STUDIA UNIVERSITATIS
BABEŞ-BOLYAI

EDUCATIO ARTIS GYMNASTICAE

1/2016

STUDIA

UNIVERSITATIS BABEŞ-BOLYAI

EDUCATIO ARTIS GYMNASTICAE

1/2016
March

EDITORIAL BOARD
STUDIA UNIVERSITATIS BABEŞ-BOLYAI
EDUCATIO ARTIS GYMNASTICAE

EDITORIAL OFFICE OF EDUCATIO ARTIS GYMNASTICAE:
7th Pandurilor Street, Cluj-Napoca, ROMANIA, Phone: +40 264 420709, e-mail: studia.fefs@yahoo.com;
http://www.studia.ubbcluj.ro/serii/educatio/index_en.html

YEAR **Volume 60 (LXI) 2016**
MONTH **MARCH**
ISSUE **1**

S T U D I A

UNIVERSITATIS BABEŞ-BOLYAI

EDUCATIO ARTIS GYMNASTICAE

1

STUDIA UBB EDITORIAL OFFICE: B.P. Hasdeu no. 51, 400371 Cluj-Napoca, Romania, Phone + 40 264 405352

CONTENT – SOMMAIRE – INHALT – CUPRINS

STUDIA UBB EDUCATIO ARTIS GYMN., LXI, 1, 2016, pp. 5 - 15
(RECOMMENDED CITATION)

INCREASING THE ATTRACTIVENESS OF PHYSICAL EDUCATION CLASSES FOR MEDICAL STUDENTS AT UMF TG. MUREŞ BY WAY OF INTRODUCING NEW SPECIFIC MEANS OF FUNCTIONAL TRAINING

LAURA EDIT CIULEA[1*], BARNA SZABÓ-CSIFÓ[1]

ABSTRACT. Premises: this study attempts to introduce a new orientation as regards improving the physical training process of medical students at UMF Tg. Mureş by way of implementing tailored programmes of functional training in physical education classes, with the aim of optimizing general physical training for students increasing the attractiveness of physical education classes. Physical education practiced on primary, secondary and university levels plays an important part in the process of forming and developing the child's personality. Reducing the number of physical education lessons for students, as well as the time spent practicing sports is the result of a loss of perception of the formative role of physical education and sport. Encouraging and supporting various forms of practicing physical education and sport in academia requires the introduction of a number of attractive and effective means, which would increase the interest of students. **Aim:** this research aims to introduce means specific to functional training into physical education classes for students at UMF Tg. Mureş, so as to increase the attractiveness and effectiveness of lessons. **Methods:** This research was conducted during the 2014-2015 academic year, and included two groups: the experimental group made up of students from the Faculty of Medicine, and the control group, composed of students from the Faculty of Pharmacy of UMF Tg. Mureş. **Conclusions:** functional training specific means, used in the training of the experimental group proved to be more efficient and more attractive compared to traditional methods used with the control group.

Keywords: *functional training, student, tests, TRX equipment*

[1] *UMF from Tîrgu Mureş, Romania*
[*] *Corresponding Author: caffenoname@yahoo.com*

REZUMAT. ***Creşterea atractivităţii lecţiilor de educaţie fizică la studenţii de la medicină din cadrul UMF Tîrgu Mureş prin introducerea unor mijloace specifice antrenamentului funcţional. Premise:*** Prin această lucrare se încearcă introducerea unei noi orientări în ceea ce priveşte îmbunătăţirea procesului de pregătire fizică la nivelul studenţilor din cadrul UMF Tg-Mureş prin implementarea, în cadrul orelor de educaţie fizică, a unor programe adaptate de funcţional training, care au ca principal scop optimizarea pregătirii fizice generale a studenţilor, precum şi creşterea atractivităţii orelor de educaţie fizică. Educaţia fizică desfăşurată la nivel de învăţământ primar, gimnazial, liceal si universitar îndeplineşte un rol important în procesul de formare şi dezvoltare a personalităţii copilului. Reducerea numărului de lecţii de educaţie fizică pentru elevi, precum şi a timpului alocat practicării sportului este rezultatul diminuării percepţiei asupra rolului formativ al educaţiei fizice şi sportului. ***Obiectiv:*** prin această cercetare se urmăreşte introducerea unor mijloace specifice antrenamentului funcţional în cadrul orelor de educaţie fizică a studenţilor de la UMF Tg Mureş în vederea creşterii atractivităţii şi eficienţei lecţiilor. ***Metode:*** Această cercetare s-a desfăşurat pe parcursul anului universitar 2014-2015, şi a cuprins două grupe: grupe experiment formată din studenţii de la Facultatea de Medicină, UMF Tg-Mureş şi grupa control, compusă din studenţii de la Facultatea de Farmacie, tot din cadrul UMF Tg-Mureş. ***Concluzii:*** mijloacele specifice antrenamentului funcţional, folosite în cadrul pregătirii grupei experiment s-au dovedit a fi mai eficiente şi mai atractive în comparaţie cu mijloacele clasice folosite în cadrul grupei martor.

Cuvinte cheie: *antrenament funcţional, studenţi, teste, echipament TRX*

Introduction

Physical education is one of the oldest forms of human personality training, contributing to human training and development by creating an optimal ratio between the physical and the psychological, the motor and the intellectual.

Physical education and sport can be considered as special forms of education involving the physique, having not only biological ends but also important psychological and social aspects.

Physical education and sport should assume the role of promoter of health through the complementary skills of professionals (teachers, coaches, physiotherapists).

According to Rodriguez, quoted by L. Patac "if we want to improve our quality of life we need to acquire the good habit of always seeking this improvement and not be content with what we have, trying to introduce some changes gradually; we will try to have better nutrition, fresh air, a more subtle, calmer and more accurate way of achieving things; in short, we have to be interested in the quality, not quantity, of things."

Physical education is an integral part of the measures taken for a harmonious physical development and maintaining optimal health for students.

"Young people's health is a major concern of European policies on work safety and health and education."

The general objectives of physical education aim are "the necessary body training and development for ensuring and cultivating human health values, the state of balance and working condition of the body" (Colibaba Evuleț, 2007).

Physical education is part of the compulsory curricula for all faculties of the University of Medicine and Pharmacy, during 2 years of study, except the School of Dental Medicine whose curriculum provides three semesters, while there are two semesters for Spa-, Kineto-, Physiotherapists and Nutritionists.

Among the most important objectives of physical education classes are health improvement and maintenance, combating sedentary lifestyle, overweight, fatigue, strengthening basic motor skills, developing independent habits of physical exercises etc.

Physical education and sport lesson content is directed towards the development and improvement of physical capacity of students using physical exercise, being determined "by its topics and teaching purposes that consist of exercises and efforts devised in order to achieve educational themes and objectives of the lesson proper, from the teaching methods, procedures and measures provided for every moment of these activities" (Mitra and Mogoș, 1975, pag.245).

The lesson structure was defined by Dragnea A., Bota A., Stănescu M., Teodorescu S., Șerbănoiu S., Tudor V. (2006) as a "sequence of moments that gain identity by the objectives, content and methodology they contain."

The eight sequences of physical education classes ensure the continuity of actions initiated by the teacher during classes, the lessons being carried out both in the gym and outdoors, using means specific to tests and branches of sports: athletics, basic gymnastics and aerobics, sport games. In physical education classes conducted at the Department of Physical Education and Sport of UMF Tg. Mureș, the focus is on the following disciplines: athletics, football, basketball, volleyball, badminton, table tennis, tennis, etc.

Practicing sports games by the students "the aim is to accomplish physical education tasks, to achieve sport performances as well as to be a means of leisure for those practicing it" (Colibaba, Bota, 1998, pag. 7).

Alongside these means we consider it appropriate to introduce specific means of functional training, because teachers at UMF Tg. Mureș are interested in a growing interest in sports among students. To this end, teachers are continuously searching for the novel, as improving quality of life for students through sport is an important factor.

By introducing new means specific to functional training the intention is to link the somatic and the mental in order to maintain health and reduce the risk of injury.

During functional training a great number of sports equipment can be used for teaching purposes which create an overload influencing the expected results regarding:

- Accomplishing a metabolic effect which helps fat tissues disperse from the body;
- Accomplishing an intense cardiovascular workout which helps to improve aerobic and anaerobic energy systems;
- Help preventing injuries or recovering from certain injuries;
- Help improving posture;
- Help improving abilities of fulfilling daily tasks and those concerning social integration.

The instruments recommended to be used in functional training are: bells, bags, hurdles, speed resistors, boxing equipment, medicine balls, benches, weights, dumbbells, ViPRs, TRXs, Bulgarian bags.

TRX equipment: is made up of a strap with two handles suspended from the ceiling, door, wall bars etc. The ends of these belts are equipped with soft handles for hands and feet.

Bulgarian bag: a perfect training tool for fighters and martial arts practitioners, with numerous applications in other sports, as well as fitness training. It is made of a highly resistant leather and filled with ground leather, cloth and sand.

ViPR ("viper") - elastic tube: it is a rubber tube, extremely efficient in training. It can be used in functional training for developing the entire body, improving coordination and flexibility.

Fitballs: these balls are ideal for fitness, cardio or rehabilitation exercises. They are professional gymnastics balls that can be used in fitness gyms or at home.

Weights and dumbbells: specialists have asserted that during exercises their centre of gravity changes and the movements made resemble lifting objects from everyday life. Thus reps ensure the same benefits: strength and balance in regular activities.

Speed resistors: an equipment used for training lateral movement.

Functional training consists of:

Exercises for torso muscles (abdomen and back) – a strong torso can improve body posture preventing back injuries.

Plyometric exercises – develops reaction speed. Exercises are effective when muscle is loaded and contracted quickly to increase strength and muscle contraction speed.

Stretching exercises – they help to improve flexibility and reduce risk of injury to joints, muscles and tendons. These exercises reduce post-effort muscular tension and pain, improve the ability to learn and perform complex movements, increase physical and mental relaxation ability.

Author Macovei S. (2012, p.3) defines stretching as "a way of analytical processing of the musculoskeletal system that involves thoroughly controlled, active or passive, stretching of muscle chains or groups."

Cardio exercises – for improving endurance. The greater the aerobic capacity the more and harder athletes can train, "the endurance of the body peaks due to a marked increase of cardiac volume and consecutively to the maximum O_2 per minute consumption" (Banister, 1997, p.159).

Strength exercises – include exercises done with body weight only or with dumbbells, kettlebells, elastic bands, fitballs, medicine balls etc.

Goals:

1. Increasing the attractiveness of physical education classes to students at UMF Tg. Mureș, by introducing specific means of functional training;
2. Getting a proper muscle tone to conduct specific motor actions;
3. Creating the habit of systematic practice of exercises outside physical education classes, in own time.

Hypotheses:

1. It is assumed that the interest of students at UMF Tg. Mureș for physical education classes can be positively affected by the introduction of attractive means specific to functional training;
2. By introducing functional training specific means, motor abilities of students at UMF Tg. Mureș can be improved.

a) Research period and location

The research was conducted during the 2014-2015 academic year, on a sample of 72 female students divided into two groups: the experimental group made up of students from the Faculty of Medicine of UMF Tg. Mureș, and the control group which consisted of students from the Faculty of Pharmacy of the same university. The groups were of 12 students each, but for each test students from different group were chosen.

Students in the experimental group utilised means belonging to functional training, while the control group students used traditional means.

b) Research subjects

Each test was conducted on students from different groups and years of study. Thus for the vertical/Sargent jump test, the experimental group was made up of 12 students from the Faculty of Medicine, first year; for the front flexibility test, 12 other students from the second year, and for the combined test of balance and arm muscle strength on fitball, 12 second year students.

The control group was formed according to the same selection method, this time from the students of the Faculty of Pharmacy.

c) Methodology applied during the research

The methods used in this research were the following: data collection method, bibliographical study, experimental and testing methods.

Results

1. Vertical Jump Test (Sargent Jump Test)

The first test the subjects underwent was the vertical (Sargent) jump test. The data collected during this test offers an insight into the vertical jump level in upper limbs.

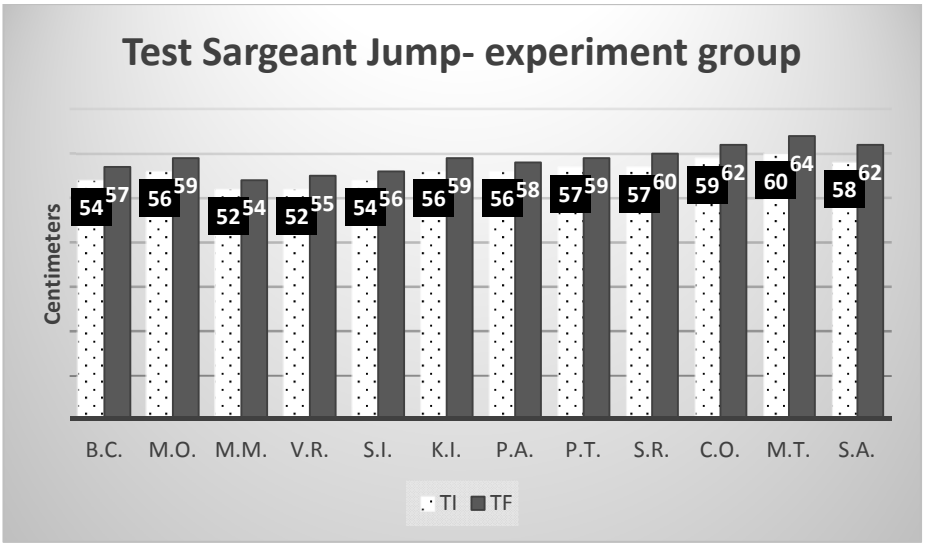


Figure 1. *Graphical representation of Sargent Jump results – experimental group*

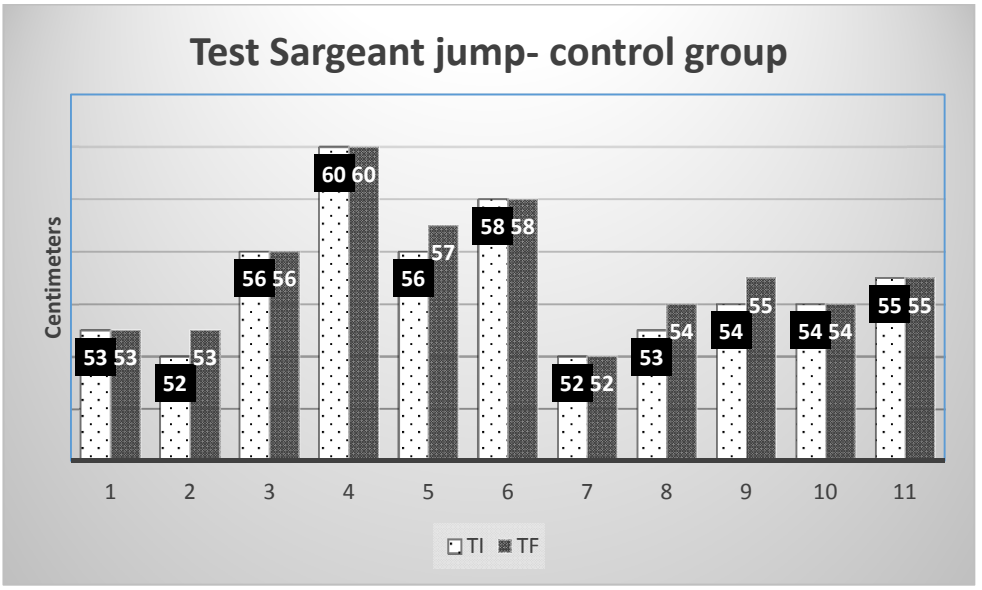


Figure 2. *Graphical representation of Sargent Jump results – control group*

Table 1. *Statistical indicators for Sargent Jump test*

Group	Statistical indicators / Tests	X	CV	t-Student	P
Experimental group	Ti	55,92±0,73	4,17	2,50	0,02
	Tf	58,75±0,86	4,67		
	Difference	**2,83**			
Control group	Ti	54,67±0,71	4,14	0,33	0,73
	Tf	55,00±0,68	3,97		
	Difference	**0,33**			

Interpretation of results:

The experimental group managed to improve the arithmetic mean of the Sargent Jump results by 2.83 cm while the control group by only 0.33 cm. The progress of the experimental group is due to the methodology devised and implemented by us, which positively affected the vertical jump motor ability.

