency reliability (alpha Cronbach) and descriptive statistics for all variables could be examined in Table 1. Reliability analysis show that internal consistency estimates are above .70 limit for all variables.

Table 1.

Reliability and descriptive statistics for age, gender, psychological needs and BREQ subscales

Variables	Females			Males		
	M	SD	Alpha α	M	SD	Alpha α
Age	32.13	8.34		33.21	9.70	
Autonomy	5.41	1.10	.71	5.56	1.65	.77
Relatedness	5.23	1.23	.76	5.30	0.67	.83
Competence	5.29	0.91	.75	5.32	1.34	.78
Intrinsic motivation	3.97	1.03	.85	3.80	1.25	.81
Integrated regulation	3.76	1.02	.84	3.80	0.93	.82

Variables	M	SD	Alpha α	M	SD	Alpha α
Identified regulation	3.80	1.70	.78	3.68	1.81	.78
Introjected regulation	2.02	0.84	.81	1.93	0.82	.85
External regulation	1.90	0.81	.76	1.91	0.81	.74

Participants were engaged in strenuous physical activities, there scores on LTEQ (M = 49.23, SD = 8.32) were higher that results from other studies done in physical activity context (Wilson et al., 2004). Autonomy had higher medium value, followed by competence and relatedness. Intrinsic motivation was the behavioral regulation more utilized, followed by identified and integrated regulation.

Pearson inter-correlations were calculated between age, gender, autonomy, relatedness, competence and BREQ subscale (table 2). Moderate but negative correlation was obtained between external regulation, on the one hand and competence and relatedness. Between external regulation and autonomy exist negative correlation but very weak. Moderate positive correlation were obtained between all psychological needs and intrinsic, integrated and identified motivation. Moderate positive correlation existed between introjected regulation and identified regulation. Significant positive correlations were obtained between all three psychological needs.

Table 2.

Matrix of intercorrelation r Bravais-Pearson for measured variables

Variables	1	2	3	4	5	6	7	8	9	10
1.Age	-									
2.Gender	.04	-								
3.Autonomy	.06	.05	-							
4. Relatedness	-.12*	-.05	.42**	-						
5.Competence	-.11*	-.12**	.43**	.45**	-					
6. Intrinsic motivation	-.10*	.09	.31**	.44**	.20**	-				
7. Integrated regulation	-.13*	.07	.23**	.41**	.39**	.68**	-			
8. Identified regulation	-.14**	.05	.21**	.20**	.40**	.59**	.45**	-		
9. Introjected regulation	-.16*	.03	-.13**	-.04	.35**	.12**	.23**	.38**	-	
10. External regulation	-.06	-.03	-.36**	-.14**	-.34**	-.12**	-.02	-.09	.25**	-

* r Bravais-Pearson significant at $p < .05$

** r Bravais-Pearson significant at $p < .01$

We used Multiple Regression Analyses because we had a number of variables, one dependent (strenuous physical exercise) and two independent (psychological needs and motivational regulation). In step 1 of regression analyses we tried to control the influence of age and gender. Thus we can analyze, in context of Self-Determination Theory, the influence of other factors on exercise behavior, other than demographic variables. We included in step 2 of regression analyses the three psychological needs because Self-Determination Theory suggests that they coexist and it is not necessary to be analyzed separately. Psychological needs operate on the behavior indirectly through motivational regulation. A number of seven variables contribute independently predicting the strenuous physical activity (gender, age, competence, relatedness, identified regulation, integrated regulation, introjected regulation). These seven factors contribute with 38% on predicting strenuous exercise behavior.

Table 3.

Multiple Regression Analyses predicting strenuous exercise in function of gender, age, psychological needs and types of motivational regulations

Independent variables	R ²	β	t
Step 1: F (2,455)=25.24, p < .01	.15		
Gender		-.14	-2.23**
Age		-.25	-5.34**
Step 2: F(5,213)=19.04,p < 01	.25		
Gender		-.10	-2.56
Age		-.23	-5.23**
Autonomy		-.10	-0.20
Relatedness		.34	5.32**
Competence		.45	6.24**
Step 3: F (8,556) = 18.06, p < 00	.38		
Gender		-.20	-4.23**
Age		-.31	-4.29**
Autonomy		-.10	-0.34
Relatedness		.20	3.45**
Competence		.29	3.79**
Intrinsic motivation		.10	0.56
Integrated regulation		.20	4.23**
Identified regulation		.19	2.45**
Introjected regulation		.19	3.22**
External regulation		-.25	-3.56**

* r Bravais-Pearson significant at p<.05

** r Bravais-Pearson significant at p<.01

CONCLUSIONS

The results of present study revealed the importance of psychological needs and motivational regulation in prediction of strenuous exercise behavior. We could assert from the view of our research that key concepts of Self-Determination Theory predict exercise behavior in greater extent than demographic variables (gender, age). Psychological needs satisfaction in physical activity context are positive correlated with more self-determined form of motivational regulations (integrated, identified and intrinsic). After regression analyses we observed that external regulation is a negative predictor of exercise behavior. Identified, integrated and introjected regulations are positive predictors of strenuous exercise behaviors. Contrary to the expectations, intrinsic motivation is not a positive predictor of this measured dimension of behavior. Although, this form of motivation posed a higher level of self-determination, it is not a significant predictor for engaging in physical exercise programs. These findings obligate us to consider other forms of motivational regulations responsible for initiating and maintaining programs of physical exercise. It seems that people who do physical exercises and recognize their importance in terms of health and well-being. There are evidences whereupon individuals engaged in physical activities from reasons less self-determined (for improving fitness and physical ego). Really we should not encourage intrinsic motivation in context of physical activity? However, many studies (Wilson & Rodgers, 2004; Deci & Ryan, 2008) suggest that intrinsic motivation contributes to the improvement of the quality of the exercise experience and maintains the activity.

Finally, we observed a negative relationship between external regulation and exercise behavior. This fact confirms one of the postulates of Self-Determination Theory which affirms that sustaining an activity from external reasons is a weak contributor for carrying on the activity. This study had a correlational design and it is not possible to make causal conclusions. That why in the future should be used an experimental design. The number of participants was rather limited and was composed by individuals engaged in strenuous physical activity.

Albeit these limitations, results of this investigation support absolutely the constructs of Self-Determination Theory in context of strenuous physical activity. This study could be a good theoretical framework for future behavioral intervention designed to increase the level of participation in physical activity.

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IMPROVING THE TREATMENT OF PERIPHERAL EDEMA IN NYHA CLASS III CHF PATIENTS THROUGH KINESIOTHERAPY MEANS

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ABSTRACT. This paper argues that by applying lymphatic drainage massage (LDM) during hospitalization period, along with drug treatment, we can make the HF peripheral edema disappear faster. The study was conducted on 20 patients diagnosed with left CHF. class III, presenting edema of legs and feet, out of whom 10 were given drug treatment and LDM, and 10, just drug treatment. During the research we recorded perimetric measurements for both groups of patients. After applying the LDM we observed that the peripheral edema disappeared much faster in the experimental group patients, than in the control group patients.

Keywords: heart failure, edema, lymphatic drainage

REZUMAT. *Eficientizarea tratamentului edemului periferic la pacienții cu ICC CL. III. NUMĂ prin mijloace kinetoterapeutice.* Lucrarea de față își propune ca prin aplicarea masajului de drenaj limfatic (MDL) din perioada de spitalizare, combinat cu tratamentul medicamentos, să se obțină o dispariție mai rapidă a edemului periferic din IC. Studiul s-a efectuat pe 20 de bolnavi, cu diagnosticul de ICC st. III cu edem la nivelul gambelor și picioarelor, 10 urmând tratament medicamentos și MDL, iar 10 doar medicamentos. Pe parcursul cercetării am efectuat înregistrări ale bilanțului perimetric la ambele loturi de pacienți. În urma aplicării MDL, se poate afirma că edemul periferic a dispărut mult mai repede la pacienții din lotul experimental, comparativ cu cei din lotul de control.

Cuvinte cheie: insuficiență cardiacă, edem, drenaj limfatic

INTRODUCTION

Cardiac rehabilitation occupies an increasingly important place inside the heart failure treatment. The kinesiotherapy treatment for cardiac rehabilitation contributes to increasing the body's effort capacity and reducing the risk for further complications, as well as increasing heart failure patients' life expectancy.

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The edema caused by heart failure shows that the condition has worsened. Seeing the patient with this kind of generalized edema makes the entire cardiac rehabilitation team to adopt a certain therapeutic attitude that would improve the patient's condition.

Hence, this research aims to prove the advantage of introducing from an early stage the heart failure peripheral edema patient in a complex rehabilitation program that would rush the possibility of physical exercise. The reason behind choosing this theme was to prove, experimentally, the effectiveness of lymphatic drainage massage in treating heart failure lower limbs generalized edema patients, during their hospitalization. Thus, we tried to prove whether the specific lymphatic drainage techniques significantly influence the evolution of lower limbs cardiac edema, and combining, inside the therapeutic strategy, lymphatic drainage and drug treatment, represents an effective solution for treating heart failure edema.

MATERIAL AND METHOD

The study was conducted on a group of 20 patients, diagnosed with stage III congestive heart failure, having generalized edema in lower limbs, committed in the Cardiology section of Bacau County Hospital.

The criteria in choosing the subjects were:

- ✓ stage III congestive heart failure with lymphatic edema in legs and feet (documented);
- ✓ male gender;
- ✓ absence of any other invalidating conditions (neurological, orthopedic and/or psychiatric);
- ✓ age of the patients (55-60 years old);

10 of the patients constituted the experimental group, to whom the manual lymphatic drainage massage was applied, along with the drug treatment recommended by the cardiologist, whereas the other 10 were the witness (control) group, receiving only drug treatment.

In the experimental group patients we started applying a manual lymphatic draining massage since their second day of hospitalization, until the edema was diminished and ultimately disappeared; the massage was done on the thorax, on the back, and on the lower limbs. The duration of drainage maneuvers we used, as well as the dosage, was calculated according to each patient's particularities and the stage of their condition. The lymphatic drainage maneuvers were done first on the back and torso, and then on the lower limbs.

The general aim was to diminish the lower limbs edema, to decongest the pulmonary circulation, to ease the work of the heart, to ease the lower limbs' movement, as well as giving them back a certain degree of mobility and freedom, by starting the kinesiotherapy program as soon as possible, thus trying to professionally and socially reintegrate the patient.

The manual drainage treatments were done every day, with breaks for avoiding overworking and overloading the heart, thus maintaining the physiological parameters within normal limits. The duration of the sessions was decided taking into account the stage of the edema and the patient's dynamic and physiological parameters. The maneuvers were also limited by the first symptoms of overworking (dyspnea) - we tried to avoid the appearance of these symptoms through a careful observation and control of the physiological parameters (the patients were monitored during treatments).

Another factor that we used of for the treatment strategy was the quantity of edema mobilized into circulation - this we quantified by assessing the skin fold that we could make using our fingers (the fold was never supposed to be very big at the end of the treatment, in comparison with the one we could make in the beginning). This can be deduced by observing the evolution of perimetric measurements we did in the beginning and at the end of every session.

An important role in conducting the treatments had the fact that during the first stage of the treatment, when the edema was accentuated, the patients were monitored. Thus, according to the modifying parameters that we could follow on the monitor, we were adapting the treatment, and we could go up to the maximum resistance and adapting limit of the body.

The control group patients were given only drug treatment, similar to the one given to the experimental group patient, adapted to each patient's particularities.

The general scheme of lymphatic drainage treatment we used for the experimental group patients was:

- addressing drainage for the retroclavicular ganglions (bilaterally)
 - 2 series of 5 maneuvers;
- addressing drainage for the posterior thoracic tracts - done on three levels, 5 maneuvers per level;
- addressing drainage for the axillary ganglions (bilaterally) - 5 maneuvers;
- addressing drainage for the inguinal/axillary tracts (bilaterally) - 3 or 4 levels, 5 maneuvers per level;

- addressing drainage for the inguinal ganglions (bilaterally) - 10 maneuvers for each member;
- resorption drainage for the thigh (bilaterally) - 3 levels, 10-15 maneuvers per level;
- addressing drainage for the popliteal ganglions (bilaterally) - 10 maneuvers for each member;
- resorption drainage for the lower leg (bilaterally) - 3 levels, 10-15 maneuvers per level;
- resorption drainage for the leg (bilaterally) - 15 maneuvers per level;

For better assessing the patients' performances in the two groups, we did multiple recordings of perimetric measurements, as follows:

- the measurements were done bilaterally in three points (above the malleolus, at 10 cm above the malleolus, and at 10 cm under the patella);
- the measurements were done on a daily basis in every patient, in both groups;
- for the experimental group patients we did two measurements every day, one before the lymphatic drainage treatment, and one after it;
- for recording this parameter we used the metric band;

DISCUSSIONS AND CONCLUSIONS

The following tables show the evolution of the peripheral edema in the two studied groups and are comprised of initial and final (when the edema was gone) data, as well as the day it disappeared.

Table 1.

Evolution of peripheral edema (ankle)

	Experimental group			Control group		
	Initial testing (cm)	Final testing (cm)	Moment of the edema's disappearance (day)	Initial testing (cm)	Final testing (cm)	Moment of the edema's disappearance (day)
Patient I	43	30	8	41	31	11
Patient II	43	29	9	41	30	11
Patient III	41	29	8	40	28	12
Patient IV	43	30	9	39	30	12
Patient V	42	30	9	37	28	10
Patient VI	39	29	7	38	27	10
Patient VII	40	29	8	37	29	10

	Experimental group			Control group		
	Initial testing (cm)	Final testing (cm)	Moment of the edema's disappearance (day)	Initial testing (cm)	Final testing (cm)	Moment of the edema's disappearance (day)
Patient VIII	37	27	7	39	28	11
Patient IX	38	28	7	38	27	11
Patient X	40	29	8	39	29	11
Arithmetical mean	40.60	29.00	8.00	38.90	28.70	10.90
Standard deviation	2.17	0.94	0.82	1.45	1.34	0.74
Variability coefficient	5.35	3.25	10.21	3.73	4.66	6.77

Table 2.

Evolution of peripheral edema (10 cm above the malleolus)

	Experimental group			Control group		
	Initial testing (cm)	Final testing (cm)	Moment of the edema's disappearance (day)	Initial testing (cm)	Final testing (cm)	Moment of the edema's disappearance (day)
Patient I	47	35	7	46	34	10
Patient II	48	35	7	47	35	10
Patient III	45	36	7	41	33	11
Patient IV	47	35	8	44	36	11
Patient V	42	34	8	43	34	9
Patient VI	45	34	6	41	32	9
Patient VII	46	33	7	46	34	9
Patient VIII	41	32	6	40	31	10
Patient IX	43	32	6	42	30	10
Patient X	47	34	7	48	35	10
Arithmetical mean	45.10	34.00	6.90	43.80	33.40	9.90
Standard deviation	2.38	1.33	0.74	2.82	1.90	0.74
Variability coefficient	5.27	3.92	10.69	6.44	5.68	7.45

Table 3.**Evolution of peripheral edema (10 cm under the patella)**

	Experimental group			Control group		
	Initial testing (cm)	Final testing (cm)	Moment of the edema's disappearance (day)	Initial testing (cm)	Final testing (cm)	Moment of the edema's disappearance (day)
Patient I	49	42	6	52	44	9
Patient II	51	43	6	51	43	9
Patient III	52	42	6	46	40	10
Patient IV	52	44	7	50	43	10
Patient V	51	43	7	47	41	8
Patient VI	49	41	5	47	40	8
Patient VII	47	40	6	48	42	8
Patient VIII	48	41	5	49	42	9
Patient IX	46	41	5	47	41	9
Patient X	49	42	6	50	43	9
Arithmetical mean	49.40	41.90	5.90	48.70	41.90	8.90
Standard deviation	2.07	1.20	0.74	2.00	1.37	0.74
Variability coefficient	4.18	2.86	12.51	4.11	3.27	8.29

In the initial testing, the experimental group had an arithmetical means of 40.60 at the ankle, 45.10 at 10 cm above the malleolus, and 49.40 at 10 cm under the patella. In the final testing, the arithmetical means presented values of 29.00 at the ankle, 34.00 at 10 cm above the malleolus, and 41.90 at 10 cm under the patella, resulting in a progress of 11.6 at the ankle, 11.1 at 10 cm above the malleolus, and 7.5 at 10 cm under the patella.

The control group, in the initial testing, had arithmetical means values of 38.90 at the ankle, 43.80 at 10 cm above the malleolus, and 48.70 at 10 cm under the patella. In the final testing, the arithmetical means presented values of 28.70 at the ankle, 33.40 at 10 cm above the malleolus, and 41.90 at 10 cm under the patella. The progress recorded in the control group patients was of 10.2 at the ankle, 10.4 at 10 cm above the malleolus, and 6.8 at 10 cm under the patella.

After analyzing the data presented above, we can see that the progress made by the experimental group is of 1.4 at the ankle, 0.7 at 10 cm above the malleolus, and 0.7 at 10 cm under the patella.

Regarding the moment when the edema disappeared (the day), we can see that the arithmetical means in the experimental group patients had values of 8.00 at the ankle, 6.90 at 10 cm above the malleolus, and 5.90 at 10 cm under the patella, whereas in the control group patients, 10.90 at the ankle, 9.90 at 10 cm above the malleolus, and 8.90 at 10 cm under the patella, results from which we could calculate a progress for the experimental group patients of 2.9 at the ankle, 3 at 10 cm above the malleolus, and 3 at 10 cm under the patella, more than for the control group patients.

In the initial and final testing, the variability coefficient, both for the experimental and the control group, is between 0-10%, which allows us to say that both groups are very homogeneous. The experimental group, in the initial testing, had a variability coefficient of 5.35 at the ankle, 5.27 at 10 cm above the malleolus, and 4.18 at 10 cm under the patella, in the final testing, of 3.25 at the ankle, 3.92 at 10 cm above the malleolus, and 2.86 at 10 cm under the patella, whereas the control group had, in the initial testing, a variability coefficient of 3.73 at the ankle, 6.44 at 10 cm above the malleolus, and 4.11 at 10 cm under the patella, in comparison with the final testing, when they had 4.66 at the ankle, 5.68 at 10 cm above the malleolus, and 3.27 at 10 cm under the patella.

Regarding the moment when the edema disappeared, the experimental group patients presented variability coefficient values of 10.21 at the ankle, 10.69 at 10 cm above the malleolus, and 12.51 at 10 cm under the patella, representing only a good homogeneity, whereas the control group patients presented a very good homogeneity, with variability coefficient values of 6.77 at the ankle, 7.45 at 10 cm above the malleolus, and 8.29 at 10 cm under the patella.

The standard deviation for the experimental group had values of 2.17 at the ankle, 2.38 at 10 cm above the malleolus, and 2.07 at 10 cm under the patella, in the initial testing, and of 0.94 at the ankle, 1.33 at 10 cm above the malleolus, and 1.20 at 10 cm under the patella, in the final testing. The control group had a standard deviation value, in the initial testing, of 1.45 at the ankle, 2.82 at 10 cm above the malleolus, and 2.00 at 10 cm under the patella, whereas in the final testing, of 1.34 at the ankle, 1.90 at 10 cm above the malleolus, and 1.37 at 10 cm under the patella.

The experimental group had a standard deviation value, regarding the moment of the edema's disappearance, of 0.82 at the ankle, 0.74 at 10 cm above the malleolus, and 0.74 at 10 cm under the patella, whereas the control group, of 0.74 at the ankle, 0.74 at 10 cm above the malleolus, and 0.74 at 10 cm under the patella.

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NORMS FOR POSTURAL DESCRIPTIONS OF VERTEBRAL COLUMN FOR CHILDREN 6-9 YEAR OLD

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ABSTRACT. This research aims to set up standardized norms to some anthropometric characteristics (height-weight) and postural descriptions of vertebral column (V.C) for children aged 6-9 years (n=900). The researcher could set up standardized percentile norms to these variables and recommended using them when conducting other studies and researchers for detection, treating and rehabilitation of postural deviations.

Key words: Posture - Percentile norms - Children

INTRODUCTION

The anthropometric term means measurement, building and body composition, and it is a form of measurements in physical education which includes height, weight, circumferences, widths, diameters and different lengths of body parts, and also to identify forms of objects so that we can judge on body composition and its parts. Anthropometric measurements, body composition, motor abilities and biological factors are important indicators for prediction of health state and development of sports level, added to other factors that help to predict and evaluate great numbers of samples like standardized motor tests as an effective means for evaluation in sports domain (Agwu et al., 2004), (Meszaros et al., 2000), (Tutkuvience et al., 2005). Vertebral Column (V.C) in sagittal direction (anterior-posterior) consists of four vertebral curves, cervical curve and lumbar one to anterior "lordosis", and dorsal curve and sacral one to posterior "kyphosis" (Tittel, k.2003), (Sean et al., 2005). V.C unit allows

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for motion in three levels like rotation, since the motion between two vertebra allows limited range of motion, and therefore, the motion of V.C always include many sub- motions for vertebrae, where range of motion of two vertebra allows to keep the varied anatomical structure in V.C regions (cervical-thoracic-lumbar).

This research aims to set up norms for postural description of V.C for children aged 6-9 years old.

METHODS

It included primary stage pupils (n= 900) in Port Said Governorate of School year 2009/2010. Sample was chosen form (1- 6 grades) by stratified random method of (5.04%) of total society number (35 710) for male pupils, without pilot study sample. The researcher excluded postural deviations pupils of fractures, polio and rickets. Table (1) shows classification of research sample.

Table no. 1
Research Sample Classification n=900 subjects

Age	6-7 years old	7-87 years old	8-97 years old
Number	300	300	300

Research Variables: Survey study was conducted to some references and previous studies for tests, measurements and posture domains to determine measurements of research which were:

1. Height and weight.
2. Perpendicular and normal height of V.C, length of cervical, thoracic, lumbar regions, their angles and lengths of curvatures' columns.