2) ***Front flexibility test***

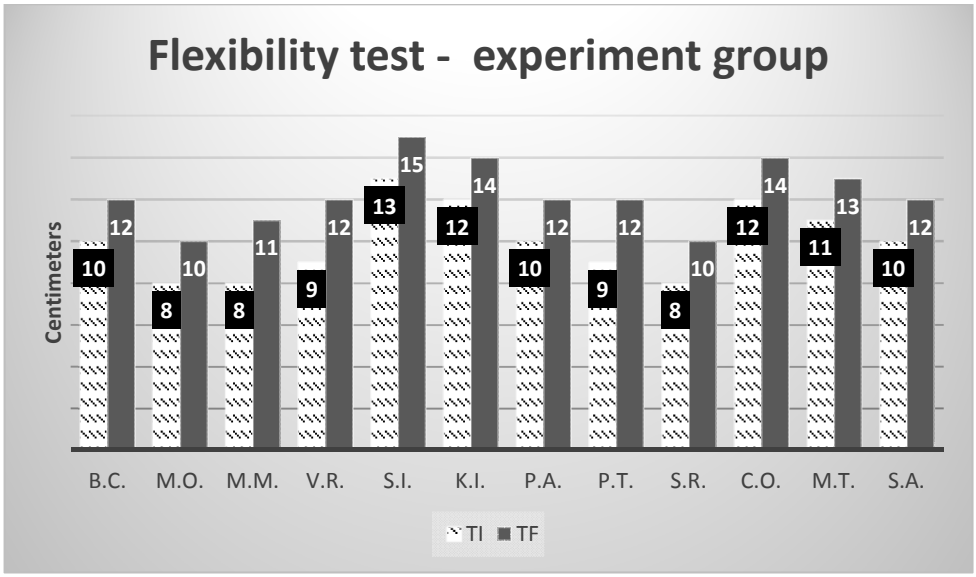


Figure 3. *Graphical representation of front flexibility test results – experimental group*

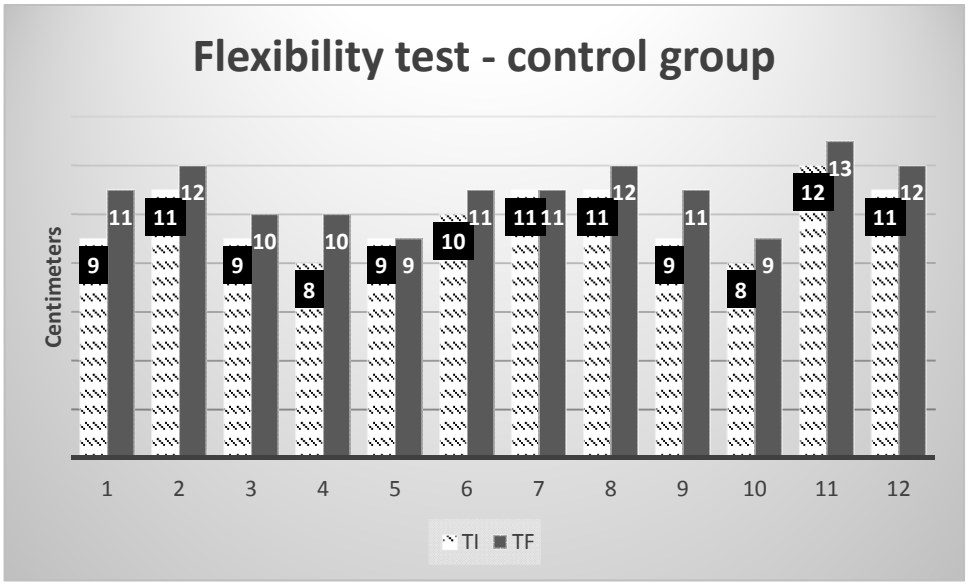


Figure 4. *Graphical representation of torso front flexibility test results – control group*

Table 2. *Statistical indicators for the front flexibility test*

Group	Statistical indicators / Tests	X	CV	t-Student	P
Experimental group	Ti	10±0,49	16,32	3,38	0,002
	Tf	12,25±0,44	12,07		
	Difference	**2,25**			
Control group	Ti	9,83±0,38	13,02	2,05	0,051
	Tf	10,92±0,35	10,88		
	Difference	**1,08**			

Interpretation of the results:

In the experimental group there is an increase of the arithmetic mean by 2.25 cm between the two testing's, while the progress of the control group was comparatively smaller, 1.08 cm.

The exercises devised to improve flexibility, implemented with the experimental group proved to be more efficient when compared to those used for the control group. An important contribution was that of the exercises using TRX and the stretching performed at both the beginning of physical education classes and at the end.

3) Combined test of balance and arm muscle strength on fitball

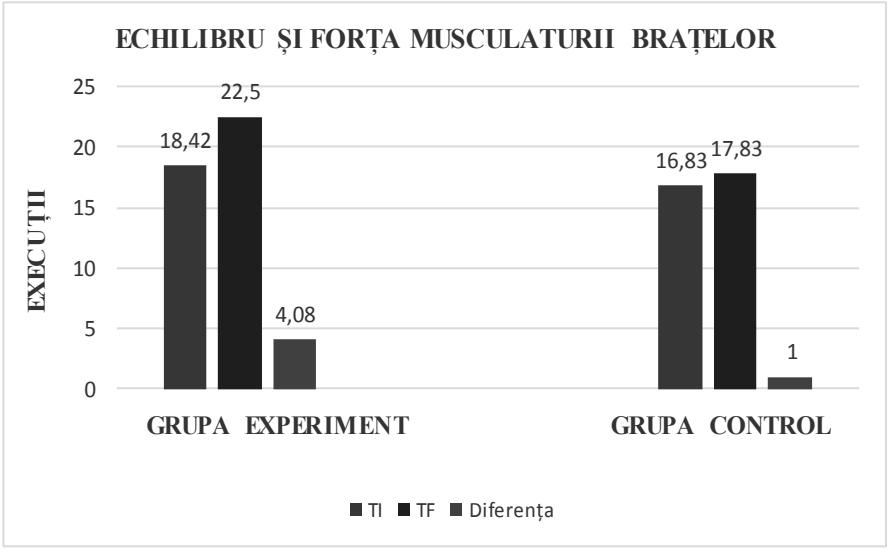


Figure 5. *Graphical representation of balance and arm muscle strength test results*

Table 3. *Statistical indicators for the balance and arm muscle strength test*

Group	Statistical indicators / Tests	X	CV	t-Student	P
Experimental group	Ti	18,42±0,28	5,18		
	Tf	22,50±0,23	3,39	11,08	0,0001
	Difference	**4,08**			
Control group	Ti	16,83±0,36	7,21		
	Tf	17,83±0,42	7,87	1,78	0,08
	Difference	**1**			

For this test which can assess both balance and arm muscle strength, the students from the experimental group achieved an improvement of the arithmetic mean between the two testing's by 4.08 executions. The students of the control group achieved a progress of 1 execution.

The progress of the students from the experimental group is due to the use of fitballs during training, which helped to improve balance, but also the use of TRX, weight and dumbbell exercises that provided an increase in arm muscle strength for this group.

Conclusions

After using means specific to functional training we were able to observe greater motivation among female students, responsiveness and a keen interest in sports. Specific means of functional training are designed to improve the physical fitness of students from UMF Tg. Mureș, they meet the new demands for modernization, diversification and enhancement of the attractiveness of physical education classes at this level.

The experimental group owes its progress to the training program developed, adapted and implemented, specially designed for this research. Students of the experimental group that used these means specific to functional training during physical education classes, registered higher progress compared to the students from the control group, who used the classical methods and means in physical training.

The efficiency of the training programs used in physical education classes on students of the experimental group was demonstrated by analysing the statistical indicators calculations of the physical training tests, confirming the hypothesis that the introduction of specific means of functional training can improve motor abilities of students at UMF Tg. Mureș.

R E F E R E N C E S

Banister WE. (1997). *Modelarea performanţei sportive de elită. Evaluarea stării de sănătate a sportivului. Testarea fiziologică a sportivilor de înaltă performanţă*. Vol. 2, Bucureşti, p.159.

Colibaba Evuleţ-D. (2007). *Praxiologie şi proiectare curriculară în educaţie fizică şi sport,* Craiova: Universitaria, pg.96.

Colibaba D., Bota I. (1998). Jocuri sportive - teorie şi metodică, Bucureşti: Aldin, pg.7.

Dragnea, A. et al. (2006). Educaţie fizică şi sport - teorie şi didactică, Bucureşti: FEST, pg.172.

Macovei S. (2012). *Stretching,* Bucureşti: AFIR, p.3.

Mitra Gh. and Mogoş, Al. (1975). *Metodica educaţiei fizice,* Bucureşti: Sport-Turism, pg.245.

Patac L. (2009). *Contribuţii privind rolul activităţilor sportive la îmbunătăţirea calităţii vieţii a studenţilor din cadrul universităţilor de medicină*, Piteşti, IOSUD, Doctoral thesis.

http://ec.europa .eu/health-eu/my health young people index

STUDIA UBB EDUCATIO ARTIS GYMN., LXI, 1, 2016, pp. 17 - 27
(RECOMMENDED CITATION)

BEHAVIOR ANALYSIS OF SPORTING GOODS CONSUMERS

MARIA-DANIELA MACRA-OŞORHEAN[1*], ÁLMOS ANDRÁS[1], SIMION GHEORGHE MERCHEŞ[2]

ABSTRACT. The actual aims of this paper is to study and analyze the consumer's behavior regarding sports articles, which represent a relatively new area of studying all over the world and especially in our country. At the beginning of the sports products and services development, the countries and the organizations that were acting on this market and in these countries have noticed the necessity of applying the marketing elements and products, but also the studying of these ones in order to find out the consumer's preferences, so that their business can develop, grow and lead to a worldwide evolution of this domain. This study wants to develop a sports marketing strategy, based on the previous support of studying and analysis of the sports articles, but also based on the needs of the customer of these products and the identification of the primarily elements that stand for the base of influencing the customer's behavior when buying sports articles and products. Our objectives are the following: to identify the interest for sports products and articles inside the group; the preferences of the targeted group regarding the brand of sports products and articles-most wanted; the setting of the category from which most customers buy sports products and articles.

Key words: *sporting goods, consumer, consumers behavior*

REZUMAT. ***Analiza comportamentului consumatorilor de articole sportive.*** Prin prezenta lucrare se urmăreşte studierea şi analiza comportamentul consumatorului de produse sportive, care reprezintă un domeniu de studiu relativ tânăr în lume şi în special în ţara noastră. La începutul dezvoltării pieţei de produse şi servicii sportive, ţările şi organizaţiile ce activau pe această piaţă şi în aceste ţări au observat necesitatea punerii în aplicare a elementelor şi produselor de marketing precum şi studierea acestor în vederea aflării *cerinţelor de pe piaţă, astfel încât afacerea lor să se dezvolte, să ia amploare şi*

[1] *Babeş-Bolyai University, Faculty of Physical Education and Sport, Cluj-Napoca, Romania*
[2] *Master student, Babeş-Bolyai University, Faculty of Physical Education and Sport, Cluj-Napoca, Romania*
[*] *Corresponding Author: miamacraosorhean@yahoo.com*

implicit să ducă la o evoluţie de ansamblu a domeniului. Prezenta lucrare îşi propune dezvoltarea unei strategii de marketing sportiv, realizată pe fondul studiului şi analizei prealabile a pieţei de produse şi articole sportive, precum şi a nevoilor consumatorului de aceste produse şi identificarea factorilor primordiali ce stau la baza influenţării comportamentului consumatorilor în achiziţionarea de articole şi produse sportive. Ca şi obiective ne-am propus următoarele: identificarea interesului pentru produsele şi articolele sportive în cadrul grupului; opţiunea grupului ţintă referitor la marca de produse şi articole sportive cea mai căutată; stabilirea categoriei de consumatori ce achiziţionează cel mai mult articole şi produse.

Cuvinte cheie: *articole sportive, consumator, comportamentul consumatorului*

Introduction

The actual aims of this paper is to study and analyze the consumer's behavior regarding sports articles, which represent a relatively new area of studying all over the world and especially in our country. At the beginning of the sports products and services development, the countries and the organizations that were acting on this market and in these countries have noticed the necessity of applying the marketing elements and products, but also the studying of these ones in order to find out the consumer's preferences, so that their business can develop, grow and lead to a worldwide evolution of this domain.

The economic development of the countries, the diversity and the enrichment of the products and services supply, the growth of competition between companies, the speed with which appear new products, the growth of interdependence between national markets, all these represent just elements that "complicated" the existence of the organizations oriented to profit or to obtain other goals.

The studying of the consumer's behavior has become, in this way, an answer to the questions shown up at the organizational level regarding the ways of developing the business.

The principles of consumer's behavior of sports products and articles play an extremely important role for the organization at the time they are being used to define and to integrate the market orientation in its entire activity process. The market orientation or the orientation for the customer can be defined as a deeply knowledge of the consumers' needs and desires, of the competitive domain and the type of market, all these being necessary in developing the organization's plans and actions to generate satisfaction for the customer (Mihăilescu, 2006; Gherasim, Gherasim, 2003; Mitrea, Boboc, 2000; Mitrea, Boboc, 2000).

Objectives

This writing wants to develop a sports marketing strategy, based on the previous support of studying and analysis of the sports articles, but also based on the needs of the customer of these products and the identification of the primarily elements that stand for the base of influencing the customer's behavior when buying sports articles and products.

Our objectives are the following:

- to identify the interest for sports products and articles inside the group;
- the preferences of the targeted group regarding the brand of sports products and articles-most wanted;
- the setting of the category from which most customers buy sports products and articles.

Theoretical support

As the well-known marketing professor and specialist, Philip Kotler claims, the customer's behavior appears as a way out, being the result of several inputs, received, evaluated and transformed by the human being.

The studying of the human being behavior, regarded as the customer, has its origin in studying of the human behavior in general, the last one being during the time, an attractive element for many specialists, from different areas-economy, psychology, biology.

The American Marketing Association defines the consumer's behavior as "dynamic interaction between affect and cognition, behavior and environment, through which individuals realize their problems relating to trade in their lives".

A definition that takes a more explicit form states that consumer's behavior represents that behavior that he displays while searching, purchasing, using, evaluating and giving up to a product, service or idea, all of which are likely to satisfy a need. A consumer is a person who seeks to satisfy his various needs by purchasing goods. (Mitrea, Boboc, 2000; Mullin, 1999; Oprişan, 2001)

Any marketing approach is strictly conditioned by the characteristics of the population from which you extract the upcoming segments of potential consumers. Any community or population has a number of peculiarities of social and economic nature that influence directly or indirectly the act of buying and consumer's behavior.

"Specialists in marketing always ask what causes consumers to buy products. In terms of sport products there is a wide range of divergent views" (Mitrea, Boboc, 2000, p. 90).

For this purpose, knowing some elements such as: age structure of the population, the structure of gender, income, consumer market, etc., are especially helpful for developing marketing strategies by studying consumer's behavior of sport articles and products.

The orientation of any marketing research that proposes to find out the behaviors regarding buying and demand, must consider and analyze the population, both in terms of consumption needs, on the one hand, and the purchasing power, on the other hand. A general stock stems from the demographic population in the area investigated (number and structure of population by age group), to which are added or deducted, the population flows. The last ones integrates the natural movement of population (date of birth and death) and migratory movement (given by immigration and emigration). In addition to these quantitative aspects, for marketing activity are at least equally important the qualitative data-different types of structures that exist and evolve within the worldwide population. Of these, the most important concerns the structure of the population after its main criteria (Mitrea, Boboc, 2000; Mullin, 1999; Oprișan, 2001):

- *age groups* that can highlight types of very young populations, medium, mature, aged or very aged;
- *gender* that can notice types of populations with strong male, female representation, or balanced;
- *marital status* – not married, married, divorced, widowed;
- *level of training* – primary, secondary, vocational secondary, higher education;
- *the degree of participation in activities useful to society* – active population employed population, the unemployed population;
- *residence* – urban and rural population;
- *ethnic groups*, involving issues of cultural, anthropological aspects, etc.

These elements, which define in particular the socio-demographic profile of a population, are operational, in terms of marketing specialist, in so far as they are related to the elements that define the degree of economic development of the same population, the latter being expressed through a series of indexes such as income, the consumer price index, inflation, etc.

Regarding Romania, for example, the transition to a market economy meant the start of a slow but constant phenomenon of demographic ageing. The economic situation seems to be changing in the future, we are witnessing at the present to a process of economic growth, but the demographic trends, however, will undoubtedly have a due date in the future.

The subjects and the place

The research was carried out inside the Association Sports Club, 'REMEMBER' from Câmpulung Moldovenesc, on a representative number of 50 people, aged 18 years and over 60 years, of both genders and coming from different social classes. The study and research took place over a period of five months, i.e. from October 2014-March 2015 and was primarily focused on members and clients of the Sports Club Association, 'REMEMBER'. Of the 50 people interviewed most are men with a share of 68%, while the number of female gender was 16 with a share of 32%. Of those questioned in the first place are those between the ages of 19-24 with a rate of 46%, followed by those over 40 years old with 24% years of age and those aged between 27-40 years with 20%, and the last place are those aged less than 18 years with 10%. Of the 50 people surveyed 66% IE 33 people are unmarried, 11 persons (22%) are married and have children, and last place is equally shared between those being divorced persons and divorcees who have children with 2% each. A number of 29 people representing 58% are employed and 18 people representing 36% are pupils or students, three persons, namely 6% are unemployed and no retired persons.