Data Collection and Measurements: According to experts, researchers and scientists of measurement and evaluation in physical education (Johnson, B. & Nelson, J., 1979), (Jensen, C. & Hirst C., 1980), (Verducci, F., 1980), (Pashman, R., 2000), the following measurements were used:

- **Anthropometer:** to measure the total height of body (closed to 0.5cm).
- **Medical Scale:** to measure body weight (closed to 0.5kg).
- **Bank raft and screen posture:** to make sure that children free from postural deviations
- **Confrometer and lead tape:** to measure anterior and posterior curvatures of V.C and its angles
- **Wheel Measurement:** to measure normal height of the V.C from first vertebrae to last one.

-Ruler (mm.): to measure the vertical height of V.C and, drawing a vertical line from the first paragraph cervical region to the last paragraph in the lumbar area.

Curvatures' columns: by measuring length of horizontal distances (H.D) between V.C vertical length and deepest points of cervical, thoracic, and lumbar regions, expressed in H.D curvatures in tables.

Circular Protractor (360°): to measure angles of cervical, thoracic, and lumbar regions through:

- Drawing the first line, which connects between the first vertebrae of cervical region to deepest medial point of same region.
- Drawing second line from medial point of cervical region to point of upper posterior lateral curvature of thoracic region.
- Drawing the third line from previous point to upper anterior medial curvature point of lumbar region.
- Drawing the fourth line from previous point to spinal process of last vertebrae of lumbar region.

Angles were calculated as following:

- Cervical angle: is the angle between first and second line.
- Thoracic angle: is the angle between second and third line.
- Lumbar angle: is the angle between third and fourth line.

Pilot Study: It was conducted on (50) of pupils, out of main sample, form1/10/2009 to 15/10/2009, where equipments and apparatus were prepared and standardized to be valid for using.

Main Study: Measurements were applied on sample research from 18/10/2009 to 27/12/2009. The statistical analysis included: arithmetic mean, standard deviation, skeweness and six sigma score (Lee, F., & Brown, V., 2006).

RESULTS

Table no. 2

Mean, Standard Deviation, Upper and Lower Limit, Range, and Skeweness of Children 6-7 years, n = 300

Skeweness	Range	Lower limit	Upper limit	S.D	X	Unit of measure	Variables	No.
0.153	20.0	113.0	133.0	4.72	120.73	Cm.	Height	1
1.28	25.0	20.0	45.0	4.56	27.08	Kg.	Weight	2
0.57	4.0	35.0	39.0	1.07	37.24	Cm.	Vertical Height	3
0.122	5.50	36.0	41.50	1.21	38.68	Cm.	Normal Height	4
0.61	2.50	7.0	9.50	0.52	7.90	Cm.	C Length of	5

Skeweness	Range	Lower limit	Upper limit	S.D	X	Unit of measure	Variables	No.
0.61	3.0	19.50	22.50	0.78	21:29	Cm.	T region	6
0.36	2.50	8.50	11.0	0.50	9.54	Cm.	L	7
5.6	1.50	1.10	2.60	0.60	1.63	Cm.	C	8
6.9	1.70	1.20	2.90	0.95	2.16	Cm.	T	9
0.23	0.90	1.20	2.10	0.23	1.87	Cm.	L	10
1.32	5.0	153.0	158.0	1.18	155.58	Deg.	C	11
1.32	6.0	153.0	159.0	2.93	156.62	Deg.	T	12
1.64	6.0	155.0	161.0	1.68	155.92	Deg.	L	13

C = Cervical T = Thoracic L = Lumbar

Table no. 3.

Mean, Standard Deviation, Upper and Lower Limit, Range, and Skeweness of Children 7-8 years old, n = 300

Skeweness	Range	Lower limit	Upper limit	S.D	X	Unit of measure	Variables	No.
1.02	20.0	121.0	141.0	4.8	127.95	Cm.	Height	1
0.42	18.0	24.0	42.0	4.4	32.27	Kg.	Weight	2
0.50	3.50	36.0	39.50	0.74	37.65	Cm.	Vertical Height	3
1.0	4.0	37.0	41.0	0.88	39.82	Cm.	Normal Height	4
0.90	2.0	7.0	9.0	0.38	7.80	Cm.	C	5
0.41	2.0	21.0	23.0	0.49	21:85	Cm.	T	6
0.86	2.0	8.50	10.50	0.35	9.64	Cm.	L	7
0.33	1.20	1.20	2.40	0.21	1.79	Cm.	C	8
0.57	1.20	1.70	2.90	0.31	2.18	Cm.	T	9
0.36	0.80	1.50	2.30	0.20	1.89	Cm.	L	10
1.36	4.0	155.0	159.0	1.44	155.90	Deg.	C	11
0.03	3.0	155.0	158.0	0.72	156.83	Deg.	T	12
0.82	4.0	156.0	160.0	0.88	157.30	Deg.	L	13

Table no. 4.

Mean, Standard Deviation, Upper and Lower Limit, Range, and Skeweness of Children 8-9 years old, n = 300

Skeweness	Range	Lower limit	Upper limit	S.D	X	Unit of measure	Variables	No.
1.17	29.0	123.0	152.0	5.99	136.13	Cm.	Height	1
0.23	21.0	29.0	50.0	5.23	39.01	Kg.	Weight	2
1.05	2.50	38.50	41.0	3.84	37.89	Cm.	Vertical Height	3
0.039	3.50	39.50	43.0	1.11	40.34	Cm.	Normal Height	4
0.64	2.0	7.50	9.50	0.42	8.15	Cm.	C	5
0.36	1.50	22.0	23.50	2.73	21:96	Cm.	T	6
0.12	2.0	9.0	11.0	0.51	9.92	Cm.	L	7
0.58	1.0	1.50	2.50	0.19	1.89	Cm.	C	8
0.71	1.70	1.80	3.50	0.39	2.36	Cm.	T	9
1.87	0.60	2.10	2.70	0.32	1.95	Cm.	L	10
0.07	4.0	155.0	159.0	0.89	156.55	Deg.	C	11
0.49	5.0	154.0	159.0	1.07	157.18	Deg.	T	12
0.75	6.0	155.0	161.0	1.65	158.73	Deg.	L	13

Table no. 5.

Percentile Norms to Raw Data Measurements of Height, Weight and Postural Descriptions to V.C for Children 6-7 years old, n = 300

Estimate	Angles of regions			H.D curvature			Length of region			Norma l length	Vertical Height	Weight	Height	Raw Data
	L	T	C	L	T	C	L	T	C					
	Deg.	Deg.	Deg.	Cm.	Cm.	Cm.	Cm.	Cm.	Cm.	Cm.	Cm.	Kg.	Cm.	
Excellent	161.26	160.92	161.13	2.37	4.89	3.64	11.04	23.64	9.46	42.32	40.41	40.75	134.18	100
Very Good	159.95	159.80	158.92	2.33	4.33	3.28	10.74	32.17	9.14	41.60	39.78	38.01	132.05	90
Good	158.74	159.12	158.91	2.19	3.79	2.92	10.44	22.70	8.83	40.87	39.14	35.28	129.22	80
Good	157.93	158.34	157.90	2.05	3.19	2.56	10.14	22.23	8.52	40.14	38.51	32.55	126.39	70
Average	156.85	157.30	156.85	1.88	2.63	2.19	9.84	21.76	8.21	39.41	37.87	29.81	123.56	60
Average	155.92	156.62	155.98	1.77	2.16	1.63	9.54	21.29	7.90	38.68	37.24	27.08	120.73	50
Accepted	155.41	154.96	145.97	1.53	1.49	1.47	9.24	20.83	7.59	37.95	36.61	24.35	117.90	40
Weak	154.91	152.92	153.89	1.39	1.12	1.10	9.94	20.35	7.28	37.22	35.97	21.61	115.07	30
Weak	154.21	152.04	152.85	1.25	0.98	0.72	8.64	19.88	6.97	36.49	35.34	18.88	112.24	20
Very weak	153.22	151.38	151.90	1.11	0.87	0.38	8.34	19.41	6.66	35.77	34.70	16.15	109.41	10
Very weak	151.18	150.12	150.03	0.97	0.77	0.12	8.05	18.94	6.35	35.04	33.07	13.41	106.58	Zero

Table no. 6.

Percentile Norms to Raw Data Measurements of Height, Weight and Postural Descriptions to V.C for Children 7-8 years old, n = 300

Estimate	Angles of regions			H.D curvature			Length of region			Normal length	Vertical Height	Weight	Height	Raw Data
	L	T	C	L	T	C	L	T	C					
	Deg.	Deg.	Deg.	Cm.	Cm.	Cm.	Cm.	Cm.	Cm.	Cm.	Cm.	Kg.	Cm.	
Excellent	161.73	159.98	160.28	2.48	3.10	2.38	10.69	23.31	8.83	41.93	39.87	45.44	142.33	100
Very Good	160.21	158.88	159.85	2.36	2.92	2.25	10.48	22.02	8.60	41.40	39.42	42.81	139.45	90
Good	159.68	158.32	158.55	2.25	2.73	2.12	10.22	22.72	8.38	40.87	38.98	40.17	136.58	80
Good	158.89	157.19	157.68	2.13	2.55	2.00	10.06	22.43	8.15	40.34	38.54	37.54	133.70	70
Average	158.36	157.48	156.82	2.00	2.37	1.87	9.85	22.14	7.93	39.81	38.09	34.91	130.83	60
Average	157.30	156.83	155.95	1.89	2.18	1.79	9.64	21.85	7.80	39.28	37.65	32.27	127.95	50
Accepted	156.78	156.40	145.08	1.77	2.00	1.61	9.43	21.55	7.47	38.75	37.21	29.64	126.51	40
Weak	155.73	155.76	154.22	1.65	1.87	1.48	9.22	21.25	7.25	38.22	36.76	27.00	125.08	30
Weak	154.84	153.11	153.35	1.54	1.63	1.36	9.01	20.96	7.02	37.69	36.32	24.37	122.21	20
Very weak	154.18	152.22	152.49	1.42	1.44	1.23	8.80	20.66	6.80	37.16	35.88	21.73	119.33	10
Very weak	153.21	150.17	151.62	1.30	1.26	1.00	8.60	20.37	6.57	36.63	35.44	19.10	116.45	Zero

Table no. 7.

Percentile Norms to Raw Data Measurements of Height, Weight and Postural Descriptions to V.C for Children 8-9 years old, n = 300

Estimate	Angles of regions			H.D curvature			Length of region			Normal length	Vertical Height	Weight	Height	Raw Data
	L	T	C	L	T	C	L	T	C					Percent Norms
	Deg.	Deg.	Deg.	Cm.	Cm.	Cm.	Cm.	Cm.	Cm.	Cm.	Cm.	Kg.	Cm.	
Excellent	161.55	161.38	160.20	2.92	3.43	2.45	11.43	30.15	9.40	53.66	49.41	54.71	154.10	100
Very Good	160.87	160.74	159.69	2.73	3.19	2.34	11.13	28.51	9.15	52.00	47.11	51.57	150.51	90
Good	160.45	159.71	159.15	2.53	2.96	2.23	10.83	26.87	8.90	50.33	44.80	48.44	146.91	80
Good	159.77	158.82	158.62	2.34	2.73	2.11	10.53	25.25	8.65	48.50	42.50	45.30	143.32	70
Average	159.23	158.18	157.55	2.14	2.49	2.00	10.22	23.60	8.40	44.20	40.20	42.16	139.72	60
Average	158.53	157.42	156.55	1.95	2.36	1.89	9.92	21.96	8.15	40.34	37.89	39.01	136.13	50
Accepted	157.94	155.25	146.02	1.76	2.03	1.78	9.62	20.32	7.90	39.86	35.59	35.88	132.54	40
Weak	157.16	154.61	155.48	1.56	1.89	1.67	9.31	18.18	7.65	39.01	33.74	32.74	128.94	30
Weak	156.77	153.58	154.95	1.37	1.56	1.55	9.01	17.05	7.40	38.35	29.61	29.61	125.35	20
Very weak	154.38	152.54	154.41	1.18	1.32	1.44	8.71	15.40	7.15	37.69	28.47	24.67	121.75	10
Very weak	152.29	151.30	150.88	0.98	1.10	1.33	8.41	13.77	6.90	37.02	26.37	23.33	118.16	Zero

DISCUSSION OF RESULTS

The results of tables (2-7) show that there are gradual increasing during the aged stages of research measurements, which are consistent with results of (Kromeyer et al., 2001) concerning with rates of anthropometric measurements, where (Butte, et al., 2007) indicated that it is necessary to follow up the international norms of growth for children and adolescence stages and set new norms and standard for different aged stages. Also tables (8-13) indicate results of percentile norms to raw data of anthropometric measurements and postural descriptions of children aged 6 – 9 years old, where these norms confirm that there are relationship between anthropometric characteristics and body composition and selection of physical talent children (Meszaros, et al., 2000). Anthropometric measurements are considered indicators for public health and as a reflection of growth and development state (Tutkuviene, 2005). The results of these norms confirm the increase of growth for both height and weight, in addition to morphology growth of both vertical and normal height of V.C with variance of H.D curvature and angles of cervical, thoracic and lumbar regions of V.C for children aged 6-9 years old. So, these norms should be taken into account when classification of children

into homogeneous groups or when guiding them to sports activities owing to their physical and morphological abilities. Also, these norms should be used as criteria to detect postural deviations of V.C for children aged 6 – 9 years old comparing with results of this research.

CONCLUSIONS

The researcher could reach to setting up norms for some anthropometric characteristics (height - weight) and postural descriptions of vertebral column for children aged 6-12 years old.

Recommendations: Using these norms as a guide for researchers in posture domain and to detect postural deviations so as to treat them and as indicator to select juniors for sports activities.1.Necessity of conducting measurements of research for other aged stages to be used for promotion of children health level.2.Conducting regular medical collective examination for children annually to detect and identify changes that might occur to avoid future problems.3.Conducting more similar studies that handle postural deviations for different aged stages and other variables.

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MOUNTAIN CLIMBING - TEACHING AND DEFINITION

LEONTE ION¹

ABSTRACT: Alpinism is generally (outside the teaching environment) a team sport in which participants have very precise roles within the cooperation process that takes place during the climbing and the maneuvering of safety chords, whether they are ascending or descending. The configuration of mountaineering abilities according to the specific requirements of the environment has always been a very important concern to all the participants, starting with Edmond Hillary (who is considered to be the first man to reach “the Roof of the World” – Mount Everest), a concern not only for the climb itself, but mostly for the anticipate preparation, the organization, the action planning and for the supply of typical materials. Over the years, it has been proven that mountain climbing is a continuous process. Its practice does not start abruptly or at any given age. Furthermore, alpinism, as a sport activity, is sustained complementarily through the effects of other sports such as: athletics, gymnastics, skiing and so on. Mountain climbing reflects itself outside the sports environment in didactics, in society, as rope access alpinism, in tourism and in the confrontation of the human being with one’s self when the only partners are the mountains, even as high as Mount Everest.

Key words: mountain climbing, teaching process, motor skills, ascent, rappelling

REZUMAT: Alpinismul este (în afara mediului didactic) un sport, de regulă, de echipă, în care componenții au roluri bine definite, privind colaborarea în timpul ascensiunii și în manevrarea corzilor de asigurare, atât la urcare, cât și la coborâre. Formarea capacității de practicare a alpinismului în raport cu stricta solicitare a mediului i-a preocupat de-a lungul vremii pe toți practicanții, începând cu Edmond Hillary, considerat a fi primul care a ajuns pe „acoperișul lumii” – Everestul, atât din punctul de vedere al escaladării în sine, cât mai ales din cel al pregătirii anticipate, al organizării și planificării acțiunii, și al asigurării materialelor specifice. De-a lungul anilor, s-a dovedit că alpinismul este un proces continuu. Practicarea lui nu se face dintr-o dată și la orice vârstă. De altfel, alpinismul este un sport susținut complementar prin efectele altor sporturi: atletism, gimnastică, schi etc. Alpinismul are reflectare în afara mediului sportiv în didactică, în societate, ca alpinism utilitar, în turism și în confruntarea omului cu el însuși având ca parteneri versanții, până la înălțimea Everestului.

Cuvinte cheie: alpinism, proces didactic, deprinderi motrice, escaladă, rapel.

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INTRODUCTION

Alpinism came into existence due to the presence of the mountains, and because human beings have always wanted to conquer these large and spectacular landforms. Representing a mixture of both physical strength and also of physiological and psychological abilities, mountaineering is an almost basic necessity for some of our youngsters and, at the same time, a major training aspect for military athletes, impassioned tourists or students who study alpinism as a compulsory object. The scientific definition shows that mountain climbing consists in “ascents performed on (pre-defined) alpine routes, characterized by various degrees of difficulty, using specialized techniques, equipment and materials”.

Alpinism is generally (outside the teaching environment) a team sport in which participants have very precise roles within the cooperation process that takes place during the climbing and the maneuvering of safety chords, whether they are ascending or descending. The confrontation consists of specific challenges: vertical walls, overhangs, domes, ledges, cornices, fissures, holds, slippery terrain, ice, altitude, temperature and so on.

THE FUNDAMENTAL PART

Mountain climbing is a confrontation between the human being and the complex natural environment, on one hand, and with one’s own self, on the other. The ascent, by expressing muscle strength, orientation, by forcing a person to set the route that has the most favorable holds and thus save important energy, the traverse and also the descent can all highlight one’s commitment to the goal of succeeding or one’s failure.²

The success is nevertheless a symbiosis between man, training and efficient action means, confidence, determination and the power of sacrifice.³ The configuration of mountaineering abilities according to the specific requirements of the environment has always been a very important concern to all the participants, starting with Edmond Hillary (who is considered to be the first man to reach “the Roof of the World” – Mount Everest), a concern not only for the climb itself, but mostly for the anticipate preparation, the organization, the action planning and for the supply of typical materials.⁴

² Dogaru, V., 2000; Pisică, D. 2000

³ Pisică, D., 2000

⁴ Dogaru, V., 2000

Over the years, it has been proven that mountain climbing is a continuous process. Its practice does not start abruptly or at any given age. Furthermore, alpinism, as a sport activity, is sustained complementarily through the effects of other sports such as: athletics, gymnastics, skiing and so on.⁵

The climb and the descent should begin at a young age on a fence, a panel or on a tree with flexible branches. This will shape a child's courage and balance. Subsequently, one's self confidence is acquired through teaching routes that have successive degrees of difficulty. This approach, didactically called "linear training", allows the fragmentation of contents, goal or the "break of performance".⁶ The linear training with contents, objectives, evaluation systems and gradual challenges thrusts aside or even eliminates possible inconsistencies between the contents and the aims of the discipline and the environment and training features, thus allowing for the accumulation of theoretical and essential practice material to build up, in respect to the significant potential of alpinism.⁷

Mountain climbing, as an activity, must find its rightful reflection in major didactical preoccupations such as studying, accommodation, adjustment and the process of fitting in.⁸ The achievement of satisfactory results in terms of efficiency has led us on a "training-process" direction with improved training contents, which has gained structures, notions, methods, features of the training principles, physiological and psychological advances that, through proven safety and efficiency, encourage further actions.⁹

A key role during training has been the methodical aspect: organization, training methods, the logical application of principles, emulation, evaluation, the duration and the daily schedule, effort – programming (guidance, measurement, determination).¹⁰

The premises for success:

- The qualification of the teacher (instructor)
- Effort capacity
- Quantity and quality of characteristic materials
- The sequence of the training environments: climbing panel, artificial rocks, gymnastic porticos

⁵ Dinu, F., 1998, Pisciă, D., 2000

⁶ ILeonte, I., 2000

⁷ ILeonte, I., 2000

⁸ Dogaru, V., 2000; Epuran, M., Holdevici, I., 2003

⁹ Epuran, M., Holdevici, I., 2003, Leonte, I., 2000

¹⁰ Dogaru, V., 2000, Suman, Gh., 1986

- Approaching the mountain routes according to their lever of difficulty
- The ability of maneuvering characteristic equipment
- The homogeneity of the teams
- The degree of motivation
- The efficiency of evaluation systems

The graphic representation of specifif and nonspecific activities carried out during the mountain climbing camp

N°	ACTIVITY	DAY										OBS.		
		1	2	3	4	5	6	7	8	9	10			
1	Climbing and descending the slopes on mountain paths, movie watching		X											
2	Passing the suspension and pendulous bridge	X	X	X										H= 7m H=0,5m
3	Identifying and describing characteristic materials	X	X	X										
4	Knots and ties	X	X	X	X	X								
5	Escalading the climbing wall or the artificial cliff		X	X	X	X	X							
6	Descending with and without the rope on the climbing wall		X	X	X	X	X							
7	Climbing the slope with lower safety attachment				X	X	X	X	X	X				
8	Rappelling the slope with lower safety attachment				X	X	X	X	X	X				
9	Assembling the ropes for both the ascent and the descent		X	X	X	X	X	X	X	X				
10	Traversing with the help of the cable way			X	X	X	X	X	X	X				
11	Traversing the ledge					X	X	X	X	X				
12	Observations based on the level of training					X							X	
13	The evaluation of the participants: - climbing, traversing, descending - identifying and using the holds - abiding the safety measures												X	
14	Future tasks												X	

NOTE:

- *the assembling of the ropes for ascent-descent and the safety attachment are done by specialists;*
- *the participants must all be in good health;*
- *the activities are taking place according to the camp schedule: 6 a.m. and 2 p.m.*

CONCLUSIONS

Alpinism is a complex but very useful activity that shows its true value only inside an organized environment. Its main features are: leadership, coordination, accessibility, equipment, safety, time, season, weather conditions, adaptability. Mountain climbing reflects itself outside the sports environment in didactics, in society, as rope access alpinism, in tourism and in the confrontation of the human being with one's self when the only partners are the mountains, even as high as Mount Everest.

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

MANASSES ILDIKÓ¹

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

Key words: formative stages, selection, training

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

Cuvinte cheie : stadii formative, selecție, instruire

INTRODUCTION

This project identifies and documents the best method of elaborating and implementing a long term strategic plan meant to structure and develops a controlled management of the processes of orientation, selection, training and competition participation in what concerns both players and basketball teams. The purpose of this process is a continuous increase of the performance level based on formative stages.

The project is likely to be put into practice with the beginning of 2010 by the sportive units subordinated to C.S U-Mobitelco from Cluj-Napoca (which has 30 teams of different age categories and over 500 children signed up as members). If the Romanian Federation of Basketball agrees, we consider the project to be nationally sustainable.

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JUSTIFICATION OF THE PROJECT

The following arguments justify the validity of the project:

- a 25 years experience as a professional basketball player, as a coach and as a teacher within the Faculty of Sport and Physical Education from Cluj-Napoca;
- the scattered way in which the demands and the contents of the training process based on formative stages have been presented so far;
- the replacement of the old concepts of initial, intermediate and final selection (which were obsolete and ineffective);
- the necessity to pass the methodology of orientation, selection and development of the players under the incidence of a praxiology which promotes a type of thinking based on objectives and an indestructible path: Instructional objectives – contents – strategies – means to determine the efficiency and the quality of the coaching process for the following formative stages:
 - I. Children (3 – 12 years): micro-baby and mini-basketball II, I
 - II. Juniors III (12/13 – 14 years)
 - III. Juniors II (15 – 16 years)
 - IV. Juniors I (17 – 18 years)
 - V. Youth Team (18 – 20 years)

This presentation will analyse only the first two formative stages, given the fact that we can't expect too much of the other stages if the first two have not been properly completed.

THE IMPORTANCE OF THE PROJECT

- Strategic value – it is a project which offers a clear-sighted vision of a long term (12 years) strategic plan with clear directions, objectives and finalities for each process and for each formative stage taken into consideration.
- Multiple determination – we have to keep in mind:
 - I. strategic targets for maximising the orientation, selection, training and competition participation processes
 - II. concrete conditions for these activities to take place
 - III. the international level of development of the sport
 - IV. the available resources or likely to be obtained

- Situational character – it is given by a comparative analyses of these processes as they nationally and internationally took place.
- Its structure refers to three distinct components:
 - **a strategic component** – which states the mission, the targets and the finalities of each process and of each formative stage on a long term;
 - **a tactical component** – which deals with a short term planning of the micro cycles, the everyday cycles, the different types of lessons, the recovery methods;
 - **an operational component** – based on operational projects, learning units, training programs and operational structures.
 - The main beneficiary: all structures subordinated to C.S. Mobitelco or those interested in the increase of the performance level both of the players and of the Romanian teams.
 - It can become part of ANS and FRB's policy, in what concerns the straightening out of the performance level in basketball, and in sports, generally speaking.

QUESTIONS AND HYPOTHESES REGARDING OUR RESEARCH

Because of the precarious level of our basketball players and teams, we ask ourselves the following questions:

- Why has Romania produced lately very few valuable basketball players, unlike Lithuania, Spain, Argentina, Greece, Turkey, and so on?
- How should we organise our selection and training methods in order to identify and produce qualitatively superior sportsmen that can truly be internationally competitive?
 1. If we want to improve the quality of the people we work with, then we must establish proficiency and efficiency standards according to well-defined normative stages, which we must thoroughly follow.
 2. In order to reach the maximum level of performance in professional basketball, we must create favorable conditions for the human body to develop full biological, psychological and sociological capacities.
 3. The quality and efficiency of the formative process will substantially improve if we reconsider the teaching-learning-training process in terms of a praxiologic circuit: objectives – contents – strategies – examination methods.

THE PURPOSE AND THE OBJECTIVES OF OUR RESEARCH

- The purpose of our research
The rethinking and the restructuring of selection and training processes in terms of formative stages with the specification of the required standards for each stage.
- The objectives of our research
 1. A synthesis regarding the present level of knowledge we have on this subject. We consider to be of high importance the identification of less known aspects and the modernization of the teaching – learning – examination process.
 2. The identification and the analysis of the problems of fundamental formative processes used so far:
 - age features
 - directions and objectives established for the training process
 - content of the programs
 - competition and training charge
 - control tests for each formative stage
 3. A preliminary study on the groups of children and on Juniors III regarding their bio- psycho-social potential and their level of training.
 4. The development of analytical programs for the two formative stages taken into consideration (children and juniors III) with a clear mentioning of the following elements: instructional objectives, contents, training strategies, means to test the quality and the efficiency of the used methods.
 5. The analytical programs should be put into practice in such a manner that the entire activity is ensured by scientific management.
 6. The development and the public presentation of scientific researches at national and international conferences (3, 4 presentations)
 7. Final measurements of the biological capacity to perform movement **and** of the training level for each formative stage.
 8. The development of a methodological program which shall be sent to the Romanian Federation of Basketball for general application.

ANALYSIS OF THE NECESSARY MATERIALS

- Material resources: those already in the possession of the club: computer, printer, paper, CDs, video camera, basketball balls (nr.5 and nr. 7), mobile basketball-hoops, etc.

- Financial resources: necessary for consumable office supplies, different printings and multiplications, protocol budget, and the acquisition of IT equipment.
- Temporal resources: 6 months for the preliminary study, 12 months for the development and the application of the project, 6 months for its improvement.
- Spatial resources: outdoor and indoor basketball courts.

PROJECT TEAM

- project manager: Ildiko Manasses
- collaborators: U Mobitelco children's and juniors' coaches: Aurora Dragos, Iurian Mioara, Delia Dragoste, Dorin Pinteau, Marcel Tenter, Razvan Cenean, Emil Huiculescu
- technical executive: Mircea Cristescu

TARGET GROUP

All the teams of C.S Mobitelco – Cluj which fit the age criteria of the two formative stages (children from 3 to 12 years and juniors from 12 to 14 years), namely:

- U 14
- U 13
- Minibasketball – 4 teams
- Babybasketball – 5 teams

INTERVENTION METHODOLOGY

The aim of our research is to apply the following intervention methodology:

- defining formative stages and their objectives;
- the strategy used to ensure that this project will know a long term implementation and the strategy regarding the intervention tactics on formative stages;
- analytical programs for each formative stage with a clear mentioning of the following elements: instructional objectives, subject contents, training strategies, examination tests meant to determine the quality and efficiency degree of the selection and training processes.
- establishing what resources are needed for carrying out the objectives (material, financial, IT and human resources)

- determining operational training strategies on formative stages, that is, a clear specification of the methods, of the didactic materials, of the training exercises, of the rules, of the principles, of the organisation forms, of the permissive way of teaching and learning the basketball game.
- determining standards and demandings for each formative stage.

ACTUAL STAGE OF THE RESEARCH DEVELOPMENT

We have so far come to determine the following activities:

- **steps and finalities of each formative stage:**

	PREPARATORY SCHOOL	CATEGORY	OBJECTIVES
STAGE I 3-7 years	KINDERGARTEN (3 - 5 years)	Microminibasketball	- a many-sided training capable to determine a long term increase of the level of performance
	first step (6-7 years)	Biddy- basketball	
Stage II 8-12 years	ELEMENTARY SCHOOL		- bringing as many children as possible and forming as many teams as possible -open to orientation and initial selection
	second step (8- 10 years)	Minibasketball II	
	third step (11-12 years)	Minibasketball I	
Stage III 12- 16 years	SECONDARY SCHOOL		- ground the performance capacity specific to basketball
	forth step (12 -14 years)	jun. III - U14	
	fifth step (15 -16 years)	jun II - U16	
STAGE IV 17 -20 years	HIGHSCHOOL/UNIVERSITY		- high performance training in order to obtain a solid construction
	sixth step (17 -18 years)	Jun. I - U18	
	eighth step (19- 20 years)	Youth - U20	
STAGE V	nineth step	seniors	- professionals

- **determine training and competition charge on each formative stage:**

CHARGE	Children	U13-14	U- 16	U- 18	U 20
	under 11	under 14	under 16	under 18	under 20
Trainings number/year	180	200	300	320	360
Trainings number/week	4	5	6	daily	daily

CHARGE		Children	U13-14	U- 16	U- 18	U 20
		under 11	under 14	under 16	under 18	under 20
Training hours/week		4-5	7-8	9-10	11-12	13-14
Number of individual trainings/week		1-2	2-3	3-4	3-4	3-4
Training length. Collective/min		40- 90	90-120	120	120	120
Individual training length		30 -40	30-60	40-60	60-90	60-90
Number of official games		10-12	25-30	30- 35	35-40	40-60
Length of training period	Preparatory period		4,5 months	5 months	5 months	4 months
	Competitional period		3,5 months	4 months	5 months	6 months
	Transition period		2 months	1,5 months	1 month	1 month
	rest – exams		2 months	1,5 months	1 month	1 month
Weight %	Physical preparation	50	30	30	25	20
	Technical preparation	30	40	40	30	25
	Tactical preparation	10	20	20	25	30
	Game preparation	10	10	10	20	25

- determine program models for each step of the two formative stages
- 3 - 5 years - Pre-school children – Kindergarten

PARTICULARITIES		OBJECTIVES	
-		- The development and improvement of movement abilities and of psycho-social skills (hereditary, gained, potential) which will lay in time the basis of an efficient activity; - The strenghtening and consolidation of players' medical condition; - A normal and harmonious development; - Knowing a variety of basic movements specific to various sports and with large utility; - A better control of the body and different parts of the body; - Developing skills and abilities which will lead to a perfect control of the ball.	
Contents			
Movement/Mobility	Biological and psychological capacity to perform movement	Basketball elements	

- 6- 7 years old BYDDI BASKETBALL

PARTICULARITIES		IMPLICATIONS	
<p>-the age of 6/7 years represents a distinct period in the development of a child: it marks the passage from kindergarten to school, and it is a period of skill acquisition.</p> <p>- same age features as for 3-6 years (but in an advanced stage of development)</p> <p>- important transformation of the psychic capabilities:</p> <ul style="list-style-type: none"> -perception through observation helps develop skills; -verbal communication is improved. 		<p>-the beginning of school represents a period of important psychological and social transformations which must be monitored.</p> <p><u>-developing a social behaviour due to social and relational context imposed by school</u></p> <p><u>-the game is the main motion activity through which children acquire basic movement skills, useful in practice</u></p> <p>-it marks the beginning of an important period (6-12 years) in the development of the biological capacity to do movement. It is now that the basis for the capacity to do performance are laid.</p>	
MOVEMENT ABILITY	TECHNICAL PREPARATION	TACTICAL PREPARATION	RULES
<p>- <u>harmonious development of the body</u></p> <p>- body posture and tonus</p> <p>- movement skills: speed, running, jumping, throwing, athletic exercises</p> <p>- dynamic games and training exercises transformed into contest, relay races, racing competitions,</p> <p>- strength exercises – overcome one’s own weight and one’s own body segments</p> <p>- skill exercises: coordination, flexibility, handling the ball etc.</p>	<p>- fundamental position, moving on the basketball court, changing direction, jumping</p> <p>- catching, holding, controlling and passing the ball</p> <p>- two- handed chest pass</p> <p>-basketball shooting: jump shot, off the dribbling, and floor shooting.</p> <p>- Dribble in place without moving, dribble while walking, while running,</p> <p>-dynamic games based on basketball elements</p>	<p><u>OFFENSE:</u> apply the principle: pass and move to an empty spot.</p> <p><u>DEFENSE:</u> keeping an eye on your opponent and placing yourself between the opponent and the basket in the fundamental position.</p>	<p><u>OFFENSE</u> -do not run with the ball in your hands; catch and pass vey quickly the ball without dribbling.</p> <p><u>DEFENSE</u> -garde your opponent -do not hit your opponent</p>

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THE IMPACT OF N.S.E. APPLICATION IN SCHOOL PHYSICAL EDUCATION IN THE MODERN EDUCATIONAL CONTEXT

MIHAILESCU LILIANA¹ & CORODEANU GABI²

ABSTRACT. This writing proposes a discussion about the evaluation and appreciation of pupils in the high school cycle in physical education and sports in the modern educational context, in relation with the formulated objectives and competences. To analyze S.N.E. an investigation was ran, in which there were identified the opinion of both professors and students about the contents, advantages, downsides, limits, efficiency of the actual system of evaluation of pupils in the high school cycle. In the research there were involved 200 teachers and 1000 pupils from high schools. The analysis of answers was done both inter-group and intra-group and has highlighted the need of both categories of the change of the actual evaluation system, for different motives, but in the same direction: accent on formative evaluation and appreciation of the progress of pupils in time for the whole length of the program. In opinion of the majority (66%) of professors, the actual evaluation system doesn't meet the principles and tendencies that manifest themselves in the post-modern pedagogy, is not harmonized with the system of objectives/competences, attitude and values promoted by the high school education program. Pupils wish for an evaluation centered on individual progress in learning and development, in which accumulated knowledge, gained specific competences, attitude and behavior are reflected.

Key words: education, formal evaluation, qualitative items

INTRODUCTION

The general content of education “ targets the main sides\dimensions in the permanent forming and development of personality, projected and accomplished in: intellectual, moral, technologic, esthetic and physical domains” (S.,Cristea, S., 1998, p.121). The specific content of physical education and sports, the form of organization and the particular way of taking actions and influencing in an educational sphere, are the arguments which give this dimension of education opportunities to be present in every form of education: formal, non-formal, informal (Mihăilescu L., Mihăilescu N., 2009, pag. 3).

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The modern evaluation promotes the transition from the notion of assimilation of knowledge to the concept of evaluation from the result of learning and specially the processes which it involves. This represents the transition from a pedagogy that conveys knowledge to one that acquires knowledge and to the science of growth (Abernot Y., 1996, p.73). From the perspective of process-product and product (evaluated)- process, evaluation represents a necessary step, in relation with decisions about making decisions about the activities in hand, intended to offer necessary information about the improvement and adjustment of the activity, and it helps it to develop in conditions of continuous improvement (Mihăilescu L., Corodeanu G., 2010).

CONTENT, METHODOLOGY

Theorists in the domain reflected upon the specificity and particularity of evaluation in this discipline: Firea E., (1979, p.203; 1996 p. 54), Cîrstea Gh., (1997, p. 182), Dragnea A., (2000, p. 48), Colibaba Evuleț, D., (1998, p.87), Rață G., (2008, p. 269-287).

The evolution of the concept of evaluation and appreciation with grades evolved along side the idol of physical education and has materialized into “national systems” inspired from performance sports or created to stimulate the performance of pupils. This way in the 1973-1974 school year, the “Integrated system for verifying and appreciating the pupil’s level of sporting performance and physical condition” was introduced and modified in 1983. Although the founders and sustainers of these evaluation and appreciation systems have declared that with they’re application the functions of notation will be respected, the system is based on summative- normative, quantitative evaluation which first of all satisfies the need to discover talent for performance sport, but also to determine an increase in the pupil’s level of physical training, as a declarative purpose for health strengthening, in fact it was meant for the preparation for work in hard conditions. talent for performance sport, but also to determine an increase in the pupil’s level of physical training, as a declarative purpose for health strengthening, in fact it was meant for the preparation for work in hard conditions.

Starting form the fact that the evaluative processes have to be accomplished in a way in which whatever the immediate objectives (knowing the pupils level of performance, ranking them in class, passing to the next grade etc.) to sustain and to stimulate the activity of teaching-learning. The N.S.E. has conducted a critical analysis on Physical education and sports, college cycle, on the basis of an investigation realized with the use and elaboration of two different questionnaires for both pupils and teachers.

In order to identify the points of view of a number of teachers regarding the content, pros and cons, the limits, the efficiency of the current evaluation system of high-schools 200 teachers from the education establishment have been presented with the C1 questionnaire from the following counties: Galați, Bacău, Neamț, Vaslui, Vrancea. The professional honesty and the experience of the educational staff is certified by the qualification and seniority steps: 63 - didactical level I, 15 – 30 years experience; 92 – didactical level II, 6 – 15 years experience; 37 – conclusive, 3 – 6 years of experience; 8 new comers , 1 – 2 years experience.

The pupil’s questionnaire (C2) was based on the pupil’s opinion on the way they are being evaluated and was applied to a number of 1000 pupils from IX to XII-th grade, from the same states.

RESULTS, DISCUSSIONS

In tables 1 and 2 are presented the items of the questionnaires and the answer possibilities and the formulated answers of both investigated sides : teachers and pupils.

Table 1.

The content of the C1 questionnaire and the chosen answers

ITEMS	ANSWER CHOICES	TEACHER’S QUESTIONNAIRE	
		NR OF SUBJECTS	PERCENT-AGE
1. How do you consider the current National System of Evaluation?	Very good	13	6,5%
	Good	55	27,5%
	satisfying	94	47%
	unsatisfying	38	19%
2. Do you think that the current evaluation system should be modified?	yes	186	93%
	no	14	7%
3. Do you think that the current system of pupil evaluation is a pedagogic lever in attracting pupils to actively participate in lectures?	yes	71	35,5%
	no	101	51,5%
	I don’t know	28	14%
4. Do you consider that the current system of evaluation is determining medical acquittals?	Yes	128	64%
	no	70	35%
	I don’t know	2	1%
5. What do you think is determining medical acquittals?	Medical problems	43	21,5%
	inactivity	80	40%
	comfort	165	82,5%
	Obligatory sport equipment	78	39%

ITEMS	ANSWER CHOICES	TEACHER'S QUESTIONNAIRE	
		NR OF SUBJECTS	PERCENT-AGE
	Task standards for evaluation	29	14.5%
	Notation system	52	26%
6. Do you think that grades determine the appearance of medical acquittals ?	yes	92	46%
	no	108	54%
7. What are the first three criteria that you use for pupil evaluation?	Performance according to N.S.E. grill	26	13%
	Specific knowledge	62	31%
	Attitude	107	53,5%
	Behavior	126	63%
	Attending classes	46	23%
	progress	149	74,5%
	Class activity	98	49%
	Participation in extracurricular activities	48	24%
8. Do you consider benefic the modification of the current system of evaluation in the meaning of using nonconventional evaluation systems (progress, interest, concern for harmonious development, level of knowledge etc)?	yes	178	89%
	no	1	0,5
	I abstain	21	10,5
9. What would be the proportion attributed to a pupil appreciating attitude, behaviour, progress ?	For attitude....%	-	-
	For behavior%	-	-
	For progress%	-	-
10. Do you consider in the evaluation the level of development in the pupils motric capacity ?	yes	173	86.5%
	no	27	13.5%

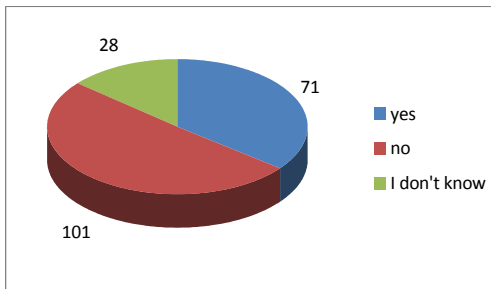
Tabel 2.
Content of the C₂ questionnaire and the chosen answers

ITEMS	ANSWER CHOICES	Pupil's questionnaire	
		NR OF SUBJECTS	PERCENT-AGE
1. Wich of the evaluation task do you think is best suited for you?	sprinting	266	26.6%
	Long distance run	218	21.8%
	Long jump form a standstill	98	9.8%
	Exercise structure from gymnastics	243	24.3%
	Sport games	450	45%
	Physical skills track/area	81	8.1%
2. Do you consider that the current system of evaluation in physical education and sport encourages a fair evaluation?	yes	730	73%
	no	249	24.9%
	I don't know	21	2.1%

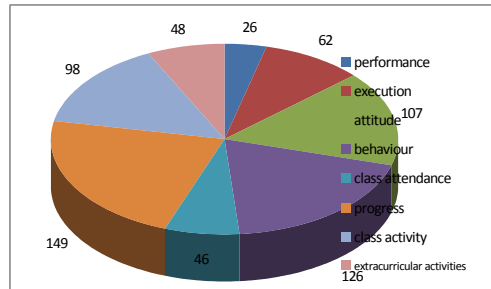
ITEMS	ANSWER CHOICES	Pupil's questionnaire	
		NR OF SUBJECTS	PERCENT-AGE
3. Wich of the requirements/standards do you consider the hardest?	Requirements for sprinting	237	23.7%
	Requirements for the long distance run	461	46.1%
	Requirements for the long jump from a standstill	326	32.6%
	Requirements for the exercise structure from gymnastics	213	21.3%
	Requirements for sport games	27	2.7%
	Requirements for the physical skills track/area	130	13%
4. Wich do you think should be the first three criteria at the base of you're evaluation?	Performance at evaluation tasks	553	55.3%
	knowledge	490	49%
	In class attitude	487	48.7%
	In class behavior	345	34.5%
	class attendance	508	50.8%
	Progress from one stage to another	466	46.6%
	Involvement in resolving lecture tasks	124	12.4%
5. Would you like to be evaluated with ratings ?	Participation in extracurricular activities (school team)	83	8.3%
	yes	281	28.1%
	no	598	59.8%
6. In you're evaluation did progress, regress, stagnation count in the evaluation tasks?	I don't know	120	12%
	yes	592	59.2%
	no	131	13.1%
7. Do grades reflect you're progress ?	I don't know	277	27.7%
	yes	626	62.6%
	no	86	8.6%
8. Do you know the benefits of systematic physical training upon you're health ?	Not always	288	28.8%
	yes	690	69%
	no	85	8.5%
9. Enumerate three somatic/morphologic and functional/physiological indicators wich express the physical development and state of health	partially	225	22.5%
	Cardiac frequency	480	48%
	weight	378	37.8%
	height	85	8.3%
10. Do you think that the current system of evaluation is a pedagogic lever of stimulation of the didactic process at this subject?	I don't know	142	14.2%
	no	389	38.9%
	I don't know	203	20.3%
	yes	175	17.5%
	For some	253	25.3%

The analysis of the investigation was carried out both within the group and outside the group, from the perspective in which the evaluation of the results is considered a stimulating activity for teaching-learning, through which the improvement of the didactic process is achieved.