Research methods

Bibliographical study method: this method constitutes the initial and mandatory step in any scientific investigation. Documentation constitutes a permanent obligation of professional ethics of any specialist. There have been studied various documents and works of authors related to marketing, consumer's behavior regarding sport articles and products existing on the market.

The questionnaire Method: it has been applied to a number of 50 subjects of different ages and genders originating from various social classes and different status and income, a total of 23 questions structured after their content in:

- introductory questions: 1, 2, 3, 4, 5, 6;
- filter questions: 7 and 8;
- content questions: 9, 10, 11, 12, 13, 1 4, 15, 16, 17, 18, 19, 20, 21, 22;
- personal questions: 23.
- After the form of response to the questions of the questionnaire have been used:
- unstructured open questions – with free with free answer: 3, 6, 12, 13, 14;
- closed questions bihotomical: 1, 2; trihotomical: 15; multihotomical: 4, 5, 7, 8, 9, 10, 11, 16, 17, 19, 20, 21, 22.

Statistical method: for the processing, interpretation, and labeling the results we have used the Microsoft Office Excel 2003 statically program for analyzing the collected data, and making the tables.

Case study method: It has been used the method of case study as a research tool document associated with the questionnaire method. For this I analysed the Sports Club Association, REMEMBER "from Câmpulung Moldovenesc, club founded in 2011 by reorganization, based on law, split from sporting association, "REMEMBER", Association that was founded in 2004. Sports Club Association "REMEMBER" is a private sporting club, non-profit, and has its own arrangements for the administration and management of the budget and approved by the heritage of its General Assembly in compliance with the law, which is based on the Club's status. The Governing Board is the one who approves the management plan and shall carry out the duties contained therein, giving the organizational and material support for the proper management of the business. The main activity of leadership, coordination and administration of the Club shall be charged to the Chairman together with the accounting officer, in collaboration with the Club and also with the support of the coaches and trainers. The main object of activity is practicing bodybuilding, fitness, but consists of the following departments of aerobics, Kangoo Jumps, Kick boxing and Thai boxing and departments of minifootball, tennis. Financial-accounting compartment is led and coordinated by the Chief Accountant of the club together with the Board of Directors which decides on apportionment and spending money for every department and areas of activity.

Results

Of those 50 sport products and articles consumers were questioned about, a number of 47 people used to buy these products and sporting goods, representing a 94%, compared with the three persons i.e. 6% that didn't use to.

Of those 50 consumer products and sporting goods, questioned a number of 41 people didn't use to buy products and sporting goods in large numbers in a month, representing a percentage of 82%, compared to the 18% 9 persons i.e. that used to buy more often in a month.

Of those 24 people questioned IE 48% said that Adidas was the brand that they knew best, compared to 32% i.e.16 who said that Nike company was that they knew a lot better. A number of five persons representing 10% responded that both companies Puma and others they knew best.

A number of 28 people representing 56% buy sporting goods occasionally, 20 people (40%) buy monthly, weekly and rarely just one person representing 2% buys these products and sporting goods of the 50 surveyed.

Of those questioned, 22 persons representing a 44% buy products and sporting goods from Adidas, 14 persons i.e. 28% buy from Nike, 7 persons representing 14% of those questioned answered that they buy from other brands. At the opposite pole lies Puma and LaCoste brands with 3, and 2 people each representing 6 and 4%, and Kappa and Lotto with one person with 2%.

Of those questioned, 25 subjects (50%) buy sporting goods because they're comfortable and loose, 12 subjects surveyed (24%) as it is the style that approached, out of the necessity for practicing sports and sporting activities are 7 subjects (14%), and 6 subjects (12%) buy for other reasons.

In the top of the preferences of those questioned 21 people with a rate of 46% Adidas company is located as the most preferred, followed by Nike with a number of 13 people representing 28%. PUMA lies in the third place in the rankings with a preference for 7% meaning 3 persons. At the opposite pole lies Kappa and Reebok with 0%.

The brands Adidas and Nike with a very small difference are considered to be of the highest quality among those asked 18, and 16 people representing 36% and 32%. On the last places there lies Reebok, a person, with 2% followed by Kappa with 0%. There is a relatively good percentage for other companies such as LaCoste, Puma and others: 10%, 5% and 4%.

The brands Adidas and Nike to very small differences are considered to be of the highest quality among those polled, 18 16 people representing 36% to 32%. The last places lies Reebok a person with 2%, followed by Kappa with 0%. A relatively good percentage have obtained the other companies LaCoste, Puma and others: 10%, 5% and 4%.

The 1st place in the top 50 adverts according to those questioned lies Adidas with a percentage of 46%, followed by Nike with 34 percent and the big difference with 8% LaCoste. The last places being Puma and Lotto 2% and Reebok with 0%. Of the 50 subjects questioned 64% of them feel that the products from Adidas are selling best, and second place are those from Nike with a share of 30%. Surprisingly is the fact that in their view the products from Puma, Kappa, Reebok, LaCoste don't sell, with a percentage of 0%.

Those questioned consider that the best sneakers are from Adidas 42% and at 32% from Nike. From other brands a number of 6 subjects meaning 13% consider that are sold the best. They are followed by the sneakers from Puma 4%, LaCoste, Kappa, Reebok and 2%.

The most important decision-making factor in the purchase of a sports article is the quality which results from questioning the 50 subjects, in which a number of 30 people representing 60% responded in the affirmative. The price is important for the other 16 meaning 32%, while for the remaining 4, 8% more important is the appearance/design.

The 1st place in the top of the wishes to change something at your favorite brand is to reduce the price with a percentage of 43%, in second place with 25% of those questioned would not change anything. They are followed by those who want to change the design with a share of 18% and those with advertising at the rate of 14%.

Out of a total of 50 subjects a number of 23, 46% consider that company with the worst product range is Lotto, followed equally by Reebok, Puma and Kappa with 16% each. Nike, Adidas and others are located at the top with the least bad range 0%.

The worst according to those questioned answered range is influenced by the design of 56%. The other 13 people, 26 percent consider the quality as an important factor and 9 i.e. 18% of people consider that a range of products is poor due to obsolete products.

A 50% of people surveyed believe that Nike products are not cheaper than those at Adidas, instead 10% of those questioned believe that they are, while the remaining 40% don't know if they are cheaper or not.

The majority of those questioned, a number of 35 persons representing a percentage of 70% responded that they find out from other sources about the emergence of a new product or article, while six persons i.e. 12% find the fastest from friends. They are followed by those for which the information source is the TV, a rate of 10% and those located in newspapers/magazine. No person finds out about the existence of a new article or product.

Most of those questioned consider that they are not influenced by anybody in the decision-making process, i.e. 70% people, while 12% acknowledge that friends have an influence on their decision, and the seller is considered to have the lowest impact on their decision to purchase only 2%. Ads and family are the following sources of influence on decision-making in proportion of 10% and 6%.

Regarding sneakers, the majority of those polled are willing to pay more for a pair, 82% than those who can pay no more than 150 lei, i.e. 20%; for pants instead the proportion was reversed in the sense that those who are willing to pay less are 50% than those who can pay more, 28 percent. 56% for t-shirt people are willing to pay between 0-100 lei at the expense of those who can pay more than IE 14%. Training suits between 150-350 lei, and it would allow for 50% towards those who would pay between 0-150 lei 18%. A fleece jacket is more expensive and would allow 52% of others who pay less than 14%. For a cheaper blouse they would pay 50% to 22% that don't think it worth paying more.

Table 1. How much you are willing to spend for sporting goods regardless their brand?

Sneackers 0-150 lei	**10**	**20%**
Sneackers 150-300 lei	**41**	**82%**
Pants 0-100 lei	**25**	**50%**
Pants 100-200 lei	**14**	**28%**
T-shirt 0-100 lei	**28**	**56%**
T-shirt 100-150 lei	**7**	**14%**
Tracksuit 0-150 lei	**9**	**18%**
Tracksuit 150-350 lei	**25**	**50%**
Jacket 0-150 lei	**7**	**14%**
J., 150-350 lei	**26**	**52%**
Jumper 0-100 lei	**25**	**50%**
Jumper 100-200 lei	**11**	**22%**

Of those questioned, 38 people have stated that 76% sports items prices are high, 7 people 14% asserted that are very high, and 3 persons 6% consider that they are extremely high. An insignificant percentage of 2% consider that prices are low and very low.

The lowest rates according to those questioned are considered to be held by Lotto brand with 14 people 28% of those questioned answered, followed with 22% Kappa with 14%, Puma, Reebok 12%, LaCoste and Nike with 8% each. A percentage of 4% considers that Adidas and other brands have higher prices than the companies listed.

Most of those polled 38% have spent between 130 and 200 RON in the last month, and the least are only 10% and claimed that they spent on average between 0-60 RON last month.

For nearly half of those questioned answered i.e. 46% the most important thing when purchasing an item or product is the quality, the design lies in the second place with a rate of 26% followed by product brand with 16% and its price with a rate of 12%.

A number of 29 people 58% said that their family income is greater than 1600 RON, 11 people representing 22% have a family incomes between 1001-1600 RON, while those with a family income ranging between 501-100 RON represents 16% of the number of the questionnaires sent and only 2 people (4%) are those whose family income is of less than 500 RON.

Conclusions

The purpose of this research was to help me find out the views and opinions of the consumers about the brands of sports articles and products as well as their wishes from those brands.

Such questions have had connection with the frequency of purchase, with the quality and price of products and sports articles as well as with the most sought and well-known brand but also with the social category which is most interested in these products, and sporting goods.

Therefore the key questions and those that wanted to be that the objectives of this work as a result of the questions asked and the answers from the respondents, we were able to highlight the following conclusions:

1. When asked about how big the interest towards products and sports articles was, most of those questioned responded in a very large number that they used to buy these products and sporting goods but not very often.

So therefore the interest among the group and thus the general public for purchase of products and sporting goods is a high one over a period of time greater than a short one (a month for example), which indicates that the market and the marketing of this product area is in a perpetual increase regardless of what category of the population purchases and uses these products.

2. Among those questioned and most sought-after brands acquired were Adidas and Nike that have stayed at quite a considerable difference from other brands like Puma, Kappa, Reebok and more.

The conclusion would be that these two large companies dominate the market for products and sporting goods through their marketing strategy and advertising very good and aggressive ", which they practice currently and are up to date at all times with the requirements of the consumers, attempting to satisfy these requirements, also through the study of the market and fashion not only by the behavior of the population.

3. To the question which consumer category is the most interested in buying and using these products, there are most persons aged between 19-25 years, as well as those over 40 years old and the majority are employees or pupils/students with a middle income and above average showing an increased interest in purchasing these products.

The brands Reebok, LaCoste, Kappa, and Lotto are the most poorly rated according to those questioned, and due to the fact that the price/quality ratio, design/diversity is not a good one and the marketing strategy also, although the majority of subjects questioned replied that they are not influenced by anybody when buying an item.

As a final conclusion, we note that the vast majority of consumers are moving towards brands already dedicated to presenting a variety and quality of their products to the detriment of the price quite high, having different tastes in their choice.

From the point of view of macro environment company products and sporting goods, market competition is relatively small, but the most imminent danger is the growing number of counterfeit items and products of poor quality that invade the market and lead to the deterioration of the image and quality of the original products.

However consumers adopt this kind of products and articles, may some even appropriated it as a part and parcel of their daily life, which is gratifying for manufacturers of these products, noting that the type of clients is increasingly diversified from day to day, and growing.

So for performance athletes and for athletes in general, sports items and products of particular importance in the conduct of their remarkable construction give them breathability, comfort, safety, helping them to reach more easily the performance or to achieve their objectives.

REFERENCES

Balaure, V. (2002). *Marketing, Second edition revised and reissued*. Bucureşti: Uranus.

Boucherin, B. (2001). *What kind of sports management should he carried out by volunteers and professionals from associations, seminar.* Challenges for sport in the European city, Consiliul Europei – CDDS. Paris.

Burduş, E. (2004). *Management comparat internaţional ediţia a II-a.* Bucureşti: Economică.

Gherasim, T., Gherasim, A. (2003). *Cercetări de marketing*. Bucureşti: Economică.

Lazăr, I., Vereş, V., Mortan, M., Lazăr, S.P. (2004). *Management general*. Cluj-Napoca: Risoprint.

Macra-Oşorhean, M., Purdea, D. (2006). *Managementul resurselor umane – motivare, carieră, recompense*. Cluj-Napoca: Dacia.

Mihăilescu, N. (2006). *Management – Marketing – Legislaţie în activitatea sportive*. Piteşti: Universitatea din Piteşti.

Mitrea, D., Boboc, F. (2000). *Marketing sportiv – Culegere de lecţii.* Constanţa: Ex Ponto.

Mullin, B.J. (1999). *Mix – Marketing*. Bucureşti: CCPS.

Oprişan, V. (2001). *Marketing şi comunicare în sport.* Bucureşti: Uranus.

Voicu, A.V. (2010). *Elemente de Legislaţie, Management şi Marketing în legătură cu organizaţiile sportive şi activităţile acestora.* Suport de curs. Cluj-Napoca: FEFS Cluj-Napoca.

Voicu, A.V. (1998). *Managementul organizaţiilor şi activităţii sportive*. Cluj-Napoca: Risoprint.

Voicu, S.F. (2002). *Managementul sportului*. Timişoara: Mirton.

STUDIA UBB EDUCATIO ARTIS GYMN., LXI, 1, 2016, pp. 29 - 34
(RECOMMENDED CITATION)

IMPROVING THE MOVEMENT QUALITY „SPEED" IN SECONDARY SCHOOL THROUGH THE AGENCY OF THE MOVEMENT GAMES

CRISTIAN ŞANTA[1*], CORNELIU ROŞ[2], ONELA ŞANTA[3]

ABSTRACT. The importance of physical education and implicitly of the development of the movement qualities in the general process of instruction and education of pupils is revealed by the fact that it represents the only subject in the curriculum which mainly has the role of acting in the field of development and physical preparation of establishing and realizing a corresponding equilibrium between the intellectual and physical effort – an element of great importance in the normal growing and developing of pupils. Starting from the premise that the secondary school pupils have a low level of the movement quality – speed, I come with the *hypothesis* that through acting with appropriate means and movement games on speed, it is a factor of progress in the amelioration of this, having as a result the improvement of the speed ratings, an important objective in the scholar physical education.

Keywords: *sport, sports activities, exercises and specifics tests*

REZUMAT. ***Îmbunătăţirea calităţii motrice „viteza" la ciclul gimnazial prin intermediul jocurilor de mişcare.*** Importanţa educaţiei fizice şi implicit a dezvoltării calităţilor motrice în procesul general de instruire şi educare a elevilor este relevată de faptul că reprezintă singurul obiect din planul de învăţământ căruia îi revine, în principal, rolul de a acţiona în domeniul dezvoltării şi pregătirii fizice de a stabili şi realiza un echilibru corespunzător între efortul intelectual şi cel fizic – element de mare importanţă în creşterea şi dezvoltarea elevilor. Pornind de la premiza că elevii din ciclul gimnazial prezintă un nivel scăzut de dezvoltare a calităţii motrice – viteza, am formulat *ipoteza*, că prin acţionarea cu mijloace corespunzătoare şi jocuri de mişcare potrivite asupra vitezei, se poate contribui la îmbunătăţirea indicilor vitezei, obiectiv important în educaţia fizică şcolară.

Cuvinte cheie: *sport, activităţi sportive, exerciţii şi teste specifice*

[1] *University of Babes-Bolyai, Cluj-Napoca, Faculty of Physical Education and Sport, Romania*
[2] *Turda Technical College, Romania*
[3] *High School „Onisifor Ghibu" Cluj-Napoca, Romania*
[*] *Corresponding Author: santa.cristian@yahoo.com*

Introduction and reason for choosing the theme

The improvement of speed in secondary school pupils through movement games is important because, through its specific particularities, the movement game is different from the other means of the physical education because it supports:

- ***Simultaneously forming and consolidating the basic movement skills*** (walking, running, jumping, throwing and catching);
- ***Developing the movement qualities*** (speed, resistance**,** force and skilfulness);
- ***The moral-volitive features and skills.***

The study of speed is important because it is one of the most important qualities of the human body and, together with the other movement qualities, it is frequently used in the movement activities

In the present study I want to find and apply the best and the most interesting movement games for improving the basic movement quality "speed" in secondary school pupils in the physical education lesson

The practical fundamentation of the study

The research was conducted in *Călăraşi Secondary School,* Cluj County. The study of the research contained a total number of 66 pupils from 4 secondary school different classes, a class from each level: the Vth form: 15 pupils, the VIth form: 20 pupils, the VIIth form: 16 pupils, the VIIIth form: 15 pupils. From the total of 66 pupils, 37 were boys and 29 were girls.