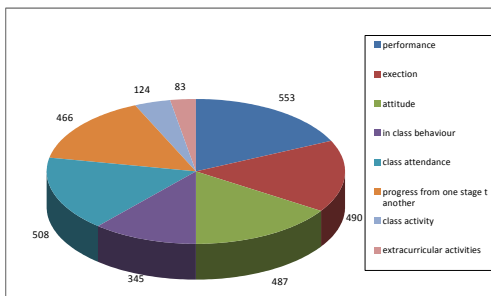
The analysis within the group for the first category of subjects revealed that the teachers had different opinions compared to the problem in hand. For every closed and open question the respondents adopted, in unequal percentage, every variation of answers but the majority considered that the current system of evaluation is inappropriate and it should be changed (98%, tab. 1). The inter-group analysis permitted the reflection of some essential aspects (teacher-pupil) of the functions of evaluation and the way the current system promotes through content and methodology. This way item 3 form C1 is identical to item 10 form C2 and the respondents have the same perceptions- the evaluation in the current system is not a pedagogical lever of stimulation of the didactic process (71% teachers -38.1% pupils, graphics 1, 4).



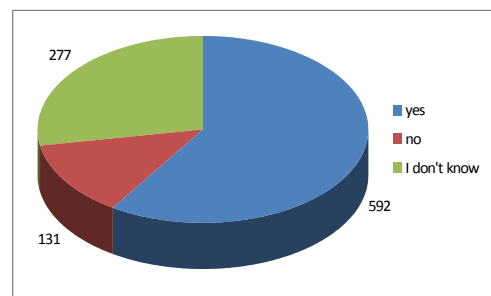
Graphic 1. The answer ratio for the variants of item 3 C2



Graphic 2. The answer ratio for the variants of item 4 C2



Graphic 3. The answers ratio for the variants of item 7 C1



Graphic 4. The answers ratio for the variants of item 10 C1

For item 7 from C1 corresponded item 4 from the questionnaire for pupils and in graphics 2-3 the suggestive opinions of both sides of subject is shown: for pupils the requirements should be performance under the form of individual progress, knowledge and in class activity, meanwhile the teacher's opinion is that the first three criteria to be progress, behavior and class attitude.

CONCLUSION

We consider that the actual N.S.E. (1999) doesn't offer equal chances for every pupil in obtaining the maximal grad due to standards and standard requirements in according marks, which is in contradiction with the principles of modern education also the number of pupils exempted from physical education classes (because of the reasons above written) is alarming. These facts prevents reaching the fundamental objective of basic education, to ensure a harmonious development of pupils personality and manifests itself by the alarming growth of overweighted, obesity, cardiovascular diseases and diabetes among children and young people caused by the lack of physical activities.

In opinion of the majority of teachers (66%), the actual system of evaluation doesn't corresponds with the principles and tendencies of the post-modern pedagogy, it isn't harmonized with the system of objectives/competences, attitudes and values promoted by the school program for the high school cycle, determined the growth of medical exemptions, and the introduction of ratings would not lead to the drop of their number.

From the perspective of professors the actual system of evaluation is perfectible and has to be optimized by adopting a differentiated evaluation system, in function of particularities of physical development and the level of specific fitness. 89% of teachers interviewed accordance with modifying the system of evaluation and propose the establishment of a greater ratio of formative-qualitative evaluation than summative-qualitative evaluation, quantitative, for the harmonization of the teaching/learning process with evaluation.

By analyzing the way pupils had filled out the C2 questionnaire we have found that they are not used to be consulted about the method of their evaluation and scoring, although they are of an age that permit them to manifest a pertinent analysis, in which their capacity of generalization, critical spirit an initiative is manifested.

Pupils want an evaluation centered on their individual progress in learning and development, in which gained knowledge, specific acquired skills, attitude and behavior in class are reflected.

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IDENTIFICATION OF CHARACTERISTICS FOR THE ELEMENTS OF PROMOTION WITHIN THE MARKETING FOR AND THROUGH SPORTS

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ABSTRACT. The paper presents the aspects of the promotion mix within the sports marketing, related to the communication as means of achieving some mutually advantageous relationships between the sports structures and the mass media. It aims the identification of the particularities of the communication elements aimed towards the shaping of the promotion instruments considered as adequate in the promotion of marketing for and through sports within the context of the local organizational environment.

Key words: communication, marketing for sports, marketing through sports, promotion

REZUMAT. Lucrarea abordează aspecte ale mixului de promovare în marketingul sportiv legate de comunicare ca mijloc de realizare a unor relații reciproc avantajoase între structurile sportive și mass-media. Se urmărește identificarea caracteristicilor elementelor comunicării menite să conducă la conturarea instrumentelor promovării considerate oportune în promovarea marketingului pentru sport și prin sport în contextul mediului organizațional local.

Cuvinte cheie: comunicare, marketing în sport, promoție

INTRODUCTION

The management of marketing within sports acquires particular connotations if we consider some variables, namely: the configuration of mixed marketing, the variety of sports structures and the mass media's potential contribution to the sports marketing. Under these conditions, the content of sports marketing mix – product, market, price, promotion (the 4Ps) – presents some characteristics, the main product of sports structures being the performance. The market of sports performance is delimited through the social requirement and it has a strict regulation, shaped through the regulations of the international and national bodies. The management of the organization cannot intervene in order to change the market conditions, but only to adapt and integrate its requirements, in a more efficient manner.

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CONTENT, OBJECTIVE, METHODS

The promotion within the sports marketing² requires careful and competent information of the potential consumers of sports performance and the development of specific actions to influence their behavior, namely to support the processes for the achievement of sports performance. Promotion is inseparably connected to communication, through which the sports organization aims to inform the potential consumers, partners or supporters about the activities, products and organizational services, to determine them to adopt positive attitudes towards these items and to embrace them.

From the sports perspective, mass media activity is centered on the sports performance, which provides show, attracts the audience, brings economic benefits and implies communication, public relationships, advertising. Mass media is interested in a slight degree to intervene in some of the components from the marketing mix: product, price, market. In promotion, the interests seem to be convergent, as the reflection of the sports performance in the media contributes to the sales of media products, and the media products carry the image of the sports organizations, activities and performances.

The context of the particularities and complexity of the environment where the sports and mass media meet implies permanent and laborious investigation, knowledge and communication processes, capable to insure knowledge, efficient communication and adequate information within some public relationships aimed to generate mutual trust and a favorable image.

The investigation of the aspects connected to the current issues of the communication processes between the sports organizations and the mass media can shape the directions and means for the improvement/increase of mass media contribution in the sports marketing, if it will be based on arguments situated between the two poles: knowledge and implementation level and the valorization potential of the instruments of the marketing for and through sports.

Our approach aims to identify some elements intended to shape the current context of the communication between the sports structures and the mass media under the conditions where the relationship and involvement of mass media within the sports marketing is mainly achieved in the component of the promotion mix, and the communication is the means and vehicle of information which contributes to the development of some viable public relationships, to the achievement of some mutually advantageous advertising

² Florescu, C. (coordinator), (1992) - *Marketing*, Marketer Publishing House, Bucharest, p. 381

and to a public image related to the organizational products, able to contribute to the achievement of managerial resources.

The research means used were the bibliographic documentation, the inquiry based on survey, statistics and graphics. The research of the way in which the sports structures cooperate with the mass media within the communication mix was achieved through inquiry based on survey. The investigation aimed the sports and the mass information means environments. We surveyed various representatives of the two environments with opened and closed questions which aimed the collection of information and the assessment of opinions and attitudes. 30 individuals answered to the survey, representing 9 sports structure, 8 sports fields and 10 locally representative media structures.

RESULTS, DEBATES

The problems considered within the research were: identification of barriers of mutual communication and the role of actors (representatives of sports structures, journalists, other factors) in the construction of the image of sports organization presented by the mass media, characterization of communication and efforts for a better communication, assessment of the frequency held by the mutual relationships, importance of the image and identification of the individuals who create the image.

Various opinions are expressed for the barriers of the mutual communication (charts 1 and 2). According to the sports organizations, the barriers which are invoked in most of the cases are “lack of information” and “rush for sensational” (34.7% each). These are followed by “lack of interest”, “non-professionalism” and – in the last place - “lack of honesty” and “malevolence”. For this question, the survey’s subjects also had the variant “other reasons”. Only 4.3% of the representatives of sports units filled in this field, indicating “personal interests”.

At their turn, when asked about the barriers in the communication with the sports structures, the journalists indicated (chart 2.) – as main obstacles - “lack of transparency” of the sports organizations (27.27%) and the fact that the sports environment “does not understand the role of mass media” (27.27%). Other barriers invoked by the journalists were the “non – professionalism” and the “lack of honesty” (13.6% each), “lack of interest” and “malevolence” (9% each).

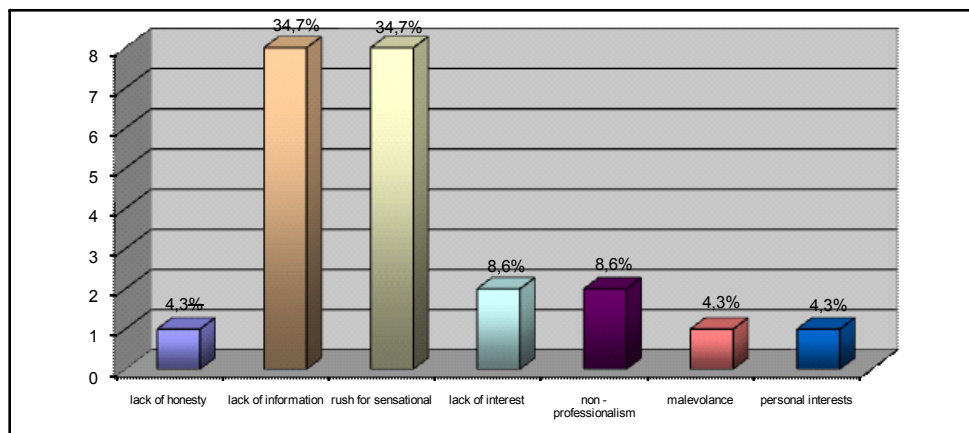


Chart 1: Representation of the opinions of sports organization members about the barriers in the communication with journalists

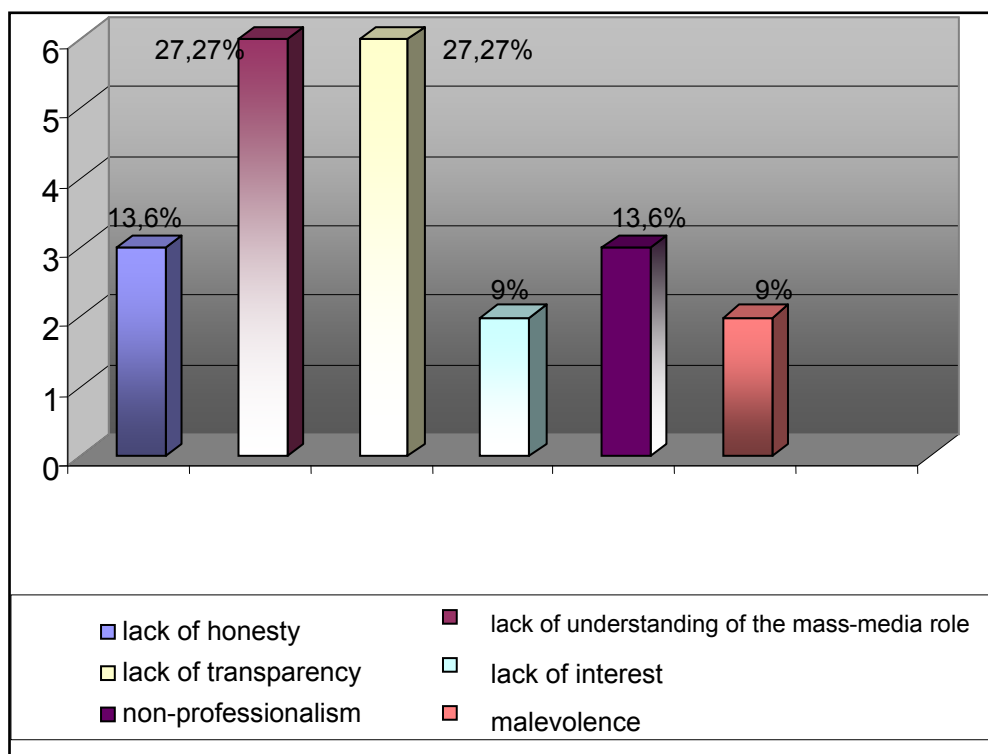


Chart 2.: Representation of the journalists' options about the barriers in the communication with the sports structures

Another problem approached within the survey was the role played by the journalists, representatives of sports structures and other factors in the construction of the image of sports organizations presented in the mass media. The representatives of sports structures claimed that they play the highest role (44.44%), then the journalists (38.88%) and in the end – other factors (point where they mentioned the criteria “sportsmen and their results – 11.11% – and “results” – 5.55%). The journalists granted themselves a higher importance (66.66%) when asked about the contribution to the image held by sports organizations in the mass media, the remaining percentage being distributed to the representatives of sports structures.

Both journalists and the representatives of the sports field consider that the improvement of the communication of sports structure with the mass media could positively influence their activity – currently the two parties having –in general – a “good” and “very good” communication. None of the survey’s subject answered that this communication was “non-functional”.

Questioned about how high were the efforts of their institutions in order to have a good communication with the other field (charts 3 and 4), 60% of journalists answered there are “high” and “very high” efforts in order to have a good communication with the sports structures. The representatives of the latter claim, in a 60% ratio, that their efforts are “low”, “very low” and “inexistent”.

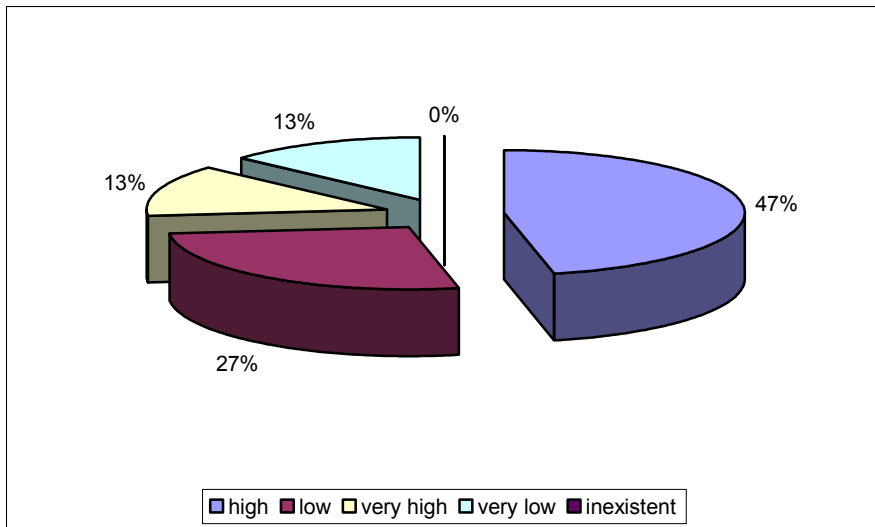


Chart 3: Graphic representation of the journalists’ answers at the question “How high are the efforts made by your institution in order to have a better communication with the sports structures?”

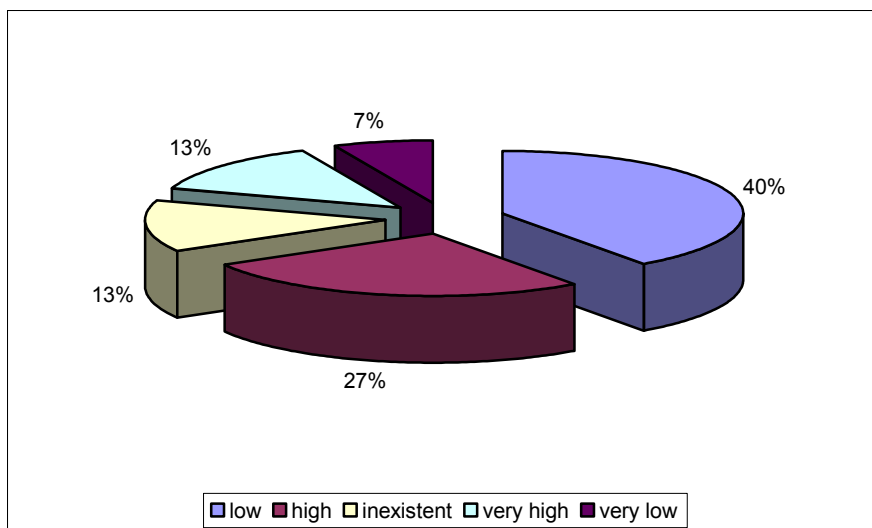


Chart 4: Graphic representation of the answers from the employees of the sports structures at the question “How high are the efforts made by your institution in order to have a good communication with the mass media?”

As related to the periodicity of the efforts made by the sports organizations in order to maintain the connection with the mass media, both the journalists and the representatives of the sports structures were questioned. If the latter consider that this connection is mainly maintained “often” and “very often” (66%), 60% of the journalists believe that this connection is maintained in a “satisfying degree”.

Compared to the mass media, the sports structures are more aware of the role played by the mass media in the attraction of viewers and sponsors, along with the sports activities. 53% of the respondents from the sports field said that the image created by the information means mattered “very much” and 33% “much” for the achievement of these objectives. Journalists, instead, claim in a 47% quota that the images they create for the sports organization contribute “much” and 33% “very much” to the attraction of viewers and sponsors.

The last aspect approached within the survey was the identification of the individuals from a sports organization which have the responsibility to maintain the relationship with the press. When asked “Who is the responsible in your institution with the maintenance of the relationship with the mass media?”, 47% of the representatives of the sports structure answered that the

coaches, 33% - the president or director, and 20% named the spokesman. No one indicated the sportsmen – also representing a category included in the variants. At their turn, when talking about the “ideal information sources”, the journalists indicated the sportsmen – 47%, the president or the director - 27%, the coach – 20% and the spokesman -6%.

ANALYSIS AND INTERPRETATION OF RESULTS

Both the mass media (100%) and the sports structure representatives (94%) claim that an improvement of the mutual communication could positively influence their activity. However, from the manipulation of the survey, it resulted that sometimes the dialogue is not so efficient. Thus, only 33% of the journalists and representatives of the sports structures who participated in the survey consider that the communication relationship between the mass media and the sports organizations is a “very good” one. This acknowledgment highlights the existence of some problems within the dialogue between the parties, problems which have to be identified and remedied.

Sports journalists make very little efforts in order to actually know the field they write about and they are always attracted by the peripheral, “strident” elements of sports, which – even if not edifying for the field –are interesting for a journalist’s eyes. On the other hand, mass media representatives explain their lack of information through the fact that they do not always benefit from the support of the sports representatives in terms of knowledge about the field.

If at the level of the two fields there is a declarative consensus about the objective to have a better cooperation, in practice the things do not look so good. 47% of the sports structures only make “little” and “very little” efforts in order to have a good communication with the mass media. In addition, for 13% of them, the efforts are “inexistent” (chart 4). The mass media also deals with this kind of problems, under the conditions where 40% of the institutions in the field have only “slight” and “very slight” attempts to initiate a successful dialogue (chart 3).

We notice that there is no proper cooperation also due to the fact that the two parties do not interact very often. The fact that the sports structures do not grant a higher importance to the spokesman role or to some connection elements with the mass media (as the press conferences or press releases) highlights the fact that the attributions and duties related to the communication with the press are somehow left to be hazardous, and there is no real interest for the professionalization of this field.

CONCLUSIONS

Our research was able to highlight the following aspects:

- ◆ mutual establishment of the adequate means for a common communication;
- ◆ identification of the obstacles encountered in the communication and the development of some adequate dialogue methods;
- ◆ shaping of the role played by the mass media in the creation of the image of the sports structures;
- ◆ evaluation of the mutual communication, the efforts made by both parties in this direction;
- ◆ shaping of some new research and continuous improvement perspectives.

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FIST AND HAND JOINT TRAUMAS IN COMPETITIVE SPORTSMEN

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ANTON MARGARETA² & DIMA MARIUS²

ABSTRACT. The overtraining imposed by competitiveness and the imbalance between the mechanic overstress and the functional resistance of the tissues have led to a high incidence of joint traumas in the studied sports. The study batch included 155 sportsmen (52 (33.5%) female and 103 (66.5%) male) who practised **athletics (sprint and hurdles), basketball, handball, football and volleyball** in Leagues A1 and A2, in Timisoara and Lugoj. The sportsmen were between 13 and 42 years old and had been practising sports for 4-20 years. The study monitored specific trauma incidence, frequency and location, as well as the causes that led to traumas. It covered three competition years (August 2006 – July 2009) during which the sportsmen were closely monitored. **OBJECTIVE.** To reduce the number of traumas in the studied sportsmen through the identification of the risk factors and the introduction of prevention exercises and stretching methods in the training process, both during warm-up and post-effort rehabilitation, in order to prevent accidents and increase performance in competitive sportsmen. **MATERIAL AND METHOD.** Research methods: scientific documentation, observation, experiments, conversations, questionnaires, MRI, CT, statistical and graphic methods (1, 2, 3, 4, 5, 6, 7). All injured segments (N = 11) were compared against the total number of traumas per sportsmen, age groups and longevity in sport practising, in order to reveal the age and longevity groups with the highest trauma incidence and the most frequently affected segments in the studied two periods (before and after starting the prevention exercises programme). **RESULTS.** The number of injured sportsmen decreased from 43 to 31 (-12 sportsmen) in the second period. Most traumas involved the fingers, and the most affected sportsmen were volleyball players (because of the blocking action). Judging by the **injured segment**, irrespective of sex or sport, in both periods the most affected **longevity groups** in the whole batch are 4-6 years for track and field events and 7-10 years and 10-15 years for games. **Volleyball is on the first place**, with an average of 40% injured players (14 out of 40), which confirms the data in the literature.

Key words: traumas, joint, hand-fist, competitive sportsmen

REZUMAT. Afecțiuni traumatice ale articulației pumnului și mâinii la sportivii de performanță. Suprasolicitările impuse de marea performanță, dezechilibrele dintre solicitările mecanice ale efortului sportiv și rezistența funcțională a țesuturilor, a determinat o incidență crescută a traumatismelor la nivelul articulațiilor în cadrul ramurilor sportive studiate. Studiul a cuprins un lot de 155 de sportivi (52 de sex feminin (33,5%) și 103 de

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sex masculin (66,5%), componenți ai ramurilor sportive: **atletism (probele de sprint și garduri), baschet, handbal, fotbal, volei**, divizia A1 și A2, din Timișoara și Lugoj, cu vârste cuprinse între 13-42 de ani, și o vechime în sport cuprinsă în intervalul 4-20 ani, la care la care s-a urmărit incidența, frecvența și localizarea traumatismelor specifice precum și cauzele care au determinat producerea, traumatismelor. Studiul s-a derulat pe o perioadă de 3 ani competiționali când s-a reușit urmărirea îndeaproape a sportivilor respectiv: august 2006 – iulie 2009. **SCOPUL LUCRĂRII.** Reducerea numărului de traumatisme la sportivii cuprinși în studiu, prin identificarea factorilor de risc și introducerea în procesul de pregătire a unor programe de exerciții profilactice și a tehnicilor de stretching, atât în încălzire cât și în refacerea postefort, în scopul prevenirii și a creșterii performanței sportive. **MATERIAL SI METODEDE.** Metode de cercetare: documentarea științifică, metoda observației, metoda experimentală, metoda conversației, convorbirii, chestionarului, metode de investigare IRM, CT, metoda statistica și grafică. (1,2,3,4,5,6,7) Am comparat toate segmentele traumatizate, (N=11) în funcție de numărul maxim de traumatisme prezentate de sportivi, pe grupe de vârstă și vechime în sport pentru a putea evidenția grupele de vârstă și vechime în sport cu numărul cel mai mare de traumatisme înregistrate, și segmentele cele mai afectate, pe cele două perioade de timp (înainte și după aplicarea programului de exerciții profilactice). **REZULTATE.** Numărul sportivilor accidentați a scăzut de la 43 la 31 (-12 sportivi) în perioada 2. Majoritatea afecțiunilor sunt la degete, iar sportivii cei mai afectați sunt voleibaliștii (acțiunea de blocaj în volei). În funcție de **segmentul traumatizat, grupele cu vechime în sport** cele mai afectate, indiferent de sex ori ramura sportivă practică, pe întreg eșantionul de sportivi (N=155) în ambele perioade de timp sunt: 4-6 ani pentru atletism, 7-10 ani și 10-15 ani pentru jocurile sportive. Pe discipline sportive, **voleiul ocupă primul loc, cu o medie de 40%** (14 sportivi accidentați din 40) din sportivi fiind accidentați, ceea ce confirmă date din literatura de specialitate.

Cuvinte cheie: traumatisme, articulație, mână - pumn, sportivi de performanță.

INTRODUCTION

Generally, hand traumas are similar with other traumas; however, they require specific evaluation and treatment.

The incidence of radio-carpal joint injuries in sport practising is high. *Gerard Maurice*, in a personal statistics, shows that within the complex hand, finger and fist lesions, radio-carpal joint sprains account for 5.90% (30, 31, 32, 33, 34, 35, 36, 37).

The most common sprain mechanism is a sudden hyperextension with the hand in adduction. Hand sprains are very painful and the joint is kept in typical cubital flexion (30, 31, 32, 33, 34, 35, 36, 37).

Hand traumas are most common in volleyball, then in basketball, handball, football and track and field events.

The most frequent lesions are metacarpal-phalangeal and interphalangeal sprains.

MECHANISM

The sprains are the results of forced hyperextension of fingers on the corresponding metacarpal bones. Ruptures or extensions of the dorsal aponeuroses of the fingers, palm fibrocartilage or articular ligaments occur within the same forced movement.

The most affected is the **metacarpophalangeal joint of the thumb**, because in this case the movement may also involve the palm fibrocartilage at the level of the sesamoid bones.

This trauma is often seen in volleyball (highest share of direct trauma in blocking), handball and basketball.



Figure 1



Figure 2

As confirmed by data in the literature, **volleyball is on the first place, with an average of 40%** (14 injured sportsmen out of 40), followed by basketball, handball and track and field events.

The most frequent lesions are metacarpal-phalangeal and interphalangeal sprains.

RESULTS

Musculo-skeletal distribution by the affected segment and the maximum number of traumas (1-5 traumas suffered by one sportsman in one segment), against the whole batch (N = 155) in the two studied periods:

HAND, PALM, FIST

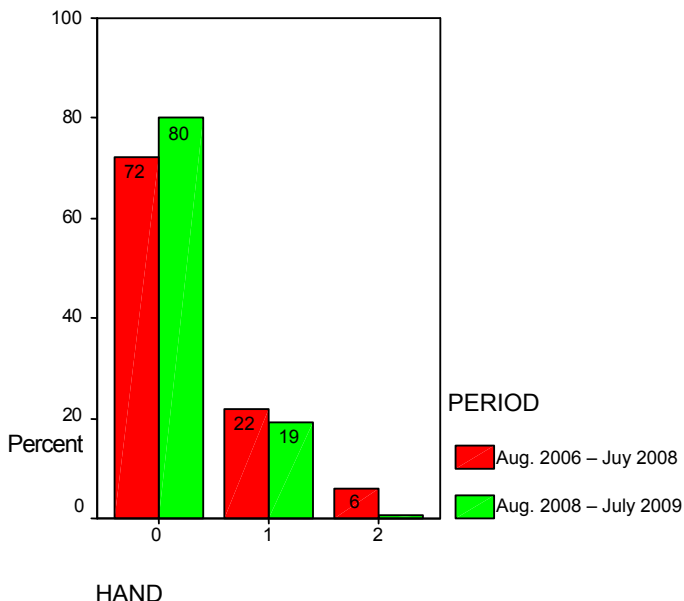


Chart 1. Hand trauma distribution (%) (0-2 traumas) in the two periods of time

INTERPRETATION

Period 1

34 sportsmen (21.94 %) suffered **1** hand trauma in Aug. 2006 – July 2008
9 sportsmen (5.81%) suffered **2** hand traumas in Aug. 2006 – July 2008.

Period 2

30 sportsmen (19.48 %) suffered **1** hand trauma in Aug. 2008 – July 2009.
1 sportsman (0.65%) suffered **2** hand traumas in Aug. 2006 – July 2008.

The number of injured sportsmen decreased from 43 to 31 (-12 sportsmen) in the second period.

Most traumas involved the fingers, and the most affected sportsmen were volleyball players (because of the blocking action).

THE MOST AFFECTED SEGMENTS BY SPORTS

The highest hand trauma incidence occurs in the following sports:

Table 1.

Hand-palm-fist

Period 1		Period 2	
SPORTS			
1. Volleyball	55%	1. Volleyball	37.5%
2. Basketball	54.35%	2. Basketball	35.42%%
3. Handball	10.71%	3. Handball	0%
4. Football	3.70%	4. Football	0%
5. Athletics	0%	5. Athletics	0%

Volleyball is on the first place, followed by basketball, handball and track and field events.

COMPARISONS ON AGE GROUPS AND AFFECTED SEGMENTS

Percentage distribution of musculo-skeletal traumas by affected segments and age groups, against the whole batch, irrespective of sex or sport; a comparison of the two studied periods.

Table 2.

Percentage distribution of hand traumas

PERIOD	HAND PALM FIST			Total number of sportsmen
	Age group	Number of traumas	% Traumas	
August 2006 – July 2008	13-18	3	8.33	36
	19-22	23	32.86	70
	23-26	10	29.41	34
	27-30	5	41.67	12
	> 30	2	66.67	3
		43	27.74	155

PERIOD	HAND PALM FIST			Total number of sportsmen
	Age group	Number of traumas	% Traumas	
August 2008 – July 2009	13-18	0	0.00	36
	19-22	17	24.64	69
	23-26	7	20.59	34
	27-30	5	41.67	12
	> 30	3	66.67	3
		32	20.00	155

As there are **significant** differences in hand lesions by age groups, it is necessary to compare the age groups to decide which group has the most important differences.

2006 – 2008:

- there are significantly fewer hand-palm-fist traumas in the 13-18 years age group than in the 19 - 22 group ($p = 0.011$, $\alpha = 0.05$);
- there are significantly fewer hand-palm-fist traumas in the 13-18 years age group than in the 27 - 30 group ($p = 0.025$, $\alpha = 0.05$);
- there are significantly fewer hand-palm-fist traumas in the 13-18 years age group than in the over 30 years group ($p = 0.045$, $\alpha = 0.05$)

2008 – 2009:

- there are significantly fewer hand-palm-fist traumas in the 13-18 years age group than in the **19 - 22** group ($p = 0.0029$, $\alpha = 0.01$);
- there are significantly fewer hand-palm-fist traumas in the 13-18 years age group than in the **23 - 26** group ($p = 0.0135$, $\alpha = 0.05$);
- there are significantly fewer hand-palm-fist traumas in the 13-18 years age group than in the **27 - 30** group ($p = 0.00039$, $\alpha = 0.001$);
- there are significantly fewer hand-palm-fist traumas in the 13-18 years age group than in the over 30 group ($p = 0.00025$, $\alpha = 0.001$).

No significant differences ($p = 0.578$, $\alpha = 0.05$) in ELBOW injuries distributed by age groups were recorded between the two periods (2006 – 2008 and 2008 - 2009).

Tabel 3.

Percentage of hand-palm-fist lesions

Age groups	August 2006 – July 2008	August 2008 – July 2009
13-18	8.33%	0.00%
19-22	32.86%	24.64%
23-26	29.41%	20.59%
27-30	41.67%	41.67%
> 30	66.67%	66.67%

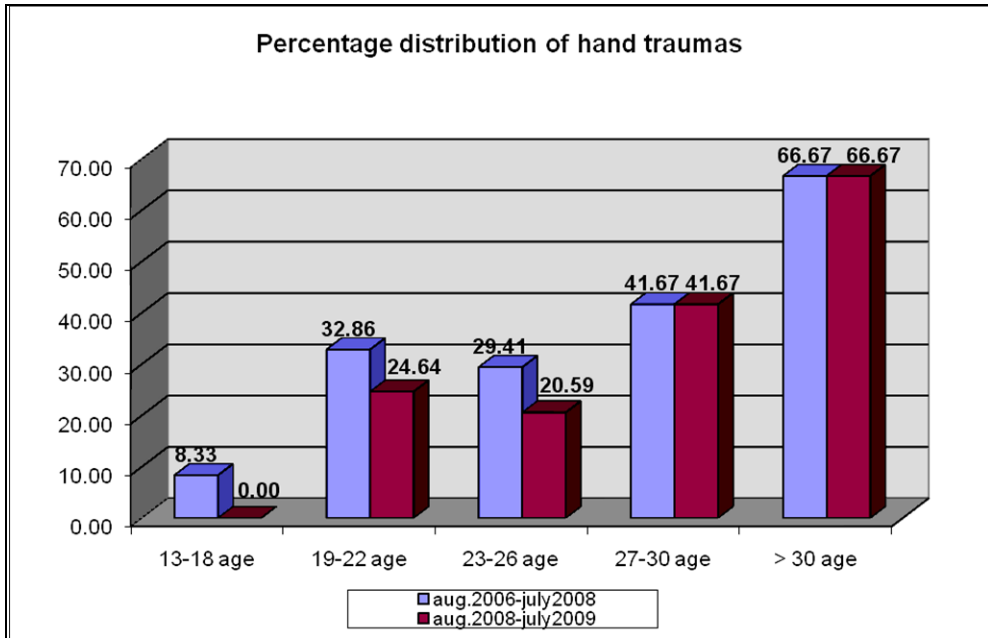


Chart 2. A comparison of the percentage distribution of hand traumas by age groups in the two periods

COMPARISONS ON AGE GROUPS AND AFFECTED SEGEMENTS

Percentage distribution of musculo-skeletal traumas by affected segments and age groups against the whole batch, irrespective of sex or sport; a comparison of the two studied periods.

Table 4.

Percentage distribution of hand-palm-fist traumas

PERIOD	Time spent in sports practising groups	Number of traumas	% Traumas	Total No.
August 2006 – July 2008	4-6	3	20.00	15
	7-10	24	35.29	68
	11-15	21	33.87	62
	16-20	2	25	8
	> 20	2	100	2
	Total	52	33.55	155
August 2008 – July 2009	4-6	1	6.67	15
	7-10	12	17.65	68
	11-15	14	22.58	62
	16-20	1	12.5	8
	> 20	2	100	2
	Total	30	19.35	155

For the first studied period, the comparisons between the groups of time spent in sports practising were made with the χ^2 test; the results were $p = 0.235$, with a significance threshold $\alpha = 0.05$, which indicates that there were no significant differences between the number of **hand-palm-fist traumas** in these groups.

For the second period, the comparisons between the groups of time spent in sports practising were made with the χ^2 test; the results were $p = 0.03$, with a significance threshold $\alpha = 0.05$, which indicates that there were **significant differences** between the number of **hand-palm-fist traumas** in these groups. Therefore, the number of traumas by time spent in sports practising groups were compared and led to the following results:

- in the 4-6 years group there were significantly fewer traumas than in the over 20 years group ($p = 0.011$, $\alpha = 0.05$);
- in the 7-10 years group there were significantly fewer traumas than for the over 20 years group ($p = 0.048$, $\alpha = 0.05$);
- in the 11-15 year group there were significantly fewer traumas than for the over 20 years group ($p = 0.048$, $\alpha = 0.05$).

The other differences were minor.

Judging by the **injured segment**, irrespective of sex or sport, in both periods the most affected **longevity groups** in the whole batch (N = 55) are 4-6 years for track and field events and 7-10 years and 10-15 years for games.

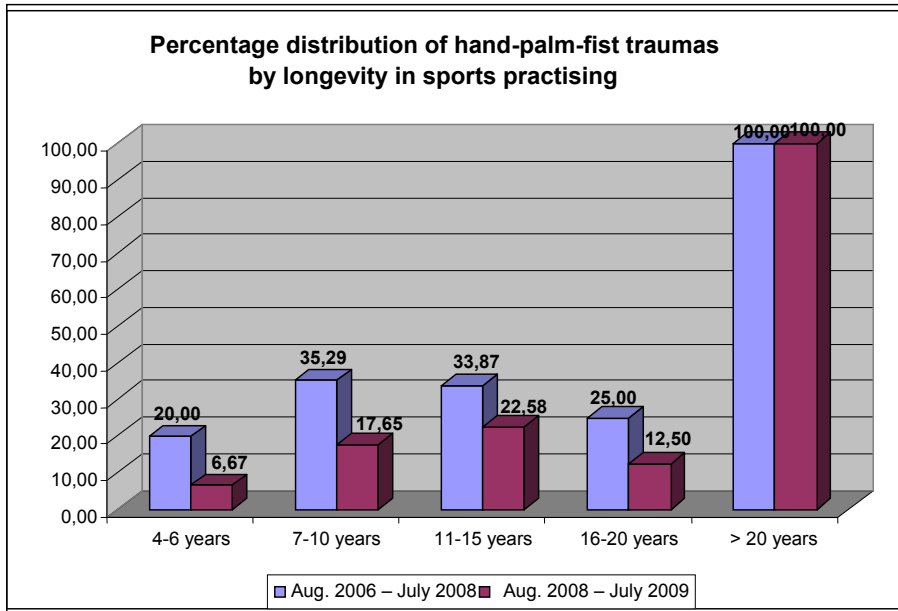


Chart 3

In order to compare the percentage values for each group between the two periods, the Z test was applied and the following results were obtained:

Table 5

Time spent in sports practising	p value and significance	α significance threshold
4-6 years	0,591 ^{ns}	0.05
7-10 years	0,032 ^s	0.05
11-15 years	0,231 ^{ns}	0.05
16-20 years	0,5 ^{ns}	0.05
> 20 years	0,99 ^{ns}	0.05

Interpretation: the decrease in the number of hand-palm-fist traumas is minor in the second period, compared to the first, except for the 7-10 years group, where it is significant.

CONCLUSIONS

High performance sport often causes both physical and psychological traumas. Therefore, the injured sportsman needs the support of his partners and a whole team of specialists: the doctor, the kinetic therapy expert and the psychologist. Together they set realistic rehabilitation objectives, lest the sportsman should decide to start training too soon.

In sports, pathology has included the injury of the following regions in the hand joint: phalangeal sprains and overstress lesions. The most frequent are metacarpophalangeal and interphalangeal sprains, while the most affected area is the metacarpophalangeal joint of the thumb.

In order to avoid accidents and meet the requirements of the daily training, the following factors should be taken into consideration: prevention exercises, diet, rest and proper warm-up.

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LEISURE TIME AND THEIR RELATION WITH SPORTS ACTIVITIES FOR FIRST YEAR STUDENTS

NEGRU IOAN NICULAIE & BOROȘ-BALINT IULIANA¹

ABSTRACT. In developed countries, sport and sports activities are considered to be a defining part of every-day life, the resource that offers them energy and enables their mood in order to face daily challenges. For this study, we have used the sociological investigation as the primordial method, based on a questionnaire combined from two other questionnaires, such as “FRESH” and “ISSP 2007 – Leisure Time and Sports”. We involved 48 first-year students in this study, the vast majority being girls from the Journalism and Psychology faculties of Babes-Bolyai University. The students questioned presented an active lifestyle from the point of view of the involvement in sports activities, their favourite physical activity being jogging, activity which requires a strong aerobe effort. This choice raises a series of questions related to the material possibilities of those in question, whether this choice is also determined by financial factors or if the students simply enjoy activities practiced outdoors to the detriment of attending a specialised gym and using special equipments.

Key words: leisure time, sports activities, students, helth

REZUMAT. *Petrecerea timpului liber și relația cu activitățile fizice sportive la nivelul studenților de anul I.* Sportul, activitățile sportive, în țările dezvoltate, sunt considerate ca făcând parte integrantă din viața de zi cu zi a indivizilor, suportul ce le conferă energie și totodată dispoziția necesară pentru a face față provocărilor cotidiene. Pentru realizarea acestui studiu, am folosit ca metodă principală de cercetare ancheta sociologică pe baza unui chestionar pornind de la două chestionare, precum „FRESH” și „ISSP 2007 – Leisure Time and Sports”. În studiu au fost angrenați 48 de studenți, (majoritatea fete-studente la facultatea de Jurnalism și Psihologie), din anul I de studiu, al univ. Babeș-Bolyai”. Cei chestionați au, în general, un stil de viață activ din punctul de vedere al participării la activități de natură fizico-sportive, principala formă de mișcare, frecventată de către cei chestionați, fiind alergarea/jogging-ul ce implică un efort fizic predominant aerob. Participarea cu precădere la această formă de activitate fizică-sportivă ridică o serie de întrebări cu privire la situația financiară a studenților, este ea un factor determinant în alegerea acestei forme de activitate fizică?... sau pur și simplu studenții apreciază mișcarea în aer liber, folosind deprinderi motrice cât mai simple în dauna exersării în săli de sport sau folosind o serie de echipamente speciale.

Cuvinte cheie: timpul liber, activitate sportivă, studenți, sănătate

¹ Faculty of Physical Education and Sport, „Babeș-Bolyai” University

INTRODUCTION

In developed countries, sport and sports activities are considered to be a defining part of every-day life, the resource that offers them energy and enables their mood in order to face daily challenges. In accordance with Pierre de Coubertin, who is considered to be the forefather of the Modern Olympic Games, sport is “*part of every man and woman's heritage and its absence can never be compensated for.*” (White paper on sport, 2007, p 2). Sport is perceived by certain sociologists as the means that can bring communities closer together in a far more efficient way than any organization or political measure could.

The level of health of a certain population, its level of development, from a social and economic point of view, can be supplied, largely, by the number of people that practise in an organised manner activities pertaining to sports and physical education.

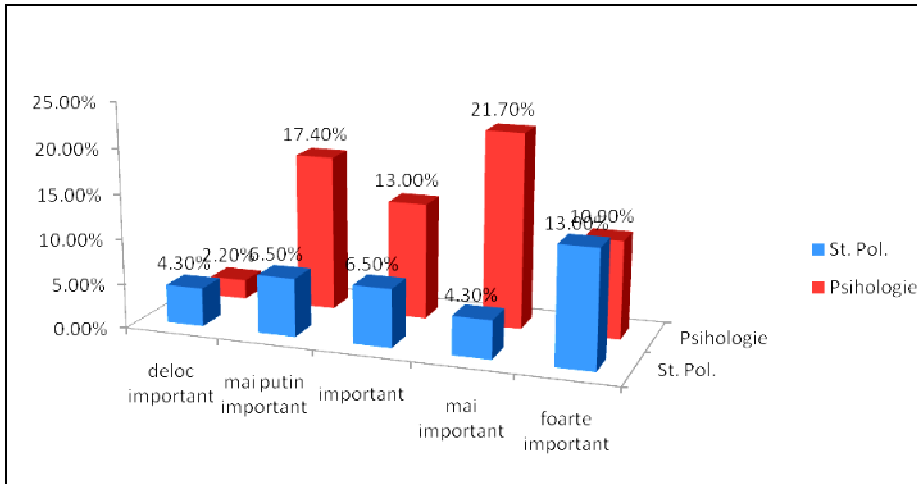
MATERIALS AND METHODS

For this study, we have used the sociological investigation as the primordial method, based on a questionnaire combined from two other questionnaires, such as “FRESH” and “ISSP 2007 – Leisure Time and Sports”. We involved 48 first-year students in this study, the vast majority being girls from the Journalism and Psychology faculties of Babes-Bolyai University. The questionnaire comprised 15 questions. However, this material presents only a part of those questions, the ones we considered to be relevant for our argumentation.