Objective**:** finding and applying the best movement games used in the learning units in the physical education lesson for improving the moving quality – speed in secondary school pupils.

Hypothesis:

- The development particularities of secondary school pupils impose the using in the physical education lesson of some *structures of varied exercises* which grow their interest and active participation

- *The appropriate choosing of the movement games,* of the means and procedures which allow the selective influence of the improvement of the movement quality – speed, with its ways of manifesting leading to its improvement

Objectives:

- establishing the specific competences, the reference objectives;
- knowing the initial morphologic-functional, physical stage and the movement quality – speed in secondary school pupils;

- elaborating the units of learning, the acting systems, the models containing the used means in concordance with the reference objectives of the lesson;
- checking the efficacy of the means, procedures and movement games used in the lesson;
- the initial testing, the final testing, recording the pupils' data from a morphologic-functional point of view of the movement quality – speed;
- the statistic-mathematical interpretation of the data;
- establishing the conclusions and elaborating proposals

Implementing the research *(*Mackenzie, 2005):

For having a successful outcome of the research I took into consideration the following organizatoric measures:

- I used the existing sportive materials: balls, gymnastics benches, rib stalls, sticks, stakes, jump ropes, gymnastics equipment's, mattresses, circles;

- All the objectives were in the calendaristic plan for being realized through the selected means for improving the speed through moving games

The antropometric measures aimed at: measuring height, measuring the body weight, the chest perimeter.

For evaluating the degree of developing of the movement quality – speed I used more instruments. Testing the movement ability – speed was realized starting from the speed's forms of manifesting: the reaction speed, the running speed, the execution speed and the repetition speed. Taking into consideration the pupils 'age particularities and individual particularities, I grouped the tests in the following way:

For the Vth form and the VIth form:

- *Running for speed on a distance of 30 m, Objective:* Measuring the running speed
- *The Zig-Zag Test, Objective:* Measuring the running and execution speed

For the VIIth form and the VIIIth form:

- *The speed test, Objective:* Measuring the running and reaction speed
- *The ADAMS speed test, Objective:* Measuring the execution speed.

Moving games used in the research:

For the Vth form and the VIth form: Change the rows, Leap frog on palm, Who is the fastest?, Relay race return, The race with numbers, The carter, The third runs, Move the balls.

For the VIIth form and the VIIIth form**:** The last decides, The long goat, Running on the colour, The goshawk and the pigeons, The chain of jumps, From circle to circle, Change the lines, Runners versus recuperators.

Results

The data interpretation was made on the basis of some statistic-mathematical methods. In interpreting data I used medium values which are characteristic to the mean and the collective homogeneity: the arithmetic mean, the standard deviation and the variability coefficient.

Apart from the movement games organized and made with the pupils, for developing the movement quality – speed, several exercises were implemented with an important role in the activity of focusing attention, realized in a competition format, combined, like, for example, cris-cross, for developing the arms' speed.

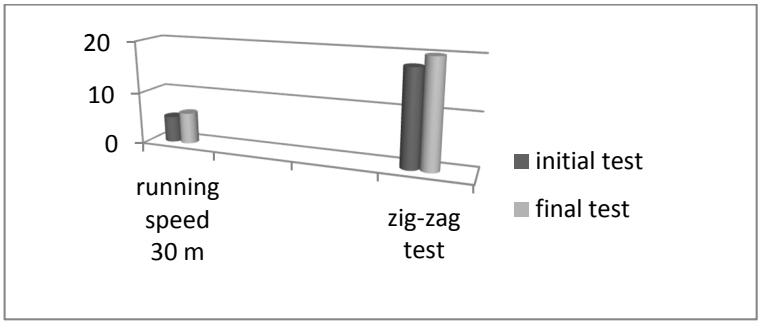


Figure 1. Results in tests and trials for the Vth form pupils

All the **girls** in the Vth form improved their final results comparing to the initial results for both sportive tests. From the 10 **boys**, 8 improved their final results comparing to the initial results in the first sportive test and in the second sportive test, all the boys improved their results.

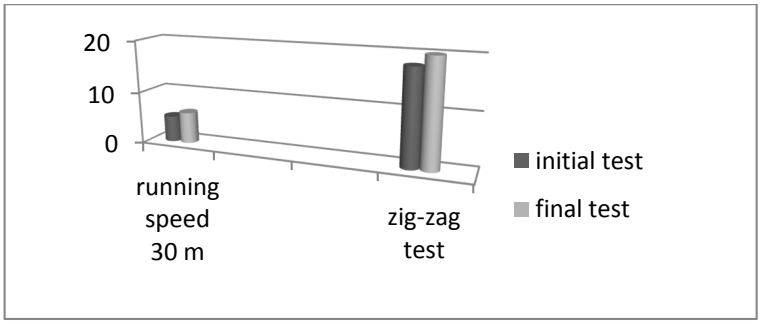


Figure 2. Results in tests and trials for the VIth form pupils

From the 7 **girls** in the VIth form, 6 improved their final results comparing to their initial results in the first sportive test and for the second sportive test all the girls improved their results. All the 13 **boys** improved their final results in the first sportive test and in the second sportive test 11 boys improved their results.

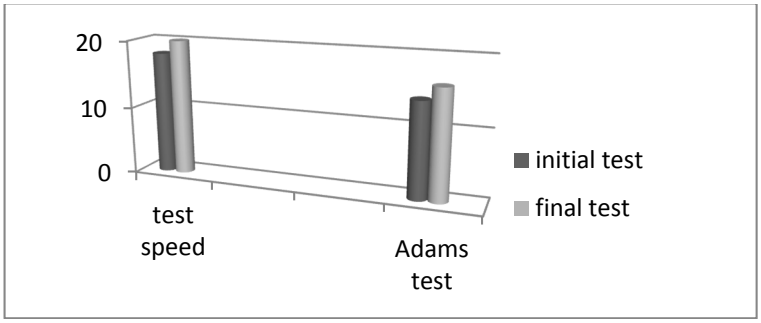


Figure 3. Results in tests and trials for the VIIth form pupils

The results for the entire collective improved in the first sportive test with a mean of 0"4 and in the second sportive test with a mean of 2 correct jumps in 15".

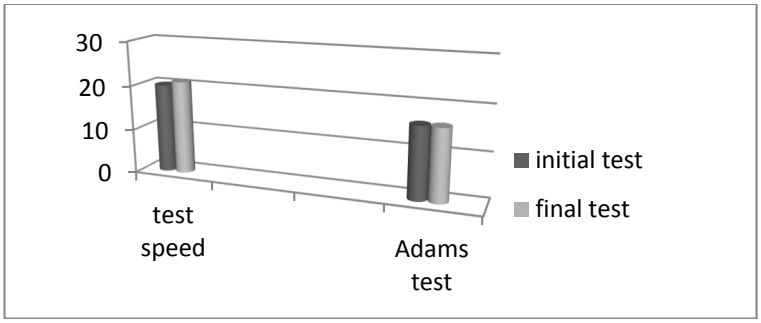


Figure 4. Results in tests and trials for the VIIIth form pupils

The results for the entire collective improved in the first sportive test with a mean of 0"1 and in the second sportive test with a mean of 3 correct jumps in 15".

According to levels of classes and sex categories, ***the percentage of improving the movement quality – speed*** is the following: ***the Vth form*****:** girls-100%, boys-99,80%, ***the VIth form*****:** girls-99,93%, boys-99,61%, ***the VIIth form*****:** girls-99,89%, boys-100%, ***the VIIIth form*****:** girls-100%, boys-99,80%.

As one can notice from these pieces of information, the girls were more industrious than boys, so that from the 29 girls in the 4 classes involved in the research, 28 improved their movement quality – speed, which is a percentage of 96,55%, and from the 37 boys, 34 improved their movement quality – speed, which is a percentage of 91,89%. *At a global level,* from the 66 pupils from the V-VIII forms in Călăraşi Secondary School, Cluj County, Romania, 62 pupils of the 66 improved their movement quality – speed, which is a percentage of 93,94%.

The movement games realized with the pupils were periodically planned for each class level so that they knew from the beginning of the physical education and sports lesson what kind of exercises they will do for body heating and also what kind of movement games they will do in groups or individually for improving speed.

Conclusions

In most secondary school pupils I noticed interest and earnestness for the physical education lessons and sportive activities.

The movement games, the trials and the tests were well chosen because they aimed at aspects of the pupils' physical development, the level of development of the ratings for the movement qualities and the level of the specific skills for improving and developing speed.

The movement games selected for the research were implemented during and significantly contributed to improving and developing the movement quality – speed.

The chosen hypothesis for research, elaborating the work steps, chosing and applying the movement games in the key moments of the physical education and sports lesson, of the methods and teaching materials used for the present study were the most appropriate and I consider that the objectives have been met almost entirely, with very few exceptions.

REFERENCES

Chiriţă, Gh. (1980). *Educaţie prin jocuri de mişcare (Education through movement games)*, Bucureşti: Editura Sport-Turism.

Mackenzie, B. (2005). *101 Performance Evaluation Tests,* London: Editura Electric Word.

Şandor, I. (2008). *Bazele generale ale Teoriei Educaţiei Fizice şi Sportului (The General Basis of the Physical Education and Sports Theory)*, Suport de Curs (Course Support), internal use, Cluj-Napoca.

www.didactic.ro

STUDIA UBB EDUCATIO ARTIS GYMN., LXI, 1, 2016, pp. 35 - 41
(RECOMMENDED CITATION)

STUDY ABOUT THE EVOLUTION OF THE SKIING RESORT IN CENTRAL GROUP OF EASTERN CARPATHIANS, ON THE PAST 10 YEARS

BARNA SZABÓ-CSIFÓ[1*], LAURA EDIT CIULEA[1]

ABSTRACT. In this paperwork we aim to study the situation of the skiing domain in the area of the Central zone of the Eastern Carpathians. The subject has an enormous actuality because of the need of the crowds to practice winter sports as skiing, snowboarding and even free-ride. Our method was to study the situation of the ski slopes on the field and a study of the specific features of every slope. As results we can confirm that in the last of 10 years has start a great development of the skiing domain, as conclusion we can justify, that the tendencies presents a positive direction.

Keywords: *slope, skiing domain, development, Eastern Carpathians*

REZUMAT. ***Studiu privind evoluția domeniului schiabil, în ultimii 10 ani, în grupa centrală a Carpaților Orientali.*** În această lucrare dorim să efectuăm un studiu despre domeniile schiabile din Zona Centrală a Carpaților Orientali. Subiectul este de o deosebită actualitate deoarece este din ce în ce mai evidentă nevoia de mișcare a oamenilor și practicarea sporturilor de iarnă cum ar fi schiul, snowboardingul, sau free-ride-ul. Am folosit ca metodă de cercetare studiul bibliografic și în mare parte studiu pe teren, marcând specificitatea fiecărei pârtii existente. Ca rezultat putem afirma că în ultimii 10 ani observăm o dezvoltare serioasă, o tendință pozitivă în dezvoltarea pârtiilor de schi.

Cuvinte cheie: *pârtie, domeniu schiabil, dezvoltare, Carpații Orientali*

[1] *UMF from Tîrgu Mureș, Romania*
[*] *Corresponding Author: barneas76@yahoo.com*

Introduction

The Central Zone of the Easter Carpathians is part of the Eastern Carpathians with the northern limit formed by the Corridor of Bârgău – Basin of Dorna – Mestecăniș Pass – Putna Valley and the Moldova Valley. The eastern limit is formed by the sub-Carpathian basin of the Neamț, Cracău – Bistrița and Tazlău – Caşin, on the south they reach until Oituz Valley and Oituz Pass and also until the Braşov Basin. The western limit is foremd by the sub-mountain basins of Transylvania, Homoroade, Odorhei, Praid-Sovata, Vălenii de Munte and Bistrița-Livezile (Pop, 2006).

The touristic potential of this area is formed by the coefficient of the natural and anthropic values, exploited through the touristic planning and development, in our case the ski resorts (Ciangă, 2006).

The geologic structure, the climate and bio climate potential also the average temperature, precipitations (rain, snow), nebulousness, wind velocity, thermal comfort index represent the factors that influence the touristic flux in a specific period of the year, with consequences on the possibilities to practice the winter sports, which is in our interest in this study.

Objectives

Our objective is to form a proper image about the situation of the ski domain in the Central Zone of the Eastern Carpathians, and to present the evolution during the past 10 years of the ski slopes, to understand the necessity of developing the ski resorts because the potential of this mountain group is enormous.

Material and methods

As method we used the study of the available database and also collecting data on the fields.

Results:

As we studied the ski domain from the existing database we realized a table with the situation of the ski resort before 2006.

Table 1. Situation of the ski slopes before 2006

Nr. Crt.	Sloap name	Ski resort	Length	Difficulty
1	Dealul Negru	Vatra Dornei	3200 m	advanced
2	Parc 1	Vatra Dornei	900 m	advanced
3	Parc 2	Vatra Dornei	600 m	beginners
4	Runc	Câmpulung Moldovenesc	400 m	advanced
5	Rarău	Câmpulung Moldovenesc	300 m	beginners
6	Durău	Durău	450 m	beginners
7	În Staţiune	Durău	350 m	beginners
8	Măgheruş	Topliţa	460 m	advanced
9	Bradul	Topliţa	1000 m	beginners
10	Ciumani 1	Ciumani	578 m	advanced
11	Ciumani 2	Ciumani	980 m	experienced
12	Izvorul Mureş	Izvorul Mureşului	620 m	beginners
13	Şugo	Harghita Mădăraş	800 m	advanced
14	Nagy Mihaly	Harghita Mădăraş	650 m	experienced
15	Kicsi Mihaly	Harghita Mădăraş	300 m	beginners
16	Valea Rece	Valea Rece	450 m	advanced
18	Sânmartin	Sânmartin	320 m	advanced
19	Miklos	Băile Harghita	300 m	experienced
20	Csipike	Băile Harghita	350 m	beginners
21	Tofalvi	Băile Harghita	200 m	beginners
22	Ozon	Băile Harghita	300 m	beginners
23	Kossuth 1	Băile Harghita	630 m	experienced
24	Kossuth 2	Băile Harghita	800 m	advanced
25	Kossuth 3	Băile Harghita	1000 m	beginners
26	Tolvajos	Tolvajos	500 m	beginners
27	Mereşti	Mereşti	300 m	advanced
28	Lobogo	Băile Homorod	400 m	advanced
29	Aluniş	Sovata	1200 m	advanced
30	Bogdan 1	Praid	600 m	beginners
31	Bogdan 2	Praid	600 m	beginners
32	Dreapta	Gheorgheni	1000 m	advanced
33	Stânga	Gheorgheni	1000 m	advanced
34	Pongraţ	Gheorgheni	400 m	beginners
		TOTAL	22.931 m	

Exactly ten years ago, in 2006 in Bucin pass was realized a ski slope for beginners in length of 400m.

2010 was the year when in Borsec started to arrange the appropriate downhill for developing a proper ski resort. They realized three slopes with different difficulties for beginner and advanced skiers.

Table 2. The new ski resort in Borsec

Nr. Crt.	Sloap name	Ski resort	Length	Width	Average incline	Difficulty
1	Hope	Borsec	680 m	57 m	21%	advanced
2	Whipster	Borsec	814 m	30 m	17%	beginners
3	Sunshine	Borsec	726 m	30 m	19%	beginners

The next step in developing the Eastern Carpathian ski resort was in 2014 when in Sumuleu Ciuc was realized a ski slope with the length of 397m, with an average of the slope of 28%, and a snow park for other winter sports.

Last and the newest ski resort which was realized in this area is in Lunca de Jos in Harghita county two slopes with 700 and 800m for beginners and advanced skiers.

Table 3. The ski resorts built after 2006

Nr. Crt.	Sloap name	Ski resort	Length	Difficulty
1	Havas Bucsin	Bucin	400 m	beginners
2	Hope	Borsec	680 m	advanced
3	Whipster	Borsec	814 m	beginners
4	Sunshine	Borsec	726 m	beginners
5	-	Sumuleu Ciuc	397 m	advanced
6	Blue slope	Lunca de Jos	800 m	beginners
7	Red slope	Lunca de Jos	700 m	advanced
		TOTAL	4517 m	

After our research we can affirm that the situation of the ski resort is way better than 10 years ago. In 2006 we count a number of 22.931 m of ski slopes in 16 ski resort with 33 slopes of different difficulties. During this cycle of years, another 4 ski resort was opened in Bucin, Borsec, Şumuleu Ciuc and Lunca de Jos. In this situation, the slopes lengths increased up to 27.448 m, with 7 more slopes, which mean an increase of 4517 m in length, and more than 26.5 percentages as the previous period.