RESULTS

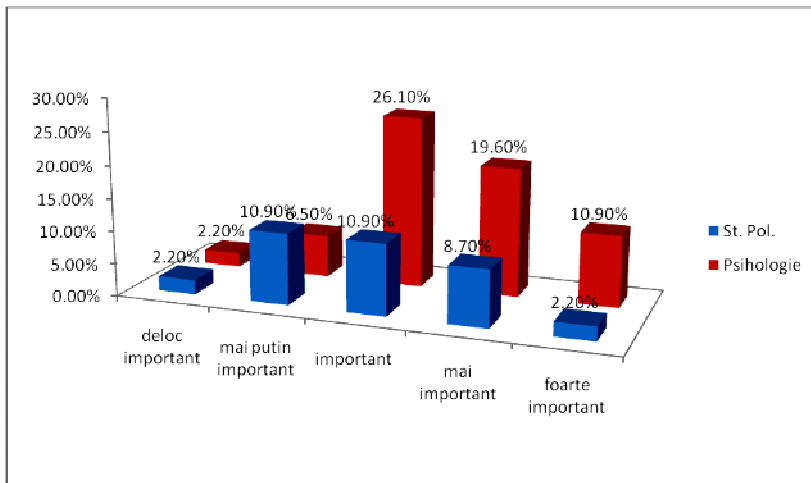
Relative to leisure time activities and how they affect the ones involved in our study, we considered a series of parameters, which will be presented in graphic displaying.

One parameter which we found interesting was “participating to cultural events: concerts, exhibitions, theatre plays”. A percentage of 13% of the students from the Faculty of Political Sciences involved in the study consider this manner of spending their leisure time to be very important, whereas only 10.9% of the students from the Faculty of Educational Sciences and Psychology agree to that (graphic no. 1).



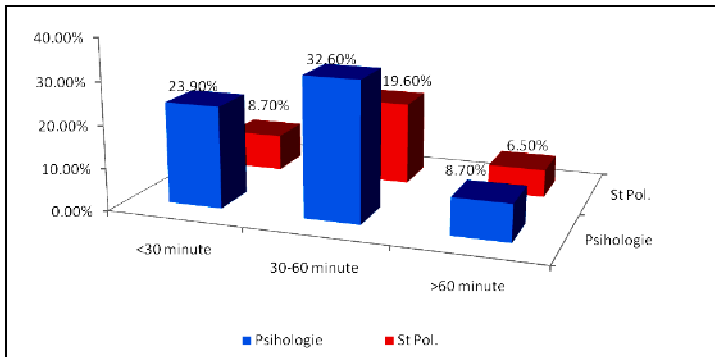
Graphic no. 1. Participation in cultural events: concerts, plays, exhibitions

Another parameter applied to describe favourite pastimes referred to the importance of engaging in sports activities, such as jogging, fitness, walking in open spaces. This time, 26.1% of the students from the Faculty of Psychology considered this manner of spending leisure time important, whereas only 10.9% of the students from the Faculty of political Sciences agreed (graphic no. 2).



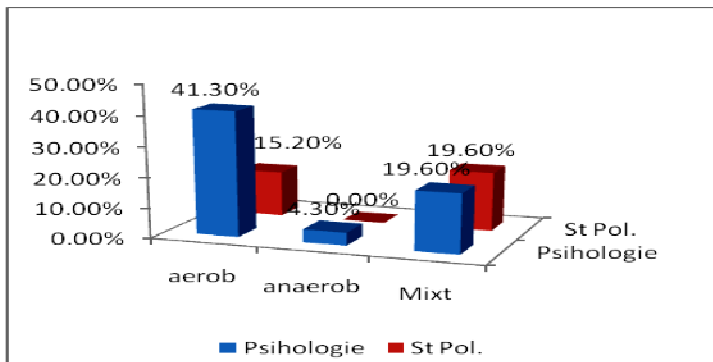
Graphic no. 2. Participation in physical activities such as sports, fitness

In order to study the relation and interest for sports activities of those questioned, we applied another set of parameters. One of the parameters was the amount of time allotted to participating in such activities. The Psychology students, in a percentage of 32.6%, assign 30 to 60 minutes for sports activities, while only 19.6% of the students from Political Sciences faculty act in the same way (graphic no. 3).



Graphic no. 3. How many minutes allotted to each session of physical activity?

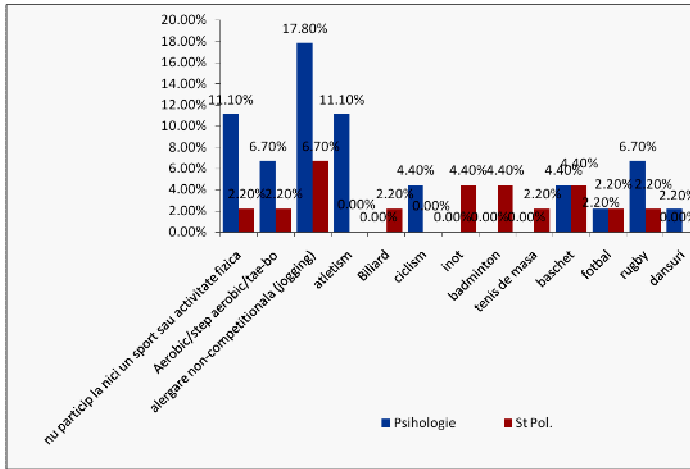
A percentage of 41.3% of the Psychology students are actively engaged in sports activities which involve aerobic efforts, as opposed to 15.2% representing the students from Political Sciences (graphic no. 4).



Graphic no. 4. What type, predominantly, make effort during physical activity?

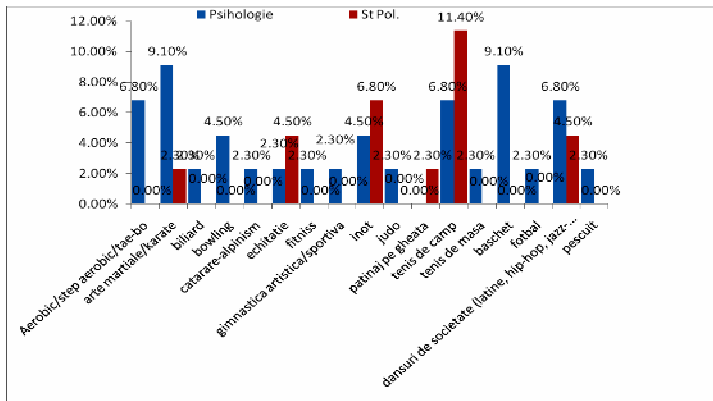
When asked about what sport they engage in most frequently, 17.8% of the Psychology students chose jogging, whereas only 6.7% of the students from Political Sciences chose the same activity (graphic no. 5).

LEISURE TIME AND THEIR RELATION WITH SPORTS ACTIVITIES FOR FIRST YEAR STUDENTS



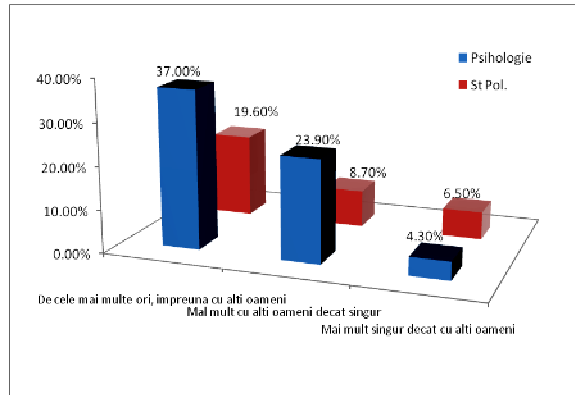
Graphic no. 5. What kind of sport or physical activity participate more frequently?

The parametre referring to sports activities that students would prefer to engage in pointed out that 11.4% of the Psychology students would like to practise lawn tennis, while 9.1% of the Political Sciences students would like to take part in martial arts or karate (graphic no. 6).



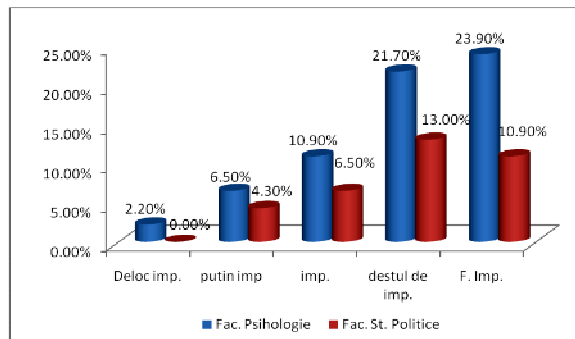
Graphic no. 6. What would be the physical activity / sport that you would like to practice them?

In what concerns inter-human relationships and spending free time accompanied by friends, the following graphic highlights that 37% of the Psychology students enjoy the idea of sharing their leisure time with other people, whereas only 19.6% of the political Sciences students embrace the idea (graphic no. 7).



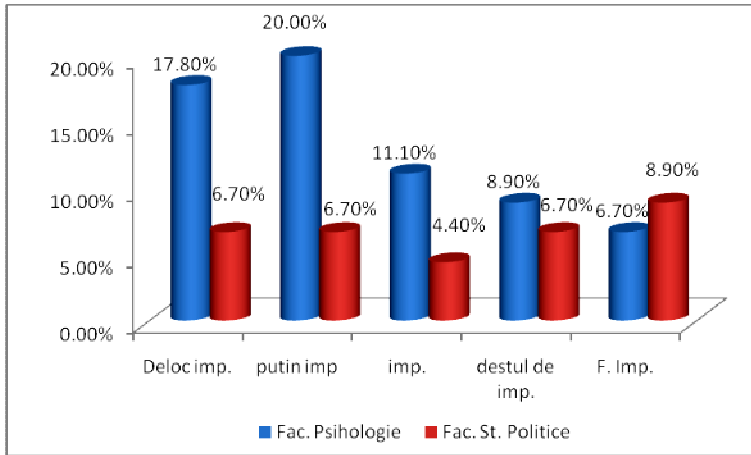
Graphic no. 7. In your spare time, prefer to be with other people, or you prefer to be alone?

Special attention was paid to the factors that determine the students' involvement in sports activities. The following graphic suggests the importance of muscular toning for the participants involved in our study, proving that 23.9% of the Psychology students consider this aspect to be important, while only 10.9% of the Political Sciences students agree (graphic no. 8).



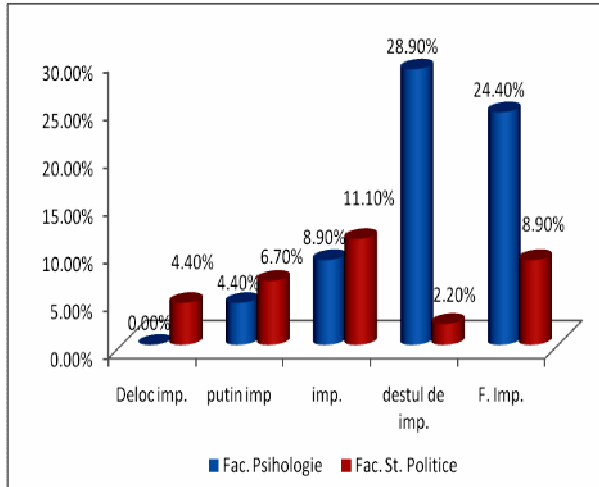
Graphic no. 8. Increased muscle tone

Those questioned in regard to the importance of achieving sport performance believe that performance is not their main interest in a percent of 20% (Psychology) and 6.7% (Political Sciences), whereas for 6.7% (Psychology) and 8.9% (Political Sciences) achieving performance is the primordial goal of sports activities (graphic no. 9).



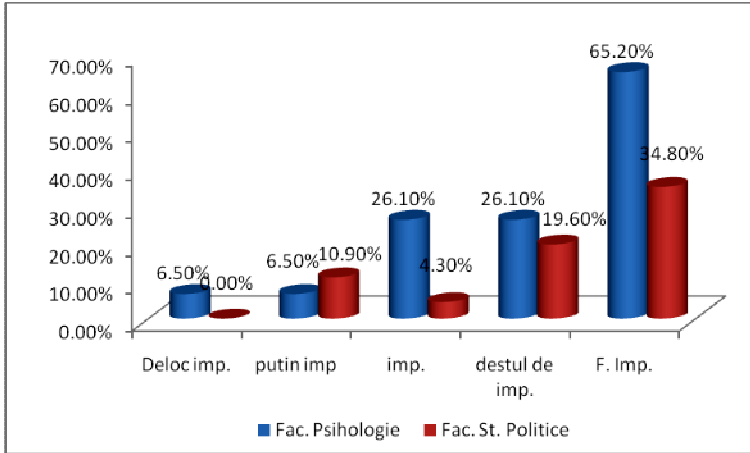
Graphic no. 9. Increased sport performance

Of those questioned, 24.4% (Psychology) and 8.9% (Political Sciences) underline the importance of practicing sports activities in the company of their friends (graphic no. 10).



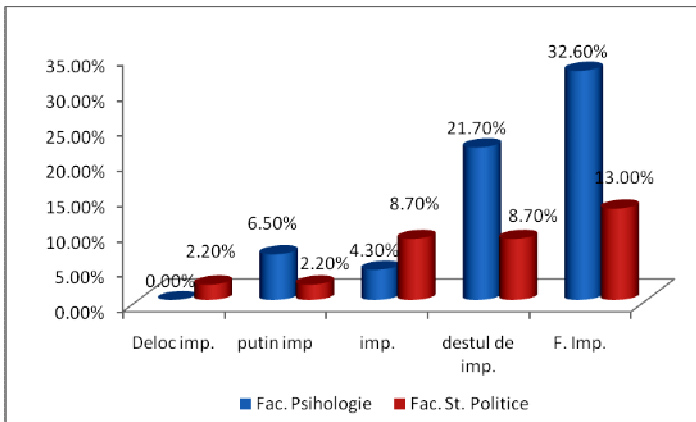
Graphic no. 10. Spending time with friends

Achieving the body image close to the ideal one appears to be one of the most important factors for students who engage in sports activities, with a percentage of 65% (Psychology) and 34.5% (Political Sciences) agreeing to its importance (graphic no. 11).



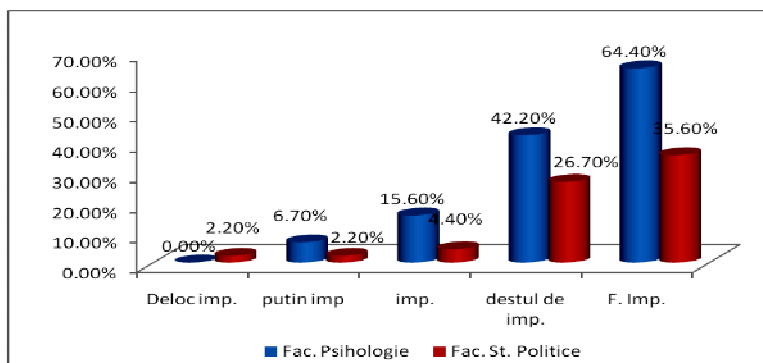
Graphic no. 11. Improved body image

A considerable number of those questioned practise various sports activities on a regular basis in order to diminish their stress. Of these, 32.6% (Psychology) and 13% (Political Sciences) consider sports activities primordial in reducing or controlling stress (graphic no. 12).



Graphic no. 12. Controlling stress

One of the essential reasons for engaging in sports activities is the individual desire of maintaining health, both on a physical level and mental one. Supporting this idea we have 64% of the students from Psychology and 35.6% of those from Political Sciences (graphic no. 13).



Graphic no. 13. Physical level and mental health

DEBATES

International literature has provided a generous amount of articles approaching the attitude of various people of different ages in regard to sports. From a study designed by Seabra & CO. (2007) we can acknowledge that engaging in sports activities is more popular among boys than girls, boys being more active than girls in a sports domain, due to a decreasing rate of interest manifested in girls as they approach the age of 18. In a different study designed by Sleaf and CO. (2007), with the purpose of determining the relation between leisure time and sports activities, it stood out that students spend most of their spare time in front of the television or computer, an amount of time that's double to that allotted to sports.

The number of students comprised in this study was limited in order to allow further globalisation to the entire group of students (locally), offering a good starting point for further ampler studies at a local or regional level.

CONCLUSIONS

The students questioned presented an active lifestyle from the point of view of the involvement in sports activities, their favourite physical activity being jogging, activity which requires a strong aerobe effort. This choice raises a series of questions related to the material possibilities of those in question, whether this choice is also determined by financial factors or if the students simply enjoy activities practiced outdoors to the detriment of attending a specialised gym and using special equipments.

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STUDY OF TECHNICAL TRAINING OPTIMIZATION AT UNEVEN PARALLEL BARS - WOMEN JUNIORS' LEVEL

POTOP VLADIMIR¹, CÎMPEANU MARIANA² &
NICULESCU GEORGETA³

ABSTRACT. In this paper, the authors highlight the content of uneven parallel bars technical elements learning and improvement at junior female gymnasts' level. For this purpose, we started from the premise that the individualized use of preparatory exercises during the training sessions will bring continuity to the workouts at uneven parallel bars and successful participation in the contest. This led to a case study carried out in the School Sports Club No. 2 in Bucharest, with a training group of 5 junior gymnasts, 12-14 years old, who participated in Women Juniors II class. The study was conducted over a period of three training mezzocycles (1.II. - 3.IV.2010), covering the preparatory period - basic stage, the pre-competitive stage and the competitive stage. Each stage of training was focused on the dynamic learning of the technical elements, on part I and II of the exercise and also on the scoring in the contest. The results of the study highlight the dynamics of the technical elements learning throughout the training mezzocycles and the increase of the execution scores from one test to another. The selection of the most effective preparatory exercises for learning and perfecting the technical elements at uneven parallel bars in different training stages highlights the technical training level and the successful participation in the contest, fact that confirms the hypothesis of the study performed.

Key words: artistic gymnastics, learning, technical training, uneven parallel bars, planning

REZUMAT. *Studiu privind optimizarea pregătirii tehnice la paralele inegale la nivelul junioarelor.* În această lucrare autorii evidențiază conținutul învățării și perfecționării elementelor tehnice la paralele inegale, la nivelul gimnastelor junioare. Pentru aceasta, s-a pornit de la premiza că folosirea individualizată a exercițiilor pregătitoare în cadrul pregătirii va conduce la asigurarea continuității pregătirii la paralele inegale și participarea cu succes în concurs. Aceasta a condus la organizarea unui studiu de caz în cadrul Clubului Sportiv Școlar nr.2 din București, având în pregătire 5 gimnaste junioare 12-14 ani, care au participat la categoria Junioarelor II. Studiul s-a desfășurat pe o perioadă de trei mezzocicli de pregătire (1.II.– 3.IV.2010), cuprinzând perioada pregătitoare etapa de bază, etapa precompetițională și perioada competițională. În cadrul fiecărei etape de pregătire s-a urmărit dinamica învățării elementelor tehnice, partea I-a și a II-a a exercițiului și, nu în ultimul rând, nota obținută în concurs. Rezultatele studiului evidențiază dinamica învățării elementelor tehnice în cadrul mezzocicliurilor de pregătire și creșterea mediilor de execuție de la o testare la alta.

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Alegerea celor mai eficiente exerciții pregătitoare, în învățarea și perfecționarea elementelor tehnice la paralele inegale în diferite etape de pregătire, scoate în evidență nivelul pregătirii tehnice și participarea cu succes în concurs, ceea ce confirmă ipoteza studiului efectuat.

Cuvinte cheie: gimnastica artistică, învățare, pregătire tehnică, paralele inegale, planificare

INTRODUCTION

The actual artistic gymnastics, by the new modifications of the Code of Points, introduces a new content of the exercises as for the assessment and composition of these ones by difficulty value, requirements per groups of elements and value of high difficulty elements linking.

In artistic gymnastics, the role of the technical training is very important and is in close interdependence with the other components, thus a poor physical training leads to a wrong, faulty technique, and hence to the failure in the competition. Also, a good technical training based on a sound physical training but lacking of adequate psychological preparation results in poor performances (Potop V., 2008).

The specific character of each artistic gymnastics event is given by the structure and number of technical elements, by the complexity, originality, spectacular character materialized in the maximum efficiency achieved during competition. (Dragnea, A., Mate S., 2002).

The process of learning the gymnastics movements is a system of successive actions of the teacher (coach) and of the athlete. These actions have a connection and a sequence distributed in time. Thus, the whole period of learning new exercises can be divided into *three linked stages*: initial learning stage, thorough learning stage and settlement & improvement stage (Grigore, V., 2001).

In conformity with the requirements and the specific character of the apparatus, the elements will be presented on several structural groups, defined not only by way of execution but also by their purpose, as follows: mounting, swings and under-swings, circles, elements with release and grips of the bars and dismounts (Grosu E., 2004).

The **study goal** is to highlight the contents of learning and improvement of the technical elements at uneven parallel bars at junior gymnast's level.

Study hypothesis. We believe that the selection of the most effective preparatory exercises for learning and perfecting the technical elements at uneven parallel bars in different stages of training will emphasize the successful participation in the contest.

STUDY ORGANIZATION AND CARRYING OUT

We started from the premise that the use of individualized preparatory exercises during the workouts will bring continuity to the training at uneven parallel bars and successful participation in the contest.

For this purpose a study of case was conducted in the School Sports Club no. 2 of Bucharest, with a training group of 5 junior female gymnasts of 12-14 years old who participated in the Junior II class.

The study was conducted over a period of three training mezzo-cycles (1.II. - 3.IV.2010) including the pre-competitive stage and the competitive stage.

- 1st stage: basic preparatory period (1.II.- 20.II.2010) –*initial testing* of the technical elements learning level at uneven bars (free circle and back giant with backwards double tucked salto) and application of the training means specific to mezzo-cycle no.1;
- 2nd stage: pre-competitive stage (22.II-14.III.2010) –*intermediate testing* of the technical elements learning level at uneven bars (part I and Part II of the context exercise) and application of the training means within the pre-competitive mezzo- cycle no. 2;
- 3rd stage: competitive period (15.III- 3.IV.2010) –*final testing* of the technical elements learning level at uneven bars (integral exercise for verification and during competition) and application of the training means within the competitive mezzo- cycle no. 3.