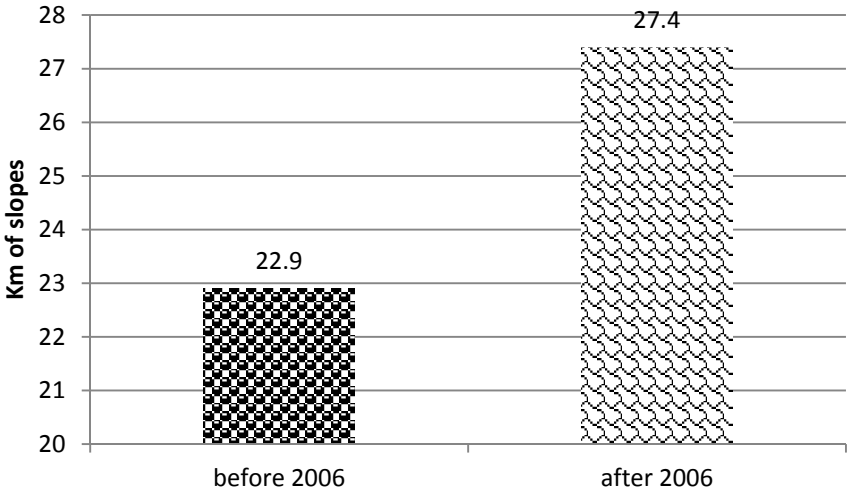


Figure 1. The total length of the ski slopes before and after 2006

In the future the most important thing is to create a team formed about a group of people to investigate this territory for the future possibilities for creating new domains in downhill skiing with longer slopes. Also the aim is to create snow parks for the skiers and snowboarders who like the half pipe ridings and free ride zones for different tricks. Domains for this kind of activities are really missing and this new "rebel" generation really need it. This facility will increase the value of this ski domain and will create a greater flux if the tourists which of course increase the financial inherit of the local population.

Discussion

As we see, before 2006 the situation of the ski resorts was poorer as now, but our opinion is that is also poor for the need of the people, seen the touristic flux during a winter season. We can confirm that all the slopes are equipped with ski lifts, baby lifts and chairlifts. Some of the slopes are equipped with spotlights make the skiing sensations more enjoyable.

Making a calculation, the increase of the length of the ski slopes, they showing us an increase of 26,2 %. This is significant towards of the previous measurements, but as we look toward to the foreign countries even in Bulgaria or Slovakia, there one of the ski resorts has the length of the slopes as here in the entire area of the Central Zone of Easter Carpathians.

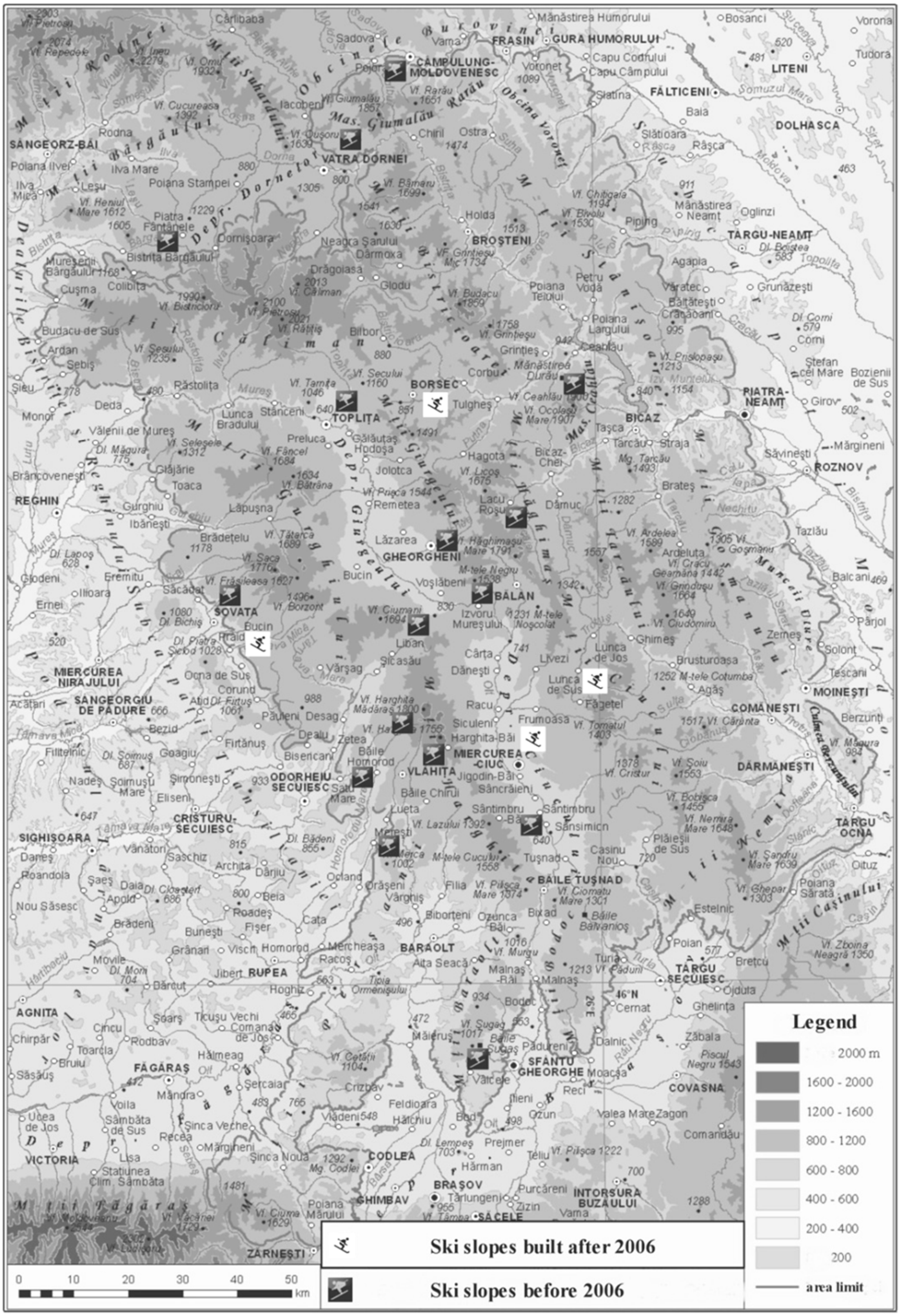


Figure 2. Map of the ski resort in the Central Group of Eastern Carpathians

Conclusions

The skiing possibilities in the Central Group of the Eastern Carpathians we can affirm that is well represented. As we look on the map we can observe that almost in every corner of this area we can find ski resorts and ski slopes. But the potential of this group of mountains is not used enough, in the Caliman Mountains or in Bistricioarei Mountains we observe that is a lot of empty space there exist lot of areas where ski-slopes can be built. The high of this mountain and the weather conditions as precipitation is snow, wind, the slopes orientation is a proper field to take advantages.

Other problem with this ski resorts is, that just a few of them offer proper accommodation units which are situated near by the skiing area. The communication network as roads and railway is another problem which is mean to be solved by the years, because they need to offer the possibility to reach this ski centres.

The positive side is, that in this hard times and fewer opportunities, we can observe the increasing number of slopes, especially in the last 10 years.

R E F E R E N C E S

Ciangă, N. (2006). *România. Geografia turimului (partea întâi),* Editura Presa Universitară Clujeană, Cluj-Napoca.

Ceangă, N. & Dezsi, L. (2007). *Amenajare turistică,* Editura Presa Universitară Clujeană, Cluj-Napoca.

Ganea, I.V. (2006). *Managementul agrementului în natură*, Editura Napoca Star.

Pop, Gr.P. (2006). *Carpații și Subcarpații României, ediția a II-a revizuită și adăugită*, Editura Presa Universitară Clujeană.

Szabo, B. (2010). *Teză de doctorat – Turismul de agrement sportiv în Grupa Centrală a Carpaților Orientali*, Cluj Napoca.

*** *http://www.schiborsec.ro/1~ro~partiile.html#last*

STUDIA UBB EDUCATIO ARTIS GYMN., LXI, 1, 2016, pp. 43 - 46
(RECOMMENDED CITATION)

STUDY CONSIDERING THE LEARNING OF BASIC INDIVIDUAL ACTIONS AND COLLECTIVE ACTIONS IN VOLLEY-BALL IN A TEAM OF BEGINNERS

CRISTIAN ŞANTA[1], EMILIA MARIŞ[2]

ABSTRACT. The selection of this study is based on the actual condition nationwide regarding a creation of more efficient learning methodology in volleyball game. Volleyball game known today a new development, due to the vast popularity and spread enjoyed by all ages. Spectacular game, dynamism is given by a variety of processes and technical and tactical actions of attack and defence, acting on the development of human personality, helping to cultivate educational factors aimed at developing collective spirit, imagination and perseverance (Şanta, C: 2016).

Keywords: *playing, volley-ball, initiation, individual actions.*

REZUMAT. ***Studiu privind învăţarea acţiunilor individuale de bază a acţiunilor colective în jocul de volei la o grupă de începători.*** Lucrarea are ca obiectiv găsirea unor mijloace eficiente pentru învăţarea acţiunilor de bază din jocul de volei. Jocul de volei cunoaşte în zilele noastre o nouă evoluţie, determinată de mare popularitate şi răspândire de care se bucură la toate categoriile de vârstă. Spectaculozitatea jocului, dinamismul este dat de o mare varietate de procedee şi acţiuni tehnico-tactice de atac şi apărare, acţionând asupra dezvoltării personalităţii umane, contribuind la cultivarea unor factori educaţionali ce vizează dezvoltarea spiritului colectiv, a imaginaţiei şi perseverenţei (Şanta, C: 2016).

Cuvinte cheie: *joc, volei, iniţiere, acţiuni individuale*

[1] *Universitatea of Babeş-Bolyai, Cluj-Napoca, Faculty of Physical Education and Sport, Romania*
[2] *CSŞ from Topliţa, Romania*
* *Corresponding Author: santa.cristian@yahoo.com*

Introduction

The spreading of volley-ball all over the world gathered with the increasing number of participants gives a special place among other sports. The players' evolution and performance exists only where knowledge and performance are going hand in hand and step by step in the learning process to achieve high scores.

The key aspects in volley-ball are the real main target in winning sets and eventually the match.

Adrian Dragnea's "Training – Theory and Methods" (1996) shows that an efficient work is based on a model of efficient action plan explained comprehensively.

Standards and Assumptions

This study is based upon the principle of the learning process of correctitude, rapidity of individual and collective actions to favourize in a positive way the capacity and performance of future volley-ball players.

We consider that this study may have at least two standards of getting started the scientifically procedure.

- The modality of learning the individual and collective technical -tactical actions at this age pointing the correct assimilation of the body moving
- Standardizing and rationalizing of these means at this age might be a favourizing factor for capacity and performance.

This study was made between two teams of beginners at C.S.S TOPLIȚA. At the first team I used the classic ways of instruction. At the second team I used a standardized method to correspond to a modern coaching.

To analyse my efficient work I can gather the following points:

- The correct timing in the process of learning the technical-tactics of individual and collective movements.
- The correctitude of these regarding the efficiency.
- The efficiency of individual and collective technical - tactical actions.

Instruments used at the Experimental Team

The instruments were rationalized and standardized for each technical - tactical action (serving, lifting, charge) for a team spirit game (Şanta, 2014).

- *THE SERVICE*
  Ex.1: Serving with extended arm.
  Ex.2: Hit the wall-ball (4-5 metres).
  Ex.3: Serve from under over the ned from different range.
  Ex.4: Serving from under at a precise target on the playground.
  Ex.5: Serving from under on fixed points.
- *FRONT PASS WITH TWO HANDS*
  Ex.1: Ball lifting visible through triangle fingers.
  Ex.2: Fast steps with strait arms (3-4 metres).
  Ex.3: Serves and passes over the ned (3-4 metres).
  Ex.4: Upper serving to a precise target.
  Ex.5: Triangular steps for passing the ball above the ned.
- *RECEIVING WITH TWO HANDS*
  Ex.1: Receiving the ball in an inappropriate condition (surprise).
  Ex.2: Receiving the ball on sitting position and drive it to a third mat.
  Ex.3: Two hands passes from under the ned.
  Ex.4: The closest service over the nearest play and two hand receiving.
  Ex.5: Service receives and charge.
- *THE ATTACK*
  Ex.1: The players under the ned standing on a support are receiving the serves given by the coach.
  Ex.2: Teaching and learning the bended-body-jump attack.
  Ex.3: Impetus, strike, ball strike, served by the coach.
  Ex.4: Charging strike offered by the coach.
  Ex.5: Lifted charge offered by a team mate.

Results

The comparison shows that every kid wants all and right now so the methods' of technical-tactical actions are important. They just want to play together. If we can't achieve this goal we'll lose young talents on the way. Assessment was made by the method of observation in time unit (table 1).

Table 1. Evaluate the necessary training time

TECHNIQUES – TACTICS	FIRST GROUP	SECOND GROUP
SERVICE	10 h	8 h
PASS (SET)	12h	10 h
RECEIVING	14 h	14 h
ATTACK	18 h	14 h

For a correct measure we used a structural level of 1 to 5 playing a simple match (table 2).

Table 2. Evaluation notes

TECHNIQUES – TACTICS	TRAINING	STUDY
SERVICE	4	4,5
PASS(SET)	3,5	4
RECEIVING	3,5	4
ATTACK	4	5

Conclusions

Over the facts we can come to a conclusion:

- All technical –tactic individual meanings were for a good result.
- Rationalising the methodology is the best for future performance.
- The movement lessons I used are concordance with the childrens' age concerning the preconized fast learning of actions.
- The surroundings are a benefit for childrens' volley-ball process and learning.
- The global instruction shows a delicate balance: to show the best of them children want to achieve all rapidly forgetting basics and here is the main role of the coach.

Scientifically we have drawn some conclusions to increase the performance of future volley-ball players:

- The methods used by us led to a better performance.
- The careful choosing of methods led us to an appropriate learning of technical- tactical procedures in short time.
- These steps in playing volley-ball led us to high results. The main points scientifically explained were pupils in a range of 10 – 12 years old training.

REFERENCES

Dragnea, A. (1996). *Antrenamentul sportiv,* Bucureşti: Editura Didactică şi Pedagogică.
Rusu, F. (2008). *Jocul de volei în şcoală*, Cluj-Napoca: Editura Napoca Star.
Şanta, C. (2014). *Volei*, Cluj-Napoca: Editura Casa Cărţii de Ştiinţă.
Şanta, C. (2016). *Jocul de volei în şcoală*, Cluj-Napoca: Editura Casa Cărţii de Ştiinţă.

STUDIA UBB EDUCATIO ARTIS GYMN., LXI, 1, 2016, pp. 47 - 54
(RECOMMENDED CITATION)

A BRIEF HISTORY OF THE WOMEN'S BASKETBALL SECTION FROM UNIVERSITATEA CLUJ SPORTS CLUB 1955 – 1972

ILDIKO MANASSES[1], ŞTEFAN MAROTI[2]

ABSTRACT. The present paper is part of a larger endeavour by means of which the authors, based on a varied research, are trying to present seventeen years of the women's basketball team's history, given the approaching 100th anniversary of Universitatea Cluj Sports Club. The first part focuses on the accomplishments, as well as on the weak results that followed after the team won the national championships in 1953 and 1954. The body of the paper is dedicated to the period 1960 – 1972, strongly marked by Vasile Geleriu, one of the iconic specialists of the team, who decisively influenced the fate of Cluj-Napoca university basketball.

Keywords: *women's basketball, Universitatea Cluj-Napoca, 1955 – 1972*

REZUMAT. ***File din istoria secţiei de baschet feminin din cadrul Clubului Sportiv Universitatea Cluj-Napoca 1955-1972***. Lucrarea este parte a unor eforturi prin care autorii, în preajma a o sută de ani de la constituirea Societăţii Sportive a Studenţilor Universităţii din Cluj, pe baza unei vaste documentări, prezintă trecutul echipei de baschet feminin. În prima parte, lucrarea se referă la împlinirile şi contraperformanţele din anii care au urmat cuceririi titlurilor de campioane din anii 1953 şi 1954. Partea cea mai consistentă prezintă perioada 1960 – 1972, care a fost marcată de activitatea unuia dintre specialiştii emblematici, Vasile Geleriu, care a influenţat hotărâtor destinele baschetului feminin universitar din Cluj-Napoca.

Cuvinte cheie: *baschet feminin, Universitatea, Cluj-Napoca, 1955 - 1972*

[1] *Babeş-Bolyai University, Faculty of Sport Sciences and Physical Education*
[2] *Retired*

Introduction

The almost secular history of Universitatea Cluj Sports Club has been marked by the existence of many sport branches. Looking at their evolution, we find sections that have lasted and improved their performances over time, and others that have ceased their activity, leaving only their memory behind. Women's basketball section is among the long lasting branches, an award-winning section that is now at the forefront of the Sports Club.

Our undertaking is to continue the series of articles dedicated to the history of the women's basketball team, its achievements, the memorable results of some of the coaches, and the increasingly better performance of some of the most representative players. Due to their great results, we are the heirs and beneficiaries of a precious treasury of great significance for the city's sports history, and we find it our duty to share it with the generations who have not witnessed the events.

The 1955 – 1960 period

After the great 1953 – 1954 accomplishments, the fans' as well as the team's management staffs' expectations regarding the 6th edition of the women's basketball championship were high. (Albulescu, 1981) For its supporters, Ştiinţa Cluj was the favorite to win the 1955 championship. Things turned out differently. The first factor that weakened Ştiinţa Cluj was that the players from Bucharest teams such as Ştiinţa Institutul de Cultură Fizică, Constructorul and Locomotiva CFR had significantly improved the quality of their game. The second factor was caused by the modifications regarding the team members.

This fact was visible from the very beginning of the championship. At the end of the tournament, the students from Cluj finished on the 5th position, with 5 victories and 4 defeats. (Sportul Popular 30 aprilie 1955). The return matches didn't end too successfully either, despite the efforts of the seven players that have borne the brunt of the game – Suzana Şerban, Elisabeta Cristea, Elza Sebestyén, Éva Papp, Ana Bereczky, Ida Borla and Ileana Winczller. Ştiinţa Cluj finished the edition of 1955 on the fourth position, having the same number of points as the teams from the 5th, 6th, and 7th position: Progresul Oradea, Progresul Târgu Mureş and Ştiinţa Ministerul Învăţământului Bucureşti (Sportul Popular, 6th December 1955)

Many people have considered that the down-fall was due to the players' loosening, but it was proved from the very first matches that the team had bigger problems. At the end of the first part of the 1956 edition, Ştiinţa Cluj was facing retrogradation, occupying the last position in the classification. The classification was as follows: 10. Ştiinţa Cluj 9 1 8 337-468 10 (Sportul 17 aprilie 1956).

The progress made in the return matches, where the team defeated Ştiinţa Învăţământ Bucureşti, Flamura Roşie Oradea, Locomotiva CFR Bucureşti and Progresul Oradea, coupled with the withdrawal of Progresul Târgu Mureş from the competition made it possible to save Ştiinţa Cluj from retrogradation, in the final lap, to the detriment of Energia Cluj (Fáklya, 4th December 1956).

The structure of the competition changed for the 1957 edition. The ten participant teams were divided into two series. Ştiinţa Cluj was assigned to the second series, together with Progresul Finanţe Bănci Bucureşti, Progresul Ministerul Învăţământului Bucharest, Energia Bucharest and Flamura Roşie Oradea. (Fáklya 4 February 1957). Some of the factors that contributed to the weak results of the team were the poor game quality of some players, problems with the number of team players and also organizational issues. Ştiinţa Cluj finished the season on the third position in the group, and continued the tournament for the positions V – VIII, which was held on the 17th – 19th of May 1957 in Bucharest, Floreasca Sports Room. The teams that competed in this group were: Ştiinţa Cluj, Flamura Roşie Târgu Mureş, Flamura Roşie Oradea and Ştiinţa Institutul de Cultură Fizică Bucharest. The team from Cluj lost all the games and finished on the 8th place. (Fáklya, május 21 1957)

The team went through a decline in the following period, caused by the fact that the new players were professionally not as valuable as they ones that they were replacing, and also not as motivated. The management staff of the team insufficiently supported Ştiinţa Cluj and these two factors lead to weaker and weaker results. Besides the difficulties in training, not enough support from the management of the team, the transfer of the coach Alexandru Şerban to the men's basketball team was the final drop that sealed the decline of the team. (Bodea şi colab., 2009**)**

During the 1957/1958 edition of the championship, organized for the first time according to the autumn (1957) – spring (1958) formula, the problems of the team got even bigger. The evolution of the players was far from what everybody expected.

Ştiinţa Cluj won two victories, against Ştiinţa Institutul de Cultură Fizică Bucharest, 39 – 35 in the away match and 39 – 26 in the home match. At the end of the season, the teams on the last two positions, Ştiinţa ICF Bucharest, place IX, and Ştiinţa Cluj, place X, retrograded from the Qualification Championship. (Anuarul sportiv, 1958)

After gaining first place in the regional competition, under the guidance of Iuliu Mike, the warm-hearted coach, Ştiinţa Cluj won the zone phase of the Qualification championship, held between 7 – 9th of August 1959, in Baia-Mare, and was advanced to the Republican Championship, category A. (Sportul Popular, 11th August 1959)

Even though most people were skeptical about the team's chances to compete at such a level, in the 1959/1960 edition, the team managed to fulfill the main objective of remaining in the first line of Romanian female basketball, having six victories, a tie and sixteen defeats. (Crişana 19 July 1960)

The epoch of Vasile Geleriu

The weak results of the previous years, the bad game quality of many players, and the absence of a qualified coach were critical enough reasons for the team's management staff to take immediate action and try to remedy the situation. In the summer of 1960, after the ending of the championship, Magdalena Gödri, Clara Bugár, Rodica Pop and Mihaela Enea were among the remaining players. New, young and promising players were transferred, among whom Virginia Jujescu, Ildikó Horváth and Margareta Szilágyi (Paloşanu şi colab., 1995). One of the most important changes which happened in the summer of 1960 was the appointment of Vasile Geleriu as coach. Between 1955 and 1960 he had been training Steagul Roşu, and together with the players Gheorghe Roşu, Ion Bota, Horaţiu Chiorean, Nicolae Bârsan, Gheorghe Doca, Cicerone Petrişor Dumitrescu and Ervin Frantz he achieved good results in the men's division B.

His credentials as a professional were more than honorable, winning the final of the Scholar Republican Championship with the High school's No. 2 students and the silver medal at the Junior Republican Championship with the players from the Sporting Pupils (Geleriu, 1955 – 1960).

His new teaching position at the Faculty of Sport Sciences and Physical Education and the coaching position gave him a brand new professional perspective. His objective was to form a competitive team and he started working with enthusiasm and professionalism. The choice of naming him as coach proved to be wise, results started appearing from the training period and continued in the first official games.

In the competition year 1960/1961, Ştiinţa Cluj got 13 victories and 9 defeats and finished on the 5th place (Sportul Popular 18 aprilie 1961), a result which made the players confident in themselves, and brought joy and hope to the supporters.

The players that kicked off the 1961/1962 season were Sanda Dumitrescu, Magdalena Gödri, Virginia Jujescu, Rodica Pop, Clara Bugár, Erika Brekner, Ildiko Horváth and Margareta Szilágyi. The team finished on the second place in the second series, after Ştiinţa Bucharest. As a result of this encouraging performance, the team from Cluj qualified for the I – VIII competition, which took place between 6 – 13th of May 1962, in Armata room from Cluj.

Summing up 5 victories, against Ştiinţa Bucureşti, Institutul de Cultură Fizică Bucureşti, Mureşul Târgu Mureş, Voinţa Braşov and Voinţa Târgu Mureş, and 2 defeats with Unirea Bucureşti and Rapid Bucureşti, Ştiinţa Cluj became national vice-champion. (Vasiliu, 1962)

Figure 1. The women's basketball team Ştiinţa Cluj in the 1962/1963competitional year (Source: Vasile Geleriu's family album)

In the years that followed, the results were discrepant, oscillating between the 10th position in the 1962/1963 championship and the 3rd position in the 1966/1967 season. (Paloşanu şi colab., 1995)

During this period, as an acknowledgement of the coaches' professional value and results, Vasile Geleriu was appointed assistant coach of the Romanian Senior National team and main coach of the Junior National team. (Buletin informativ, 1967)

Another proof of Vasile Geleriu's worth is that between 1960 and 1969 many of Ştiinţa Cluj's players were summoned to play for the national teams: Magdalena Gödri and Doina Rizescu, for juniors and Sanda Dumitrescu, Anca Demetrescu, Maura Popa, Ildiko Horváth, Magdalena Wagner, Olimpia Păcuraru and Magdalena Gödri-Tordai for seniors. (Bodea şi colab., 2009)

Starting with 1968, the team was destabilized by the generational change of players and the crisis of not having enough team members. At the end of the 1969/1970 edition, Universitatea Cluj-Napoca finished the championship on the last position and was degraded to division B (Buletin informativ nr. 2, 1970). In the following years, the situation got worse, in 1970 /1971 the team finished on the 5th position, out of ten teams, (Sportul, 3rd June 1971) and on the 4th position, out of five teams in the 1971/1972 edition. (Buletin informativ nr. 2, 1972). Universitatea Cluj-Napoca women's basketball didn't have the support, nor the ability to recover and come back to the first league of Romanian female basketball.

In September 1972, the sports institutions interested in overcoming the women's basketball crisis decided to merge together the sections from Universitatea Sports Club and Sports Association Armata Cluj-Napoca. The team that resulted after the fusion kept the name of Universitatea and was coached by Nicolae Martin. Vasile Geleriu was transferred to the men's team. (Sportul, 20 September 1972)

Figure 2. Vasile Geleriu (Source: Vasile Geleriu's family album)

During his 12 years activity as a coach, Vasile Geleriu proved that besides the quality of the professional training and leading of the players, the value of a coach resides also in his human qualities, and in that respect he was one of the best.

Although he had his ups and downs in his coaching career, Vasile Geleriu remains an emblematic figure in the history of Universitatea Cluj-Napoca. Together with Nicolae Martin, Horia Pop and Alexandru Şerban, he remains one of the memorable specialists who really made an impact on the fate of Cluj female basketball.

Conclusions

The period that followed the glory years, when Ştiinţa Cluj was national champion, was characterized by regression, reaching a peak in 1958 when the team faced retrogradation after the Qualification Championship.

The recovery process was fast, and under the guidance of Iuliu Mike, Ştiinţa Cluj rejoined the teams in the first league.

After the changes that occurred in 1960, Cluj female basketball stepped into a new era with the help of Vasile Geleriu. The results achieved during his activity as coach were very important as well as the contributions to the senior and junior national teams.

In sign of appreciation for his training qualities, Vasile Geleriu was appointed coach of the Republican junior team between 1961 and 1963. Also, in 1964 he became assistant coach of the Romanian senior team.

1968 marked the beginning of a crisis for Univeritatea Sports Club Cluj-Napoca, a crisis which lead the team to retrogradation to the second league. The team didn't receive enough support and couldn't find the necessary resources to get back on track during the following two years.

Vasile Geleriu remains one of the couches with the greatest influence on the fate of women's basketball from Cluj-Napoca.

REFERENCES

Albulescu, V. (1981). *Baschet. Mică enciclopedie*, Bucureşti: Editura Sport-Turism, 160 – 222.

Albumul de fotografii al familiei Vasile Geleriu.

Bodea, G. şi colab. (2009). *"U" 90 de ani de activitate sportivă de performanţă 1919 – 2009*, C.S. Universitatea Cluj-Napoca, Cluj-Napoca: 178.

Geleriu, V., *Caietul antrenorului*, 1955 – 1960, (manuscris).

Paloşanu şi colab. (1995). *Baschet feminin, festival în 12 acte şi un prolog*, în: U 75. Almanah aniversar. Pagini din gloriosul club sportiv românesc transilvănean, Cluj-Napoca: Editura Daco Press, 122 – 125.

Vasiliul, A. (1962). *Rapid Bucureşti a cucerit pentru a cincea oară titlul de campioană la fete*, în: Sportul Popular, luni 14 iulie 1962, anul XVIII, nr. 4030, Bucureşti: 2.

*** Anuarul sportiv 1958, (1958) Uniunea de Cultură Fizică şi Sport, Bucureşti.

*** Baschet (1956) în: Sportul Popular, marţi 17 aprilie 1956, anul XII, Bucureşti: 3.

*** Baschet. Buletin informativ nr. 4 1967 (1967) Federaţia Română de Baschet, Bucureşti.

*** Baschet. Divizia B, (1971) în: Sportul, joi 3 iunie 1971, anul XXVII, Bucureşti: 2

*** Befejződött a női kosárlabda bajnokság, (1956) în: Fáklya, december 4, kedd, XI-ik évfolyam, Nagyvárad: 3.

*** Clasamente, (1970) în: Buletin informativ nr. 2, Federaţia Română de Baschet, Bucureşti.

*** Campionatul Republican divizia B, feminin, ediţia 1971/1972, (1972) în: Buletin informativ nr. 2, Federaţia Română de Baschet, Bucureşti.

*** Echipa Ştiinţa ICF Bucureşti a câştigat Campionatul Republican de baschet, feminin, (1955) în: Sportul Popular, marţi 6 decembrie 1955, anul XI, Bucureşti: 2.

*** Fazele de zonă ale campionatului de calificare pentru divizia A, feminin, (1959) în: Sportul Popular, marţi 11 august 1959, anul XV, Bucureşti: 3.

*** Fuziunea între AS Armata şi Universitatea Cluj-Napoca (1972) în: Sportul, miercuri, 20 septembrie 1972, anul XXVIII, nr. 7181, Bucureşti: 3.

*** Observaţii la încheierea campionatului republican de baschet (1961) în: Sportul Popular, marţi, 18 aprilie 1961, anul XVIII, nr. 3808, Bucureşti: 3.

*** Rapid Bucureşti campioana la baschet feminin, (1960) în: Crişana, marţi, 19 iulie 1960, anul XV, Oradea: 2.

*** RNK női kosárlabda bajnokság (1957) în: Fáklya, május 21 1957, XII-ik évfolyam, Nagyvárad: 2.

*** S-a încheiat turul Campionatului Republican de baschet feminin, (1955) în: Sportul Popular, marţi 30 aprilie 1955, anul XI, Bucureşti: 2

*** Sport és testkultura. Kosárlabda, (1957) în: Fáklya, február 4 1957, XII-ik évfolyam, Nagyvárad: 2.

STUDIA UBB EDUCATIO ARTIS GYMN., LXI, 1, 2016, pp. 55 - 62
(RECOMMENDED CITATION)

THE DANCE IN MARTIAL ARTS

PETRE-ION BARBOŞ[1*], RAREŞ-DUMITRU CIOCOI-POP[1], HANNA IMOLA VARI[1]

ABSTRACT. Arts warriors were considered sacred, because the gods of war participates with together with earthly mortals to the earthly struggles. What was in heaven was on earth. If the world of the gods in heaven, they carried the fighting powerful, means that the same events are also on earth. The ancient and medieval word has experienced so many forms as of leisure, as of training of war, by using dance and arts of the war. The dance was not very popularized together with martial arts since historians have researched separately, detached from the context of society. A common approach (dance - martial arts) would lead to a better understanding of how people in ancient times conceived the world in which they lived.

Keyword: Temple, priestesses, Devadas, martial arts, dance, Greece, Spartans, India, Yamaguci, Koshti, Legong.

REZUMAT. ***Dansul în Artele Marţiale.*** Artele marţiale sunt cunoscute din perspectiva luptelor şi tehnicilor. Japonia, China, Coreea, Vietnam sunt doar câteva dintre ţările care au ieşit în evidenţă în ceea ce privesc artele războinice. Istoricii au omis, de-a lungul timpului, o abordare împreună cu ritualurile religioase. Dansul este unul dintre aceste ritualuri extrem de importante, fără de care nici nu am putea vorbi despre arte de luptă. Astăzi nici un luptător nu mai cere ajutorul Zeului Războiului, pentru ca regulile s-au schimbat. Dar reminiscenţe ale acestuia le vom regăsi în diferite întreceri: dansul rugby-iştilor din Noua Zeelanda, dansurile judecătorilor din Sumo sau dansurile din Africa, ce le regăsim în Capoiera. Această lucrare doreşte să cerceteze rolul pe care l-a avut dansul în istoria militară. O prezentare generală ce poate lăsa loc unei cercetări ştiinţifice de nivel superior.

Cuvinte Cheie: Templu, prinţese Devadas, Arte marţiale, dans, Grecia, Sparta, India, Yamaguci, Koshti, Lelong.

[1] *University of Babeș-Bolyai, Cluj-Napoca, Faculty of Physical Education and Sport, Romania*
[*] *Corresponding Author: petrebarbos@yahoo.com*

Introduction

Ancient and medieval history recorded over time a strong connection between the arts of war and music respectively dance. Present in religious rituals in temples, dancing was not a form of relaxation, but also a symbolic expression and body for those who went to war. In Greece, Japan, in many Islamic sects, and the tribes of Africa or New Zealand and Australia, warrior rituals included at least one dance scene.

Even in the modern dance music remains as one of the instruments that increase efficiency psychology soldiers. Military music was present on all fronts of war, symbols of dances performed by masters of stage movement are being presented to soldiers that were to go to war. The joy of victory was manifested through dance, music and drink.

Although the present in the life of society researchers have not occupied discovering symbolism contact and psychological role of music and dance. Present work tries to do a broad review of the influence of dance movement in ancient and medieval societies.

Ancient Greece

Dance and martial arts, though not very popular in the modern world, were part of the warrior society of ancient and medieval periods.