RESEARCH METHODS USED

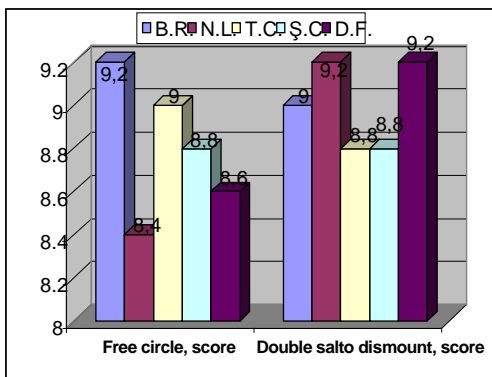
- method of bibliographic study- documentation of the specialty literature
- method of observation : it was used throughout the study both in training sessions and participation in the contest;
- method of experimental study – the goal was to confirm or invalidate the efficient use of the preparatory exercises during the technical training at uneven bars;
- video method – records during the training sessions, remarks on the technical execution;
- statistical-mathematical and plotting method

ACTIVITY CARRYING OUT

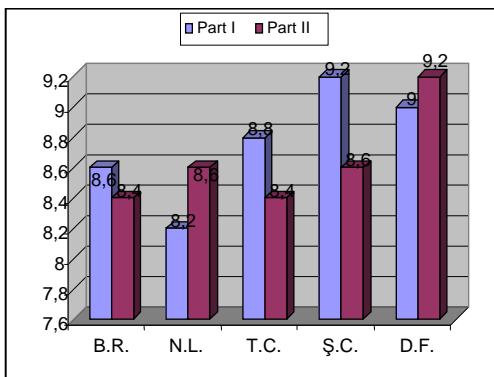
The study was conducted throughout a two months period (February - March 2010), including 3 training mezzo-cycles (basic, specific and competitive training), 57 training sessions.

The content of the study emphasizes the goals and the means of the training mezzo and micro-cycles within the technical training at various apparatus during the preparatory period and the efficiency of using preparatory exercises throughout the technical training at uneven parallel bars. It is also highlighted the competitive training, which has as final target the turning into good account of the technical training level at uneven parallel bars by the participation in contest.

RESULTS OF THE STUDY



Graph no.1. Dynamics of technical elements learning – initial testing



Graph no.2. - Dynamics of technical elements learning – intermediate testing

The graph no.1 shows the results obtained by the female gymnasts in the initial stage as for the dynamics of learning the technical elements during the initial testing at the training mezzo-cycle no.1 start. The results of the calculations show an average of 8.8 points for the technical execution of the free circle and 9.0 points at dismount from back giant by double tucked/pike salto backwards.

In graph no.2 are listed the results obtained by the female gymnasts during the pre-competitive stage regarding the dynamics of the technical elements learning within the intermediate testing at the end of training mezzo-cycle No.2. The results of the calculations highlight an average of 8.76 pct. for the technical execution of part I of the contest exercise and 8.64 points for the execution of part II.

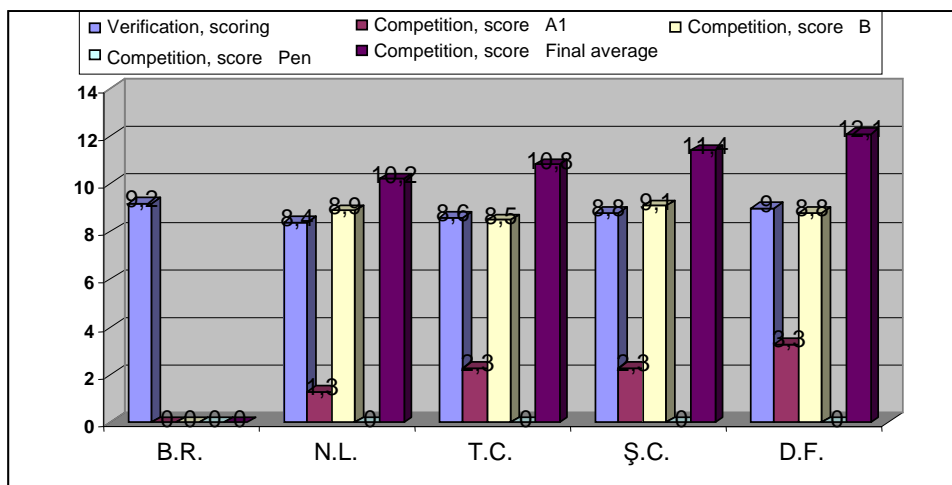
Table no. 1.**Results of the technical training at uneven bars, mezzo-cycle no.3**

N P	Verification, scoring	Competition, scoring			
		A1	B	Pen	Final average
B.R.	9.2	-	-	-	-
N.L.	8.4	1.30	8.90	0.0	10.20
T.C.	8.6	2.30	8.50	0.0	10.80
Ş.C.	8.8	2.30	9.10	0.0	11.40
D.F.	9.0	3.30	8.8	0.0	12.10
Statistical Indices					
Mean	8.8	2.3	8.825	0.0	11.125
S.E.M.	0.14	0.41	0.125	0.0	0.41
S.D.	0.32	0.82	0.063	0.0	0.81
Coef. Var.	0.035	0.35	0.028	0.0	0.073
Sum	44	9.2	35.3	0.0	44.5

Note: the gymnast B.R. had an accident at the hand joint one week before the contest and she did not participate in the National School Championships in Buzău (1-3.IV.2010).

In table no.1 are listed the results obtained by the gymnasts during the competitive period as for the dynamics of technical elements learning within the final test, at the end of the training mezzo-cycle No.3. The results of the calculations show an average of 8.8 points for the performance of the integral exercise during the verification training and the execution for contest, having an average of the exercise difficulty of 2.3, the execution score of 8.825 points and the final average of 11.125 points (graph no.3).

Analyzing the results of tests within the junior gymnasts' training in both workouts and competition, we highlight a progress regarding the technical performance from a verification to another and especially the competition results (Dan Florin - 3rd place at parallel bars).



Graph no. 3. Dynamics of technical elements learning – final test

CONCLUSIONS

1. A correct learning of the basic technical elements at uneven parallel bars contributes to the improvement and the increase of the exercise contents difficulty and also to the fulfillment of the specific requirements at this apparatus.

2. The correct planning of the goals and of the methods content per mezzo-cycles ensures a continuous and efficient technical and physical training at uneven bars in different training stages.

3. The results of the study prove the dynamics of technical elements learning during the training mezzo-cycles and the growth of the execution averages from one test to another.

4. The efficient use of the algorithmic schemes for learning and improving the technical elements at uneven parallel bars contributes to the optimization of the technical training and to a successful participation in the competition.

5. The selection of the most effective preparatory exercises for learning and perfecting the technical elements at uneven parallel bars in different stages of training highlights the technical training level and the successful participation in the contest, which confirms the hypothesis of the study performed.

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CLASSIC AND MODERN REGARDING THE PRACTICE FORMS OF PHYSICAL EXERCISE WITH PRIMARY AND SECONDARY SCHOOL STUDENTS IN ROMANIA

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BAR SANDA² & BOCA ALINA²

ABSTRACT. This article seeks to present the practice forms of physical exercise that have undergone significant changes in society in recent years. Presentation is based on the taxonomy reported in physical education by specialized disciplines. There are forms of physical exercises practice that were very beneficial for students considered to be mandatory forms in the Romanian education but not practiced anymore (for example, the physical education time or 'minute', gymnastics in the school day regime, compensatory gymnastics, etc.). Also, there are practice forms with great development and very motivating for students because of strong anchoring in social life (e.g. traditional cups).

Key words: exercise, practice, education, primary, secondary.

REZUMAT. *Clasic și modern în formele de practicare a exercițiilor fizice cu elevii din învățământul primar și gimnazial din România.* Articolul urmărește să prezinte formele de practicare a exercițiilor fizice care au suferit modificări importante în societate în ultimii ani. Prezentarea este raportată la taxonomia fundamentată în domeniul educației fizice de către disciplinele de specialitate. Există forme de practicare a exercițiului fizic care erau foarte benefice pentru elevi, forme considerate a fi obligatorii în învățământul românesc dar care nu se mai practică (de exemplu momentul de educație fizică, gimnastica în regimul zilei de școală, gimnastica compensatorie etc.) și există forme de practicare a exercițiilor fizice care cunosc o dezvoltare foarte mare fiind foarte motivante pentru elevi datorită ancorării puternice în viața socială (de exemplu cupele devenite tradiționale).

Cuvinte cheie: exercițiu fizic, practică, învățământ, primar, gimnaziu.

Practicing of physical exercises can begin in early years. At first, parents do exercises with little children, and not long after that the children begin to develop and play or move by themselves. In kindergarten they begin to play with other children, which mean that physical exercise is organized. But the real exercise begins organizing the school, where an experienced teacher has

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this designation. In addition there are school clubs or private sports associations or Children's Palace, which organizes activities for children where they can spend their leisure time.

It is desirable that the exercises to be conducted by a specialist in an organized manner because children are more motivated and the finality is more precise. Racing with friends is very motivating for children and also is the chance to participate in various competitions where they can win prizes and diplomas, cups and medals, which will stimulate further in the future.

According to theories in the field, the practice forms of exercise with primary and secondary school students in Romania are structured according to the following classification:

I. The school day regime:

- I.1. Included in the curriculum
 - I.1.1. Physical education class
 - I.1.2. Sports class
 - I.1.3. The performance in classes and schools with physical education program
- I.2. Not included in the curriculum but mandatory
 - I.2.1. Morning gymnastics
 - I.2.2. Compensatory gymnastics
 - I.2.3. Gymnastics in the school day system
 - I.2.4. Physical education time or 'minute'

II. The spare time:

- II.1. Amateur sports activities
 - II.1.1. Competitive activities
 - school championship
 - crosses, traditional cups
 - Republican school championships
 - orienteering
 - II.1.2. Not competitive activities
 - tourism activity
 - sports festivals, camps
 - technical and applied sports
- II.2. Performance sports activities
 - sports clubs and associations

The practice forms of physical exercise differ from primary to secondary education because of the development of children and because of the objectives which has primary physical education classes (I-IV) and secondary school (V-VIII).

Because the practice forms of physical exercise are known to all, we will continue to present this lesser known forms or less practiced today, although they have been beneficial for students. Yet we will present also the practice forms that are in a great development.

MORNING GYMNASTICS

Although it is no longer practiced in an organized manner with students, the morning gymnastics is one of the most refreshing and beneficial form of physical exercise. For those who want a healthy lifestyle it is very useful to allow a few minutes in the morning to exercise. This kind of practice improves the functioning of the circulatory and respiratory apparatus, has a positive effect on the nervous system, and prepares the body to cope with the daytime effort.

Morning gymnastics lasts about 6-7 minutes and includes simple exercises, running on the spot, light jumping and breathing exercises. It is important that the windows are open when performing the exercises.

COMPENSATORY GYMNASTICS

The compensatory gymnastics was often practiced in schools which provide technological education workshops, activities requiring static positions. In such cases students are tense than in other activities, and their ease is through simple exercises that do not require much space or teaching materials (balls, fixed ladder, mattresses, etc.).

The compensatory gymnastics is beneficial for preventing deficiencies of spine, e.g. scoliosis, kyphosis, lordosis, etc. which are not very easy to correct.

Physical education teacher's role here is to demonstrate and practice with students specific exercises for this type of disease. Exercises should be chosen according to the profile of each workshop. These exercises are intended to prevent and correct certain diseases or to relax tense muscles of the students.

GYMNASTICS IN THE SCHOOL DAY SYSTEM

Gymnastics in the school day system may be made between any classes under the leadership of any teacher. Exercises should be light, simple and accessible and they should address main muscle groups. It can be used about 6 to 8 exercises.

In this activity students practice exercises in the yard, using materials from the sport's gym. It is preferred this activity instead of resting in the classroom or hallways.

One benefit of gymnastics in the school day system is that students will be safe from the social temptations like smoking in bathrooms or corridors.

PHYSICAL EDUCATION TIME OR 'MINUTE'

Physical education time takes about two minutes and may take place at any class, being designed to relax students. It includes light exercise for the joints of the hands, neck, spine and legs.

This practice form is very beneficial because students' position in the bank and extended writing can cause tensions, especially to joint of hands and to muscles of back.

Also, the physical education time may help the teacher during class when students lose motivation and attention. To harness the benefits of physical education time teachers of all disciplines must work with physical education teachers to build their practice forms of exercise.

Students will be more relaxed and could concentrate better after that they performed a few minutes of some light exercises.

In addition to the practice forms of physical exercise by students in the school day arrangements are forms of organizing their leisure time. These include: amateur sports activities and performance sports activities.

COMPETITIVE ACTIVITIES

Crosses, traditional cups and other similar sports activities

Crosses and traditional cups may be arranged to continue the tradition of a school, organization or during a holiday or anniversary.

An example is The Caransebeș County Cross organized for Children Day, celebrated through sport (romanianathletics.blogspot.com, 2009).

The Hope Cup - is a contest held in Sibiu, organized by County School Inspectorate, for children in grades III and IV.

This contest is designed to motivate students to choose sport, to develop their team spirit and fair play (www.calificativ.ro, 2010).

Danone Cup - is open to children aged 10 to 12 years who love football. At this cup are allowed to participate children enrolled to a professional club or just with their school teams (www.cupadanone.ro, 2010).

McDonald's High School Cup - includes basketball and football and is organized in partnership with the County School Inspectorate and the County Directorate of Sport. This takes place approximately between 15 to 22 February (<http://www.cluburbanlegends.com>, 2010).

High School Street Dance Cup - two years after the inauguration the High School Street Dance Cup has experienced significant growth, involving a growing number of dance schools: StreetBeat (Constanța), HardBeat (Constanța), Diamonds Crew (Constanța), Next Level Kit (Craiova), In Action Crew (Bistrița - Năsăud), M&Q (Oradea), New Style (Brașov), Stance (Galati), Urban Legends (Cluj), One Stop Studio (Petroșani), Crazy V Media (Buzău), etc.

The competition takes place approximately one month (from 21st of February to 21st of March) in several cities: București, Brașov, Constanța, Cluj, Oradea, Bistrița, Craiova, Galați, Petroșani și Buzău.

The winner teams from every city participate in the National Grand Final in Bucharest with the seven teams from Bucharest, where he will designate The School Street Dance Champion.

Childhood Olympics – it is a competition held in Cluj-Napoca by one of the malls in the city. For children aged between 4 to 7 years were held tricycles contests, and for older children were held bike and skateboard competitions, with two events: speed and slalom.

In this contest were also held competitions in basketball and football for children aged 8 to 12 years (www.evenimenteincluj.wordpress.com, 2010).

Children's Festival - was held in Oradea and took place over three days, with one day allocated to sport. In this day were organized competitions, such as: handball, basketball, speed running, long jump, badminton, table tennis, bike contests, skateboard, dance, cheerleading, etc. (www.oron.ro, 2010).

These practice forms of physical exercise have rapidly grown more and more participants are recorded with each edition. These can be considered aspects of modern improvement in the forms of exercise practice because they are sustained by sponsors that contribute to the award of students.

Republican School Championships

Republican Championships are sporting events organized in schools and colleges. It is an exclusive form of organization for junior sport. Their establishment was born in 1944, the name deriving from the system of state organization, The Romanian Socialist Republic.

After August 23rd 1944, with the establishment of the communist regime, basketball is beginning to have a mass character, like most sports in that time. Republican championships are being held (from 1947), it is notated

the participation at the first Balkan Games (1946), championships are held annually at schools and universities, also basketball festivals for children are being organized (<http://www.radiomedia.hum.ro>, in 2010).

Orienteering (developed from tourism activity)

Although this activity had a non competitive form, tourism activity managed to attract many followers through competitions organized on different routes in a given period of time, making this form of exercise practice a competitive form, named, now-a-days, orienteering.

NOT COMPETITIVE ACTIVITIES

Tourism activities

In these activities the students can organize trips to various tourist spots in town such as the Botanical Gardens, museums, memorial houses, cathedrals. If the city does not have such opportunities they can go in surrounding areas.

Camps / Excursions

Camps last about a week, unlike the trips which usually carries over a weekend and involve, sometimes.

Sports fiesta

Sports festival can be organized in the festivities named "School Days" and the parents can take part too. Children will have the satisfaction of being watched by family members, being more motivated.

Extreme Sports

In recent years we note a growing attraction for young people in so-called "extreme sports". Some of them believe that training for football, basketball, hockey, handball, volleyball, etc. can be boring or with too many rigid rules, so they prefer to ride a skateboard, snowboard or bike or to hike. Although these sports can be extremely dangerous, the child can be protected from injury by using protective equipment which is mandatory (www.calificativ.ro, 2010).

Technical and applied sports

Lately, there has been some discussion on the topic dilemma: Amateur radio is a sport or a hobby. The problem is not new and has occurred in countries after the so-called "popular democracy". Amateur radio, in order to be supported

by the state, was included in technical and applied sports. These practice form is useful for those who want to pursue a military career because it offers them to learn, since childhood, interesting and useful things for their future profession. Although this kind of sports are considered non competitive, in recent years there has been performed gliding and skydiving competitions. This may be beneficial for attracting children to practice these sports.

In addition to amateur radio sport we can call technical and applied sport also model aircraft, telegraphy, chess, skydiving, gliding (www.radioamator.ro, 2010).

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DETERMINANTS OF SEDENTARY BEHAVIOR OF YOUNG PEOPLE IN ROMANIA

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ABSTRACT. There is an increase in sedentary lifestyle and a dramatic decline in young people's participation in physical activities and therefore a deterioration of health. Sedentary and obesity related diseases tends to become the twenty-first century problems (Rossner 2002). In Europe, the highest rate of overweight adults and adolescents are in South Eastern part (Lissat et al 2004).

Keywords: physical activity, sedentary, obesity, youngs, Romania.

INTRODUCTION

Due to rapid technological and societal changes, opportunities to undertake convenient and attractive sedentary behaviours as part of a contemporary lifestyle are likely to have increased.

The physical activity, physical fitness and health in young people as part of a contemporary lifestyle are likely to have increased. Although the relationship between physical activity and different sedentary behaviours may be complex (Marshall, Biddle, Sallis, McKenzie, & Conway, 2002). Childhood obesity is rising steadily in the industrialized world and low levels of physical activity are likely to be a primary cause.

WORKING METHODOLOGY

The tool used was a questionnaire investigation.

Students were given a questionnaire who had completed their free time (with parental consent), outside school hours, three days a week and a day during the weekend.

It has been applied to a number of 195 subjects enrolled students between 13-14 years, from the following counties: Cluj, Covasna, Mures, Sibiu, Satu-Mare, Harghita, Bistrita-Nasaud, Zalau.

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Aim is to identify various factors that have a bearing on young people's sedentary behavior.

Behavioral categories of students

Sedentary activities were designated as those using technological equipment, computer, internet surfing, watching TV, or games on the internet dealing with leisure, and those that "socializing" with friends (discussions, speaking on telephone, etc.). Physical activities including physical exercise and sport on an organized or not, tourism or active (biking, cycling, etc.).

Processing and analysis

For processing and analysis program was used SPSS for Windows V14. 0. The information obtained was coded, quantified and incorporated into two SPSS files.

To examine similarities and differences between sedentary activities and physical activity is practiced in accordance with socio-economic status, gender-based statistical method was used MANOVA (multifactorial analysis of variables).

RESEARCH RESULTS

In the research were tested for differences in physical activity and inactivity in both sexes. The dependent variable was composed of sedentary activities with technological contribution to the work of "socialization" and physical activity. Their analysis was conducted separately for both weekdays and for weekend day.

Weekdays

On weekdays, access technological tools is much higher than before 1989, but still, not yet, at the level of other Western countries. Boys than girls are more involved in accessing technology devices. The boys participate in more physical activity while those in the "socialized" most are girls.

Day of Week-end

The research shows that on the weekend students and schoolgirls using less equipment technology, "socialize" more and participate in various physical activities other than during the week.

DISCUSSION

The characteristics of socio-economic standard, as an expression of living standards, can determine the behavior of youth. The economic conditions of Romania influence in particular the phenomenon of leisure of young people. We believe that the level of economic development, low living standards are motivating factors and decisive in terms of youth participation in physical activities in general, and sports performance practice in particular.

CONCLUSIONS

Compared to what would be "ideal", the young have a low level of physical activity, but not that it is still widespread for all young people. Values vary from one geographical area to another, from one country to another, from one individual to another.

Globalization has a strong influence on the livelihoods of populations. Major changes occur in young lives that have access, increasingly, the latest in technology. Young people spend more time on the computer than stadiums, gyms, parks or special places to play.

Due to the physical human development under the average, typical, unfortunately, for postdecembrist period, for different reasons young people are much less involved in physical activities and sport. Many of those waiting to finish high school to emigrate. To be able to intervene positively, vigorously and effectively in regard to the avoidance of sedentary behavior and activities involving young people in physical activities for the benefit of their health, are required more extensive investigations carried out by multidisciplinary teams of experts to consider many aspects, from the cultural to the educational, environmental, social, and geographical.

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STUDY OF SPECIFIC PHYSICAL TRAINING INFLUENCE ON THE TECHNICAL TRAINING IN PERFORMANCE WEIGHTLIFTING

ULĂREANU MARIUS VIOREL¹ & POTOP VLADIMIR¹

ABSTRACT. In this paper the authors point out the influence of the specific physical training on the technical training in juniors' performance weightlifting. For this purpose, we have organized a study in the Sports Club "Rapid" of Bucharest, Department of Weightlifting. The study was conducted over a period of three pre-competitive training micro-cycles (1.II.2010 - 6.III.2010), with a group of four athletes, aged from 13 to 19 years, who have competed in the Juniors' National Championship, Bucharest. The study results reveal the relationship of the percentage and number of reps in a training micro-cycle, the volume of training means per workout, the performances achieved in the two styles (technical snatch and technical clean and jerk) and the athletes' ranking in competition. In the end we can conclude that the optimal specific physical training influences the technical training level and improves the performance in competition, which confirms the hypothesis of study that we have proposed.