Greece, Rome, China, Japan, Korea, Vietnam, but also in other regions of the world, music was used in warrior arts. In Japan, in most samurai fighting styles, music and dance appeared as auxiliary forms.

We would be tempted to believe that a samurai was preparing his fighting tehniques through dance and music. No, dance and music were mystical forms, as well as many arts that the practitioner used in prayers, prayers that kami (spirits) were required to participate in military training. Following these delightful legends say that Yamagugi, forest spirits can participate and even reveal some secret techniques (Barboș, 2015).

Dancing was an art practiced in ancient Greece in all social life areas. Philip of Macedon (379 BCE-336 BCE), father of Alexander the Great, was married to dancer Larissa, the fifth wife of the seven wives he had. Philip of Macedon fell in love with Larissa at a banquet after she presented a dance (Worthington, 2010).

In the ancient Greece dances were not executed mixed, only in very few situations. They generally took place either just between men or just between women. Situations where dancing is mixed (men and women) were usually conducted at a chain.

Dances in Athens and Sparta were taken over from Crete, once with its conquest in 1500 BCE by Greeks. Whether we are talking about dancing in Apollo's honour, whether we are talking about those dedicated to Dionisy, both were given lame to the gods and warrior arts.

A warrior dance originated from Minoan Bronze Age from ancient Greece, was "*Pyrichi*" (*Dancing in armour*) (gr. Πυρρίχιος or πυρρίχ). Pyrrhus was the son of the legendary Achilles, who couldn't been killed unless a weapon touched his heel. Another legend says that when Zeus was born, to hide it from his father, the god Cronos, not to be eaten, nine goddesses (Kouretes) cared for the little one. When he cried, the goddesses were beating down the shields for the sounds of weeping to be covered. It was a victorious warrior dance. Its origins are Doric, and the warriors passed it from generation to generation under the form of movements that imitates fight against the enemy.

In Athens, this ritual was present when a son was born. The father showed his joy by dancing accompanied by striking a shield.

Figure 1. *Gymnopaedia Festival held for Apollo in Sparta. Ancient sarcophage*

Spartans children were required to be initiated into the art of dance from the age of 5. Under the leadership of a warrior, children were initiated into the art of dance, hymns and sacred rituals, all addressed to the great gods. Another very popular dance in Sparta was Gymnopaedia. It was held once a year in the (Agora) market. Here men didn't wear any clothes as they performed dance movements combined with boxing and wrestling, to the delight of those watching.

Figure 2. *Πυρρίχιος, Vatican Museums, Pius-Clementine Museum, Room of the Muses, 66*

A pure Greek military dance was called *Korybante*. Phrygian origins, *Korybantum* was initially dedicated to the vegetation gods and to *Kyzbel* goddess. In the third century BCE, this dance was gradually transformed into a warrior dance, but including also many orgiastic scenes (Fink, 2009).

East Asia

In India, dancing was present not only in the temples dedicated to gods, but also in the warrior castles, where along with prayer, sacred symbols were transmitted in this form. The role of Grand Nataraja, the Hindu god of cosmic dance, is to perform a series of dances with the aim of destroying the universe, thereby paving the way to Brahma in the creation of the world.

Special attention is given to God Nataraja especially in southern India at Mahakaleshwar Jyotirlinga temple in Madhya Pradesh state. Here religion and art of dance blends in perfect harmony (Berkson, Doniger, Michell, 1983).

In temples dedicated to the god *Nataraja*, priestesses (Devadas) devoted their entire life's to dancing and prayers. At these temples numerous warriors came from Indian tribes to pray and to inspire the works of the great warrior Nataraja.

The importance of these dances and religious rituals led to elaborating a paper with the name "*Natyashastra*" in 200 BCE. 200 CE period, having as presumed author Bharata Muni, a theatrical, Indian musician and man of letters (Daumal, *1970*).

Figure 3. *Shiva / Nataraja* -Painting

In other parts of India, the dancing was, and still is today, dedicated to the goddess Apsara, Gandharva god's wife, the god of music who plays instruments and his wives are dancing in celestial palaces. The origin of these dances is dates from the time of King kmer Suryavaman the second (1113-1145). The dance was performed only in the royal palace, and it was addressed strict to the great royal personalities. It was made public once with the Khmer Rouge regime.

In Persia (today Iran) there were several types of dances, one of which was a warrior dance, accomplished with the aim of preparing soldiers for battle. Fighters were called Koshti and they were practicing a kind of wrestling in a room called Zoorkhaneh synonymous with the Greek word gymnasium. Its originates from (132 BCE.-226).

Among fighting movements carried out by akoshti, on music rhythms warrior dance was also executed.

This form of art has been banned in Iran once with the Iranian Revolution of 1979, when the ultra-religious parties came to power, who considered dance as pagan. Despite these prohibitions, Persian art and dance were taken over by Sufi Muslim rituals (Farzad, Nekoogar, 1996).

Figure 4. Yurkhaneh, the traditional sport.
Picture by NAEINSUN *form Training hall-Iran, 2013*

Figure 5. Legong dance (from: www.esatradi.deviart.com)

One of the most famous Asian dances is called Legong. Legong is originated from Indonesia, it is believed that from the nineteenth century. It comprises a series of complicated movements performed with the hands and feet. Every gesture of the hands has a special significance, which must be in perfect harmony with facial mimicry. Legend says that Prince Sukwati had a dream in which two young virgins performed a dance on gamelean music (performed with mallets). As soon as he woke up, he implemented the movements making the Legon dance. The dance was so much appreciated that it was taken over by theatre artists.

Legong dancers interpret warlike scenes, such as the story of King Lasem Malat, who lived in the twelfth century. He had a conflict with his father, who did not want to have Princess Ranjaswari as his daughter in law, and the princess felt the same about Lasem. Crazed with love, Lasem took the princess in hostage, but a giant raven comes to her rescue. The whole story is presented as a pantomime, and skillfully executed by dancers dressed in bright colorful costumes (Davies, 2006).

Conclusions

If war and the art of dancing have always been closely related, today they are separate arts, with distances between them, not representing each other anymore. Those who want to study the history of martial arts, but also the beginnings and the evolution of dance styles throughout history, have to approach them together.

Existing work though many, is unfortunately treated separately, leading to confusion and time-consuming to be understood in the context in which they have developed throughout history.

We are hoping for a more detailed approach through a comprehensive research study in the upcoming period.

REFERENCES

Barboș, I.P. (2015). *Artele Marțiale și Societățile Asiatice*, Cluj-Napoca: Editura Risoprint.

Berkson, C., Doniger W., Michell, G.E. (1983). *The Cave of Shiva*. Princenton University Press.

Daumal, R. (1970). *Bharata : L'Origine du Théâtre. La Poésie et la Musique en Inde,* Gallimard.

Farzad, Nekoogar (1996). *Traditional Iranian Martial Art* (Varzeshe Pahlavani) Menlo Park.
Fink, G. (2009). *Who is Who in der antiken Mythologie*, pag. 172, Aufl. München.
Davies, S. (2006). *Balinese Legong: Revival or Decline?, Asian Theatre Journal,* 23.
Worthington, I. (2010). *Philip II of Macedonia*, Yale University Press.

STUDIA UBB EDUCATIO ARTIS GYMN., LXI, 1, 2016, pp. 63 - 72
(RECOMMENDED CITATION)

THE NUTRITIONAL EDUCATION OF YOUTH – A BASIC ELEMENT OF AN OPTIMAL HEALTH

PAULA DROSESCU[1*], BEATRICE-AURELIA ABALAŞEI[1], ALEXANDRU-RAREŞ PUNI[1]

ABSTRACT. The fact that one of the pillars of a good health is optimal nutrition. For this reason, knowing what, how, when and how much to eat becomes a fundamental question. Starting from this reality, we wished to design a study that would highlight the way in which young people feed themselves and their sources of information on this topic. The study included 164 subjects from high-school (79) and university (85), aged between 17 and 27 years old. In the present paper we will show some of the results we have achieved by applying a survey on the subject on nutrition that we had created ourselves. The survey included 15 questions that aimed to take a look at what the nutritional intake of the subjects was made up of, as well as the frequency with which certain food groups were included in each subject's weekly diet. The results pointed out a clear necessity for a better education regarding nutrition among young people, and also the need for the creation of certain programs that would better explain to youth groups which types of foods are better consumed frequently and which ones should be eaten in moderation, or rarely, or never. The survey also pointed out that the current main source of information on this subject for the young subjects is the internet – which is perhaps unsurprising, as we live in a very modern high-tech age, but which raises the further question of the quality of the web sites that young people use in order to extract their information; as we know, the internet is both a place for scientific exchanges, but also for simple opinions expressed on popular blogs by people with no scientific or rigorous education on the subject. The survey also revealed that girls are more interested in receiving or researching information regarding nutrition than boys.

Key words: *optimal nutritional intake, food groups, health, young people*

[1] *Faculty of Physical Education and Sports "Alexandru Ioan Cuza" University - Iasi, Romania, Cod 700554*
[*] *Corresponding Author: paula_drosescu@yahoo.com*

REZUMAT. ***Educaţia alimentară a tineretului – element de bază a unei stări de sănătate optime.*** Este binecunoscut faptul că unul dintre pilonii stării de sănătate este alimentaţia optimă. Din acest considerent a şti ce, cum, când şi cât să mănânci devine fundamental. Pornind de la această realitate, am dorit să realizăm un studiu prin care să punem în evidenţă modul în care tinerii se alimentează, precum şi de unde îşi iau ei informaţiile legate de alimentaţie. Studiul a cuprins 164 subiecţi din mediul preuniversitar (79) şi universitar (85), cu vârste între 17 şi 27 de ani. În cadrul materialului de faţă prezentăm o parte din rezultatele obţinute prin aplicarea unui chestionar propriu privind alimentaţia: chestionarul a cuprins 15 întrebări care au vizat modul în care este configurată raţia alimentară a celor intervievaţi. Rezultatele trimit la necesitatea realizării unei educaţii alimentare, şi evident, la elaborarea unor programe prin intermediul cărora să li se explice tinerilor ce alimente este util să consume frecvent, moderat, rar sau să excludă din alimentaţie. Chestionarul a revelat de asemenea faptul că la momentul actual principala sursă de informaţie a tinerilor pe subiectul nutriţiei este internetul – ceea ce poate nu este surprinzător, în condiţiile în care trăim într-o perioadă foarte modernă şi dezvoltată tehnologic, dar aceasta ridică o întrebare suplimentară legată de calitatea site-urilor web de pe care tinerii îşi extrag informaţiile; după cum ştim cu toţii, internetul este atât o platformă pentru un schimb de informaţii ştiinţifice, cât şi un loc pentru păreri exprimate pe bloguri populare de către persoane fără o educaţie riguroasă sau o formare ştiinţifică pe această temă. Chestionarul a mai arătat de asemenea faptul că fetele sunt mai interesate în a primi sau a căuta informaţii pe tema nutriţiei decât băieţii.

Cuvinte cheie: *alimentaţie optimă, clase de alimente, stare de sănătate, tineri*

“Let food be thy medicine and medicine be thy food” (Hippocrates)

Introduction

The World Health Organization defines, ever since 1946, health as being “a state of complete physical, metal and social well-being – and not merely the absence of disease or infirmity”. Later this definition was expanded to include also “the ability to lead a socially- and economically-productive life”. In order to achieve a state of health, several pillars are needed as a base – and one of them is particularly important: nutrition (Bilic, 2005).

The explosion and abundance of different types of food available are heavily putting to test a person's will to resist to temptation. In many cases, the food contains additives that make us give in to the pleasant taste of something that has no nutritional quality or necessity. This explains why many young people become obese at early ages – this is something associated also with a chronic lack of physical activity (Drosescu, 2007, Grigorieff, 2006).

In order for the body's growth and development processes to take place, we need quality protein, fats and carbohydrates, together also with vitamins, minerals, water and fibre. All these are collectively called "fundamental nutritional elements" – meaning the elements based on which the body can build quality structures that can ensure its optimal functioning. If these fundamental nutritional elements are of poor quality or are lacking, the body cannot function in an optimum way, and it becomes ill or it dies. The hygiene of nutrition has stated some very firm rules that define the composition of the correct nutritional intake in terms of both quantity and quality (Mencinicopschi, 2010, Biro, 2005).

Any activity we undertake implies a consumption of energy (Tugui, 1982, McKeith, 2006), for example: reading aloud 1.5 calories / hour, getting dressed or undressed 1.69 calories / hour, light physical work 75-100 calories / hour, moderate work 100-300 calories / hour, hard work 300-500 calories / hour, and very hard physical work over 500 calories / hour. For athletes, the energy expenditure during training has been estimated at:

- light athletic effort, or in the break between competitions: 75-100 calories / hour
- medium-level effort, for regular training: 100-300 calories / hour
- intense effort during competition: 300-500-700 calories / hour
- very intense effort (water polo or Nordic Combined competitions): over 500 calories / hour.

In a correctly composed nutritional intake, the proteins have a ratio of 12-15 (20)%, of which 60% should be of animal origin, and 40% of plant origin. The quantity of protein recommended varies based on age, gender, the type of activity and conditions.

The ratio of carbohydrates is of 300-700 grams / day, which makes up around 55-65% of the day's caloric intake. From this amount, 35% should be monosaccharides or disaccharides, and 65% polysaccharides (the ones that released the stored energy slower and more constantly).

Lipids have a ratio of 20-30% of the caloric intake, of which 70% are of animal origin and 30% of plant origin; in special cases, such as hard physical labour, that takes place in difficult environmental conditions, or in winter sports, the intake of lipids can be calculated at 1.5-2 grams of lipids per kilogram of body weight per day. For the athletes that are active in winter or in low-temperature environments (mountaineering, gliding, etc.), the amount of lipids can be further increased up to 2-2.3 grams per kilogram of body weight per day.

However, these rules are seemingly distorted on their way from the nutrition specialists to the final beneficiaries, and the communication and education don't function very well.

One of the premises that we started from when we created and applied the Nutritional Survey was that "*perhaps the cause of an incorrect nutrition lies more than just in the variety of foods eaten*" (McKeith, 2006, Mincu, 1984).

Materials and method

Our study included 164 subjects, of which 79 were high-school students and 85 were university students, aged between 17 and 27 years old – at this stage of the study we are interested only in finding out whether the information regarding nutrition has reached those it is addressed to.

In the present paper, we will show some of the results we have achieved by applying a survey created by ourselves that concerned nutrition. The survey included 15 questions regarding the way in which the nutritional intake of our subjects is configured and what kind of foods is included – an investigation into the quality of their nutrition. The questions in the survey aimed to identify if the main categories of food nutritional elements are included in their diet: Milk and dairy products, Meat and derived products, Eggs, Animal and Vegetable Fats, Cereals and bakery items, Beans and dry vegetables, Fresh vegetables and fruits, and Sweets.

Apart from the main categories of nutrients, we have observed also the frequency with which these were included in the diet, measured according to the following scale: never, once per week, 2-3 times per week, 4-6 times per week, daily.

Results and discussions

Table 1. The distribution of the subjects that consume products included in the Milk and Dairy category

Food type	Never	Once	2-3 times	4-6 times	Daily
Milk	7,3%	24,4%	29,9%	22,6%	15,9%
Milk derivatives – yogurt, buttermilk	7,3%	18,3%	46,3%	12,8%	15,2%
Cottage cheeses, Feta cheese	6,7%	26,8%	40,2%	17,1%	9,1%
Other types of cheeses – pressed cheese, Cheddar cheese, Swiss Cheese, Emmentaler, etc.	15,9%	35,4%	32,9%	10,4%	5,5%

The milk and dairy category is included in the diet of our subjects differently, based on the type of products they choose to include – the date shown is expressed as percentage from the total number of subjects.

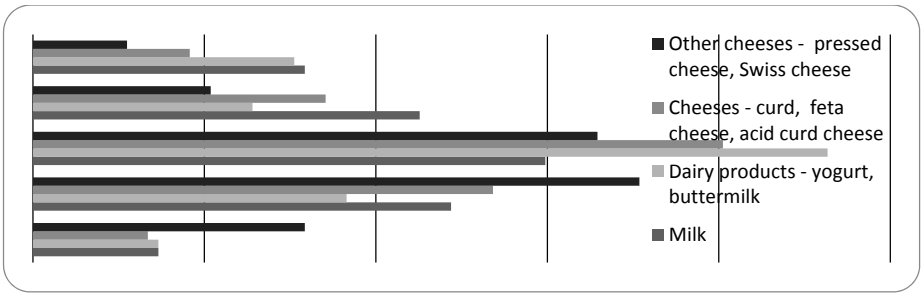


Figure 1. The distribution of the subjects that consume products included in the Milk and Dairy category (the percentages are shown on the horizontal axis)

14.6% of the participants do not consume milk, yogurt or derivatives, while 42.7% include these products in their diet only once per week – which means that overall 56.3% of the subject do not eat these kinds of products.