Key words: weightlifting, technical training, specific physical training, performance

REZUMAT. *Studiu privind influența pregătirii fizice specifice asupra pregătirii tehnice în haltere de performanță.* În această lucrare autorii prezintă influența pregătirii fizice specifice asupra pregătirii tehnice în haltere de performanță la nivelul Juniorilor. Pentru aceasta am organizat un studiu în cadrul Clubului Sportiv „Rapid” din București, secția Haltere. Studiul s-a desfășurat pe o perioadă de 3 microcicluri de pregătire precompetițională (1.II.2010 - 6.III.2010), cu un grup de 4 sportive, cuprinși între vârstele 13- 19 ani, care au concurat la Campionatul Național de Juniori, București. Rezultatele studiului scot în evidență, relația procentajelor și numărul de repetări în cadrul unui microciclu de pregătire, volumul mijloacelor de pregătire pe fiecare antrenament, performanțele obținute în concurs la cele două procedee (smuls tehnic și aruncat tehnic), precum și locurile ocupate de sportive în concurs. În finalul lucrării putem concluziona că, asigurarea unei pregătiri fizice specifice optime influențează nivelul pregătirii tehnice și contribuie la îmbunătățirea performanțelor în concurs, ceea ce ne confirmă ipoteza studiului propusă.

Cuvinte cheie: haltere, pregătire tehnică, pregătire fizică specifică, performanță

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INTRODUCTION

The rapid growth of the performances in weightlifting, phenomenon that we are permanently witnessing, is based on the improvement of the training methods and technique.

The modernization of the materials and equipment for training and competition (stage, platform, podium, barbells, arbitration and display equipment, computer programs for competitions conducting) have imposed the emancipation and selection of the lifting styles, of the arbitration regulations and resulted in the increased performance and spectacular character of this sports branch (Romanian Federation of Weightlifting).

The specific physical training contents is primarily oriented towards the development of the capacity for effort specific to this sport branch, as well as towards the combined motor skills that determine a high specific efficiency (Teodorescu S., 2009).

The technical training joins the assembly of measures, means and methods used for learning the technical elements and procedures specific to a sports branch. (Teodorescu S., 2009).

In weightlifting, the number of training means decreased significantly after rationalization, especially because their inventory does not include tactical means and the tactical thinking manifests itself during contests only. So, the number of training means in this branch of sport is formed of physical and technical training exercises (Nicu A., 1993).

In most sports, the combination of these three biometric traits leads to different results, each trait having a larger contribution depending on the situation. In weightlifting, the dominant combination of the bio-motor traits “strength, speed and resistance” for high performance achievement represents the relation of these ones, reflecting the sport specific character and the development of each trait as well, depending on the extent of their participation in the sports or trial execution (Bompa, T., 2002).

The main **purpose** of this paper is the presentation of the specific physical and technical training contents in competitive weightlifting.

HYPOTHESIS OF THE PAPER

We consider that an optimal specific physical training will influence on the level of the technical training and will contribute to the improvement of performances in competition.

Research methods used:

- Method of bibliographic study;
- Method of experimental study;
- Method of observation;
- Statistical-mathematical („KyPlot” program - multiple comparisons test) and plotting method.

RESEARCH ORGANIZATION AND CARRYING OUT

In order to highlight the relationship of the physical and technical training means in performance weightlifting, we have conducted a study within the „Rapid” Sport Club of Bucharest, Weightlifting Department.

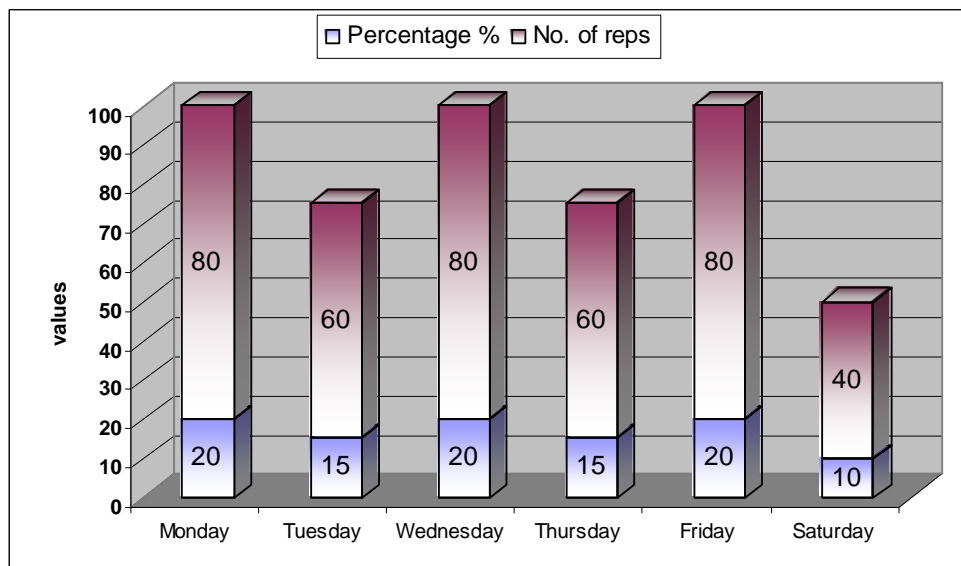
The study was conducted over a period de 3 micro-cycles of pre-competitive training (1.II.2010 - 6.III.2010), with a group of 4 athletes, 13 to 19 years old, who have competed in the Juniors’ National Championship of Bucharest.

CONTENTS OF THE TRAINING**Table no. 1.**

Micro-cycle no.2, pre-competitive stage, 8-13.II.2010
No. of reps-400, Technique-40%-160 reps, Strength-60%-240 reps

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Percentage %	20	15	20	15	20	10
No. of reps	80	60	80	60	80	40
C	Gf.S	Gf.P	Gf.S	Gf.P	Gf.S	Gf.P
O	85%,3x4	90%,3x4	85%,3x4	90%,3x4	85%,3x4	90%,3x4
N	90%, 3x4	95%,2x4	90%, 3x4	95%,2x4	90%, 3x4	95%,2x4
T	95%, 3x2	Ar.Th	95%, 3x2	Ar.Th	95%, 3x2	Tr.Sm.
E	Sm.Th.	85%,1+2x3	Sm.Th.	85%,1+2x3	Sm.Th.	90%,4x4
N	85%,2x5	90%,1+2x3	85%,2x5	90%,1+2x3	85%,2x5	95%,2x3
T	90%,2x4	Tr.Sm.	90%,2x4	Tr.Sm.	90%,2x4	
S	Tr.Ar.	90%,4x4	Tr.Ar.	90%,4x4	Tr.Ar.	
	85%, 4x4	95%,2x3	85%, 4x4	95%,2x3	85%, 4x4	
	90%,3x3		90%,3x3		90%,3x3	
	95%, 3x2		95%, 3x2		95%, 3x2	

Key of means contents: (Ar.Th.- technical snatch; Gf.S – back squats; Gf.P – chest squats; Sm.Th.- technical snatch; Tr.Ar.- clean and jerk pulls; Tr.Sm – snatch pulls).



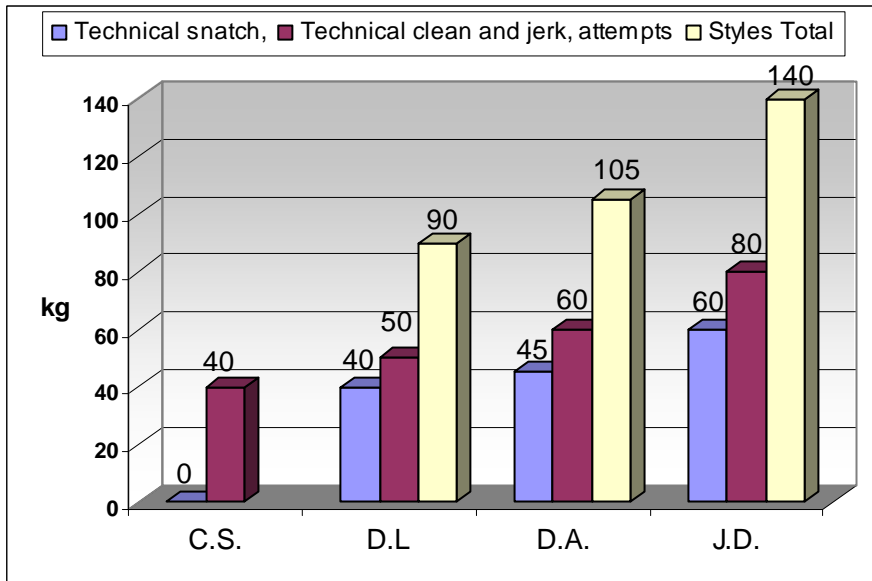
Graph no.1. Relation of the intensity percentage and the number of reps in micro-cycle no.2

Table no. 2.

Results in competition, Juniors' National Championship, Bucharest, 2-6.III. 2010

N .P.	Technical snatch, attempts			Max. lifted weight	Technical clean and jerk, attempts			Max. lifted weight	Overall sum of weights	Ranking in EVENT
	1	2	3		1	2	3			
C.S.	25	30	30	25	35	40	41	40	65	X
D.L	40	-	-	40	50	-	-	50	90	VI
D.A.	45	55	55	45	60	70	70	60	105	VIII
J.D.	50	55	60	60	70	75	80	80	140	II
Statistical ind.				X1				X2	X3	
Mean				42.5				57.5	100	
S.E.M.				7.21				8.53	15.6	
S.D.				14.4				17.07	31.3	
Variance				208.3				291.6	983.3	

N .P.	Technical snatch, attempts			Max. lifted weight	Technical clean and jerk, attempts			Max. lifted weight	Overall sum of weights	Ranking in EVENT
	1	2	3		1	2	3			
Coeff. Var.				0.33				0.29	0.31	
Parametric multiple comparisons				Group1				Group2	Group3	
Group1							0.953 NS (P>0.05)	3.656* (P<=0.05)		
Group2				0.622				2.702 NS (P>0.05)		
Group3				0.013			0.057			



Graph no.2. Results obtained in competition

CONCLUSIONS

The results of the study point out the relationship of the percentages and the number of reps during a training micro-cycle, the volume of training methods per each workout (table no.1), the performances achieved during competition at the two styles (Technical Snatch and Technical Clean and

Jerk), insignificant differences between the technical styles and significant differences at $P \leq 0.05$ between Technical Snatch and Total of Styles, also the ranking of the female athletes in competition (table no.2 and graph no.2).

In the end of the paper we can draw the conclusion that an optimum specific physical training influences upon the level of the technical training and contributes to the improvement of the performances in competition, fact that validates the proposed hypothesis of the study.

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THE IMPORTANCE OF KINESIOTHERAPY IN EQUILIBRATING AND CORRECTION OF THE SCOLIOSIS OF THIRD DEGREE AT PUBERTY – CASE STUDY –

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TRIF IONUȚ MUGUREL³ & MAN CLAUDIU ADRIAN³

ABSTRACT. The hereby paper presents a case study, about scoliosis with major curve: right thoracic-left lumbar, with severe deformation. The study was carried out during a period of 6 months, the patient had to work 5 days per week under the rigorous supervising of the kinesiotherapist. The purpose of the specific exercises was to equilibrate the scoliosis. During the first stage, the objective was to prepare the body of the patient for medical gymnastics. Thus, during a period of 10 days the back was taught the correct position by using the back school technique. On the second stage, the purpose of the exercises was to develop the underdeveloped muscles from the thoracic and lumbar area. In the last phase, the exercises were focused on scapulohumeral muscles of the left hand, because the lumbar area of the patient was normally developed, and the vertebral column acquired a normal degree of deviation. After the treatment program applied the subject will have in time an almost normal carriage and regain a normal attitude.

Key words: scoliosis, puberty, scoliosis correction, kinesiotherapy.

Rezumat. În lucrarea de față se prezintă un studiu de caz, o scolioză cu curbură majoră: toracică dreaptă – lombară stângă, cu diformitate severă. Studiul a fost efectuat pe o durată de 6 luni, subiectul lucrând 5 zile pe săptămână sub atenta supraveghere a kinezoterapeutului, având ca scop, echilibrarea scoliozei prin exercițiile specifice. În prima fază s-a stabilit ca obiectiv, pregătirea organismului pentru gimnastică medicală, efectuându-se pe o durată de 10 zile școala spatelui. În a doua fază, exercițiile au avut ca scop, dezvoltarea musculaturii subdezvoltate din zona toracală și cea lombară. În ultima fază, exercițiile au fost concentrate pentru musculatura scapulo-humerală a membrului superior stâng, deoarece zona lombară a subiectului dezvoltându-se armonios, iar coloana vertebrală prezentând grade normale de deviație. Pe întreaga perioadă a studiului, pe lângă exercițiile de kinezoterapie au mai fost folosite cu scop terapeutic, electrostimularea și masajul medical. În urma programului de tratament aplicat subiectul ajunge în timp la o ținută apropiată de normal și redobândește o atitudine normală.

Cuvinte cheie: scolioză, pubertate, echilibrarea scoliozei, kinezoterapie.

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INTRODUCTION

The importance of kinesiotherapy at children during their puberty period is essential in discovering, preventing and treatment of the problems related to the development of the spine.

Scoliosis is defined as a deformation of the spine, characterized by lateral curvature (namely kyphosis and hunchback), that gives the name of the scoliosis direction. The vertebral rotation is made towards the concavity of the spine.

From the curvatures' point of view, scoliosis (particularly the idiopathic one) can be:

- a) With thoracic curve (usually right); they give tall kyphosis and hunchback; they have above and below minors curves, that have a compensatory aspect; high evolution potential, accompanied by cardiopulmonary damages.
- b) With thoracolumbar curve either on the right side, either on the left; they have minor curves, they give rib deformation; they are less disgraceful and cardiopulmonary dangerous.
- c) With lumbar curve; they do not give an extremely large deformation.
- d) With major curve accompanied by various combinations; thoracic left-lumbar right, or vice versa; the deformation is generally small.

OBJECTIVES

The aim of the study was to obtain the equilibration in third degree scoliosis at puberty through proceedings including specific exercises, electro stimulation and medical massage.

SUBJECTS AND METHODS

In the hereby paper, the subject, M.D a 13 years old pupil in the 7th grade, presents a scoliosis with major curve: thoracic right-lumbar left, with severe deformation.

The study was carried out during 6 months, as the subject was working 5 days per week under the strict supervising of the kinesiotherapist, in order to equilibrate the scoliosis through the specific exercises.

In the first stage we established as an objective, the training of the organism for the medical gymnastic, by means of a kinesiotherapy program, accompanied by muscular electro stimulation and medical massage.



Kinesiotherapy exercises used in the first 10 days had the purpose of training the musculature for the effort, accustoming the organism with kinesiotherapy and recovering the spine mobility.



Initial position



Exercise no. 1

Exercise no. 1: From the initial dorsal decubitus position, with the arms along the body, the patient has to bend alternatively each knee on the chest (2 series x 16 repetitions)



Initial position



Exercise no. 2

Exercise no. 2: From the initial dorsal decubitus position, with the knees bent and the palms under the head, the patient has to pull alternatively each knee to the chest and at the same time move the head towards the chest being careful to keep the shoulders on the ground. In the initial position the patient breathes in, and in the final position she breathes out. (2 series x 16 repetitions)



Initial position



Exercise no. 3

Exercise no. 3: From the initial dorsal decubitus position, with the knees bent and the palms under the head, the patient bends the knees at the chest simultaneously, and at the same time, she brings the head towards the chest being careful to keep the shoulders on the ground. In the initial position the patient breathes in, and in the final position she breathes out. (2 series x 15 repetitions)



Initial position



Exercise no. 4

Exercise no. 4: From the initial dorsal decubitus position, the knees bent and close to each other, the arms along the body, the patient lifts the pelvis as much as her mobility allows, and then returns to the initial position. (2 series x 15 repetitions)



Initial position

Exercise no. 4

Exercise no. 5

Exercise no. 5: From the initial dorsal decubitus position, the knees bent and close to each other, the arms along the body, the patient lifts the pelvis as much as her mobility allows, and in this maximum raised position moves away the knees 3 times in a row, and then returns to the initial position. (2 series x 10 repetitions)



Initial position

Exercise no. 6

Exercise no. 6: From the initial ventral decubitus position, arms stretched, the sight forward, the patient raises alternatively an arm-the opposite leg. (2 series x 16 repetitions)



Initial position

Exercise no. 7

Exercise no. 7: From the initial ventral decubitus position, the head turned to the right, the arms and the palms at the shoulders' level (or higher, depending on the mobility from the lumbar area of each subject), the patient raises the trunk as much as the mobility affords her and leaves the head on the back. When the patient returns to the initial position, she places the head on the opposite side. (2 series x 16 repetitions)



Initial position

Exercise no. 8

Exercise no. 8: From the initial ventral decubitus position, the patient catches her leg and perform the trunk hyperextension. (2 series x 10 repetitions) (Little boat position)



Initial position

Exercise no. 9

Exercise no. 9: From the initial ventral decubitus position, with the arms stretched forward, the patient performs trunk rolling towards right (2 series x 15 repetitions) and then towards left (1 series x 10 repetitions)



Initial position

Exercises no. 10, 11

Exercise no. 10: From the initial ventral decubitus position, the patient performs the simultaneous raising of the legs. (2 series x 15 repetitions)

Exercise no. 11: From the initial lateral left decubitus position, the patient performs the simultaneous raising of the legs. (1 series x 10 repetitions)



Initial position



Exercise no. 12

Exercise no. 12: From the initial position, leaned upon the knees, keeping a distance between the knees, the patient performs the simultaneous raising of the left arms and the right leg; she returns to the initial position, then she simultaneous raises the right arm and the left leg. (2 series x 8 repetitions for each arm-opposite leg)



Initial position



Exercise no. 13

Exercise no. 13: From the initial position, leaned upon the knees, with distance between them, the patient lets down the chin towards the ground and alternatively raises each leg. (2 series x 10 repetitions on the right leg; 1 series x 10 repetitions on the left leg)



Initial position

Exercises no. 14, 15

Exercises no.14, 15: From the initial position hanging with the arms stretched, the patient performs 4 series of 30 seconds of standing in the hanging position. 2 series with the face towards the rib stall and 2 series with the back towards the rib stall.



Initial position

Exercise no. 16

Exercise no. 16: From the initial position hanging, the patient moves the legs backwards (2 series x 12 repetitions)



Initial position

Exercises no. 17, 18

Exercise no. 17: From the initial hanging position, the patient moves the legs towards right and then returns to the initial position (2 series x 12 repetitions)

Exercise no. 18: From the initial hanging position, the patient moves the legs towards left and then returns to the initial position (1 series x 8 repetitions)



Initial position



Exercise no. 19

Exercise no. 19: From the initial hanging position, the patient lifts alternatively each knee to the chest (1 series x 10 repetitions)



Initial position



Exercise no. 20

Exercise no. 20: From the initial hanging position, the patient lifts simultaneously the knees to the chest (1 series x 10 repetitions)



Initial position



Exercise no. 21

Exercise no. 21: From the initial position, standing with the arms up, the elbows flexed with the palms at the level of the back head, the skipping rope is set and the patient performs arms extensions. During the execution of the extension, the patient has to follow the palms with her eyes (2 series x 16 repetitions).



Initial position



Exercise no. 22

Exercise no. 22: From the initial position, standing with the arms along the body, the patient grips with the left hand the skipping rope and performs the arm raising. (4 series x 10 repetitions)

Exercise no. 23: From the initial position, standing with the arms along the body, the patient grips with the right hand the skipping rope and performs the arm raising. (1 series x 10 repetitions)



Initial position



Exercise no. 23

Exercise no. 24: From the initial position, sitting on the ball, with the stick situated at the level of the cervical and lumbar area, the patient performs the bending to the right (2 series x 16 repetitions)

Exercise no. 25: From the initial position, sitting on the ball, with the stick situated at the level of the cervical and lumbar area, the patient performs the bending to the left (1 series x 16 repetitions)



Initial position



Exercise no. 26

Exercise no. 26: From the initial position, sitting on the ball, with the stick close to the chest, the patient performs the raising of the stick above the head. (2 series x 15 repetitions)



Initial position



Exercise no. 27

Exercise no. 27: From the initial ventral decubitus position, the patient is leaned with her belly upon the ball, performing simultaneously the raising of the left arm and the right leg; then returns to the initial position, and after that, raises her right arm and left leg (2 series x 16 repetitions)

The exercises were done during 6 months, 5 days a week under direct supervision of the kinesiotherapist, who corrected the execution errors of the patient.

In addition, the electro stimulation was used in the recovering program, with the help of the BTL-4000 device, with 7212-four poles program, 2 in the thoracic area and 2 in the lumbar area. After almost 3 months the 0853-four poles program was also used with the poles in opposite position than 7212.

In the slackness of the back and of the paravertebral musculature, we used daily the medical massage during the first month and a half, and then alternatively the electro stimulation.

In the 2nd stage, the purpose of the exercises was to develop the underdeveloped musculature in the thoracic area and the lumbar one, as we can see from Figure no.1.

RESULTS

At the end of each month, we took pictures of the affected area, and after 4 months, we could notice some major changes in equilibrating the scoliosis. In figure no.1 dated 01.03.2010 the subject was photographed before the beginning of the recovering program, and we can see how severe the scoliosis was. Each month, there were pictures taken, to monitor the evolution of the musculature.

After the first month of exercises, we can see that the musculature responds to the kinetic exercise and the subject presents a higher mobility at the spinal level.(01.04.2010)

During the 3rd month, in the lumbar area arise some major changes, the musculature in the right lumbar area begins to settle into shape and the shoulder blades begin to be arranged in a line.

During the 4th month, the lumbar area receives an almost normal aspect, the shoulder blades are arranged in a line, and the kinesiotherapist emphasizes on the musculature of the left shoulder blade area.

In the last stage of the treatment, the kinesiotherapist emphasized the left shoulder musculature and very little the lumbar area, reaching to the final results of the study. (Figure no. 2)



Figure no. 1



Figure no. 2

CONCLUSIONS

As the treatment program applied proved, kinesiotherapy has a great importance on equilibrating scoliosis, the subject reaching in time an almost normal carriage and recovering its normal attitude.

In my opinion the results obtained were very good as we can see from the pictures, but there is compulsory the verification of the recovering proceedings in order to get the validation that the therapeutic program has given very good results. It is required the verification in other cases, too.

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