31.1% of the subjects eat milk or yogurts daily, while only 14.6% have ensured their cheese intake in their nutritional intake.

The data is a subject of concern from the perspective of the 56.3% who consume no such products. The percentage of 31.1% who consume them daily is also hardly an encouragement, because the percentage of calcium contained in such products is very low, and very far from the amounts needed by the processes f growth and development in our body.

The situation recorded for the Meat and derived products category is as follows:

Table 2. The distribution of the subjects that consume products included in the Meat and Derived Products category

Food type	Never	Once	2-3 times	4-6 times	Daily
Chicken or turkey meat	3.7%	18.9%	45.7%	20.7%	11%
Meat products – salami, sausage, ham, etc.	6.1%	16.5%	30.5%	22.0%	25%
Pork meat	14%	55.5%	17.7%	7.3%	5.5%
Fish – fresh, smoked, salted	22%	56.7%	13.4%	5.5%	2.4%
Beef or veal meat	26.8%	45.7%	22.6%	3.7%	1.2%
Canned meat or fish	41.5%	44.5%	11%	3%	0%

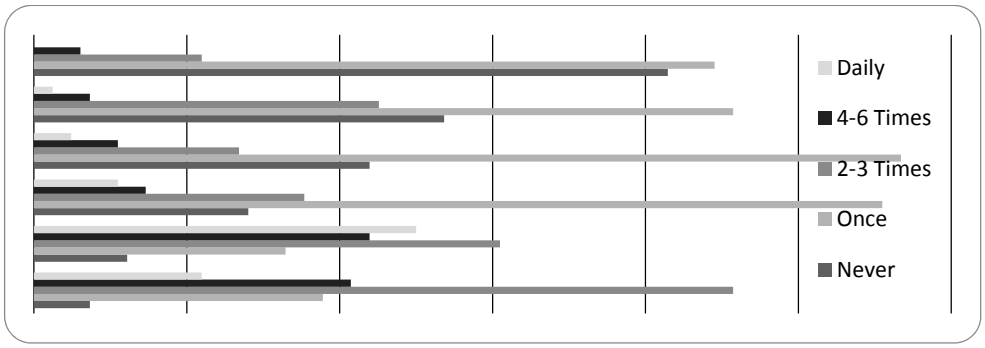


Figure 2. The distribution of the subjects that consume products included in the Meat and Derived Products category (the percentages are shown on the horizontal axis)

One of the first aspects I would like to point out is the high number of subjects that eat chicken, turkey or meat-derived products daily 36% (11% + 25%), once per week 35.4% (18.9% + 16.5%), 2-3 times per week 76.2% (45.7% + 30.5%). The fact that the nutritional intake is appropriately provided with meat is a good thing, but we have to point out also the fact that in the case o those who consume such products 4-6 times per week or daily the emphasis is placed on the sub-category of meat-derived products (salamis, sausages, hams). It is well-known that this category does not provide the quality proteins that the body needs, that it contains a high percentage of associated fat as well as significant amounts of salt.

Pork meat is not significantly present in our subjects' intake, at least not according to their statements: never 14%, once per week 55.5%, 2-3 times per week 17.7%, 4-6 times per week 7.3%. If this is true, there can be two explanations for this fact: either the fat contents of pork meat is well known and is a sufficient reason for it to be avoided, or the price of pork meat is higher than that of chicken meat and therefore the latter becomes the main option.

In a similar situation with the Pork sub-category is also the Fish (fresh / smoked / salted) sub-category: never 22%, once per week 56.7%, 2-3 times per week 13.4%, 4-6 times per week 5.5%. The data is realistic if we take into consideration the fact that the city of Iasi is not an area where fishing is a main hobby, and the price of fish is relatively high compared to the purchasing power of the local population.

Although beef and veal are considered among the highest-quality meats in regards to the intake of animal proteins, its proportion in the subjects' diet is very small (1.2%) for daily intake, small (3.7%) for an intake 4-6 times per week, moderate (22.6%) for the intake 2-3 times per week. Moreover, over a

quarter of the subjects (26.8%) do not include beef or veal in their weekly food ratio. The explanation can be both financial (high price), as well as difficulty to procure (since this meat does not sell well in stores, it is also higher to find).

What our survey has pointed out is that 41.5% of our subjects do not eat canned meats or fish, and a further 44.5% eat these products only once per week. Here we could mention that perhaps they are unfamiliar with the fact that it is preferable to consume a serving of canned fish (especially if it is in tomato sauce or in its own sauce) than to consume meat-derived products (hams, etc.) - whose disadvantages we mentioned above. The best option should always be fresh meat that can be cooked for food, but when this is lacking or in order to diversify the menu then canned fish is a good substitute.

Data regarding the Eggs sub-category

Table 3. The distribution of the subjects that consume products included in the Eggs category

Food type	Never	Once	2-3 times	4-6 times	Daily
Eggs	3%	15.2%	56.7%	14.0%	11%

As far as the intake of eggs is concerned, the situation is closer to a healthy nutrition: 56.7% eat them 2-3 times per week, 14% 4-6 times per week. The percentage of 11% daily consumers is relatively high and can lead us to the idea of compensating for other protein sources: the egg consumption can substitute for that of meat. This situation can be explained both financially, and also by the ease of preparing the food.

Data regarding the Animal and Vegetable Fats category

Table 4. The distribution of the subjects that consume products included in the Animal and Vegetable Fats category

Food type	Never	Once	2-3 times	4-6 times	Daily
Animal fats – butter, cream	22.6%	36.6%	28.7%	5.5%	6.7%
Vegetable fats – oils, margarine	18.9%	28%	24.4%	13.0%	17.1%

Regarding the above data, we find an argument in favor of this study's idea: the importance of knowing what the correct nutrition is made up of and of the way in which food can be prepared in a hygienic way. Values of 18% (never), 28% (once per week) and 24.4% (2-3 times per week) are not realistic for the consumption of vegetable fats, as most processed or cooked foods contain oil.

The responses regarding animal fats are also out of the optimal range of the parameters: 22.6% do not consume these fats, while 36.6% consume them only once per week – for a total of 59.2%. Butter and cream are an important source of energy. Some fats contain or help transport fat-soluble vitamins A, D, E, K as well as the linolenic and linoleic essential fatty acids. These essential fatty acids are part of the composition of triglycerides, and are necessary for the synthesis of prostaglandins, which regulate many of the body's functions (blood pressure, blood coagulation through the aggregation of blood platelets, the secretion of gastric acid). The resistance of cell membranes also depends on the essential fatty acids. The human brain, the central nervous system and membranes from the entire body require the omega-3 fatty acids (especially EPA – eicosapentaenoic acid and DHA – docosahexaenoic acid) in order to function normally. These are only some o the benefits of fats. It is very true that mass-media always talks about "for your health, avoid the consumption of fats, salts and alcohol". But not all kinds of fats should be avoided – and the quantity in which they are consumed is also important.

The answers regarding the Cereals and Dry Vegetables sub-category

Table 5. The distribution of the subjects that consume products included in the Cereals and Dry

Food type	Never	Once	2-3 times	4-6 times	Daily
Bread	1.8%	4.9%	12.2%	7.3%	73.8%
Cereal-derived products: rice, semolina, pasta, polenta	4.9%	30.5%	42.7%	15.2%	6.7%
Potatoes	0%	15.9%	45.7%	28%	10.4%
Dry vegetables - beans, peas, soy	16.5%	47%	23.8%	9.8%	3%

Vegetables category

What we can notice straightaway is that 73.8% of the subjects declare they eat read daily – this is not necessarily a negative aspect in itself, but it largely depends on the quality of the bread that is consumed: in a future study we will ask our questions a lot more precisely.

We can also underline the consumption of potatoes at a ratio of 10.4%, which is actually below the numbers we were expecting to see.

As we have previously mentioned, we have applied our surveys in the month of September, which explains the low percentage of dry vegetables in the nutritional intake: 3% daily, 9.8% 4-6 times per week.

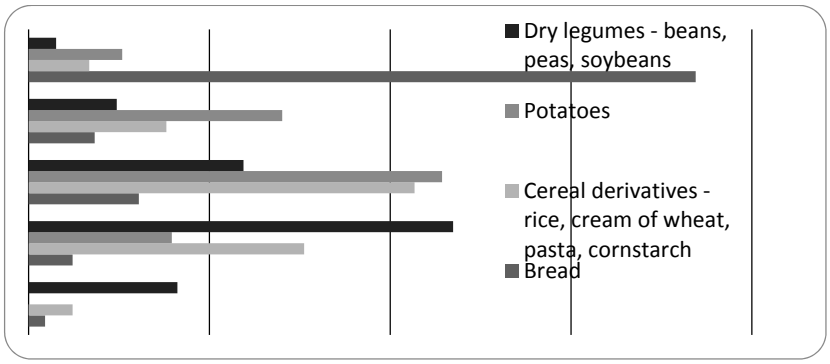


Figure 3. The distribution of the subjects that consume products included in the Cereals and Dry Vegetables category (the percentages are shown on the horizontal axis)

The situation of the answers regarding the Fresh vegetables and fruits category

Table 6. The distribution of the subjects that consume products included in the Fresh Vegetables and Fruits category

Food type	Never	Once	2-3 times	4-6 times	Daily
Fresh vegetables and salads	1.2%	9.8%	32.9%	28.7%	27.4%
Fresh fruits	0%	7.3%	19.5%	22.6%	50.6%

Regarding this sub-category, we notice that at least half of the subjects eat fresh fruits daily. The percentage of 7.3% subjects who declared that they eat fruits once per week, together with the 19.5% who eat them 2-3 times per week, brings the total to 26.8% for whom the intake of vitamins and mineral salts is extremely low.

The results recorded for the Sweets (other than fruits) sub-category

Table 7. The distribution of the subjects that consume products included in the Sweets category

Food type	Never	Once	2-3 times	4-6 times	Daily
Sugar, honey	7.9%	20.1%	29.3%	18.9%	23.8%
Sweets	1.2%	9.1%	17.1%	25.6%	47%

The ratio of those who consume sugar and honey is under a quarter (23.8%), while most of the subjects prefer a daily intake of sweets (other than fruits and/ or sugar / honey). The percentages of 47% who eat sweets are simply very serious through its consequences for the short-term (cavities), but also medium / long term (obesity, risk of cardiovascular disease, diabetes).

Most likely the messages in the mass-media are starting to have a certain effect, but it is still unknown among the large population that the combination of carbohydrates with proteins and fats (such as in chocolate, cakes) are as unhealthy as the consumption of raw sugar.

One question in the survey was related to the source on which the subject relies for information regarding nutrition: 73.2% said the internet (47.3%) or friends (25.9%), 17.7% get their data from the family and the rest 9.1% from school. And while it is true that the internet can also be a source of scientific data, do young people access those sites or the popular media sites?

Girls declared they were more interested in information regarding diet, potentially due to the motivation of maintaining a desired weight (the study included 67 boys and 94 girls).

Conclusions

If we wish to have a healthy population, it is important to educate them regarding nutrition.

Programs must be created in order to explain to young people which food types should be consumed frequently, moderately, rarely and which should be completely excluded from their intake.

Presenting the fundamental nutritional elements (proteins, carbohydrates, fats, mineral salts, vitamins, water, fibers) as factors based on which we can build our health, and not as some rigid rules that are hard to be observed.

Organizing Nutrition classes could probably increase the interest and preoccupation for appropriate diets.

REFERENCES

Bilic, M. (2005). *Silueta dincolo de mituri*. Bucureşti: Editura Coreus Publishin.

Biro, V. (2004). *Dietoterapia, aloeterapie, gemoterapie*. Iaşi: Editura Polirom.

Drosescu, P. (2007). *Igiena Educaţiei fizice şi Control medical*. Iaşi: Editura Pim.

Grigorieff, G. (2006). *Sfaturi dietetice pentru a mânca bine şi a slăbi sănătos*. Iaşi: Editura Polirom.

Holford, P. (2007). *Cartea nutriţiei optime*. Bucureşti: Editura All.

McKeith, G. (2006). *Hrană vie pentru sănătate*. Bucureşti: Editura Curtea Veche.

Mencinicopschi, G. (2010). *Şi noi ce mai mâncăm…?* vol I şi II. Bucureşti: Editura Coreus Publishin.

Mincu, I. (1984). *Alimentaţia raţională şi sănătatea*. Bucureşti: Editura Sport-Turism.

Treben, M. (2001). *Alimentaţia sănătoasă cu plante*. Bucureşti: Editura Gemma Pres.

Ţugui, I. (1982). *Alimentaţia raţională şi igienică a omului sănătos*. Bucureşti: Editura Medicală.

STUDIA UBB EDUCATIO ARTIS GYMN., LXI, 1, 2016, pp. 73 - 80
(RECOMMENDED CITATION)

STUDY ON THE INFLUENCE OF PRIMARY KINETOPROPHYLAXY ON BODY WEIGHT OF PREGNANT WOMEN

ENIKO GABRIELA PAPP [1*], BELA SZABO[2], SIMONA SZASZ [2]

ABSTRACT. Woman, even if is well informed and documented, she cannot imagine the multiple changes her body will pass through in a relatively short time, that of the pregnancy. Interdisciplinarity of physical therapy allows new guidelines aiming towards a dynamic psychological-body approach of the pregnant woman. The study objectives were: development and implementation a comprehensive program of prenatal training, analysis and interpretation of results, establishing and drawing conclusions. The methods and means were: implementation of kinetoprophylactic program of pregnant woman included theoretically, physically and mentally training, measuring and evaluating the weight gain during pregnancy. Results: to increase in weight between 0-9 kilograms, at this level ascertaining the frequency of 17 subjects in the experimental group 8.5% and 7 subjects in the control group representing 3.5% in increase in weight between 9-15 kilograms; at this category it was found a frequency of 173 subjects, ie 84.5% of the experimental group and 161 subjects, ie 80.5% of the control group and the increase in weight over 15 kg, it was found a frequency of 10 subjects, ie 5% of the experimental group and 32 subjects, meaning 16% of the control group, of all subjects of the study group. Conclusion: even if weight gain frequency analysis seems to refute working hypothesis, we consider this positively as we reveal a trend in society regarding the principles of care of the mother during pregnancy and weight gain control.

Keywords: *woman, pregnancy, prophylaxis*

REZUMAT. ***Influența kinetoprofilaxiei primare asupra greutății corporale a gravidelor.*** Femeia, chiar dacă este bine informată și documentată, nu își poate imagina multiplele schimbări prin care urmează să treacă corpul ei într-o perioadă de timp relativ scurtă, cea a sarcinii. Interdisciplinaritatea kinetoterapiei permite

[1] *School Center of Inclusive Education No.2 Târgu Mureș, Mărăști No 8, 540328, Romania*
[2] *The University of Medicine and Pharmacy of Târgu Mureș, Gh. Marinescu No. 38, 540139, Romania*
[*] *Corresponding Author: eni_papp@hotmail.com*

noi orientări ce tind spre o abordare psiho - corporală dinamică a femeii gravide. Obiectivele studiului au fost: elaborarea şi implementarea unui program complet de pregătire prenatală, analiza şi interpretarea rezultatelor şi stabilirea şi formularea concluziilor. Metodele şi mijloacele au fost: implementarea programului kinetoprofilactic a gravidei a cuprins pregătirea din punct de vedere teoretic, fizic şi psihic şi măsurarea şi evaluarea creşterii în greutate pe perioada sarcinii. Rezultate: la creştere în greutate între 0-9 kilograme, la acest nivel constatându-se o frecvenţă de 17 subiecţi din grupul experiment reprezentând 8,5% iar 7 subiecţi din grupul control reprezentând 3.5% la creştere în greutate între 9-15 kilograme; la această categorie, s-a constatat o frecvenţă de 173 subiecţi, adică 84,5% din grupul experiment, şi 161 subiecţi, adică 80,5% din grupul control iar la creştere în greutate de peste 15 kilograme, s-a constatat o frecvenţă de 10 subiecţi, adică 5% din grupul experiment şi 32 subiecţi, adică 16% din grupul control, din totalul de subiecţi ai lotului studiului. Concluzii: chiar dacă analiza frecvenţei de creştere a greutăţii pare să infirme ipoteza de lucru, acest aspect îl considerăm pozitiv deoarece ne relevă existenţa unui trend în societate privind principii de îngrijire a mamei pe timpul sarcinii şi de control al greutăţii corporale.

Cuvinte cheie: *femeia, graviditate, profilaxie*

Introduction

Researches, current demonstrations obliges us to a new vision, a new awareness with new practical applications, to be prepared for the requirements of the new millennium, in order to increase more healthier, autonomous and humanitarian generations. Pregnancy with her peculiarities brings major changes throughout a woman's body. The body tries to adapt to the child's development and is preparing for birth even from the first quarter. Among the many changes that occur in a woman's body we chose to research, the increase in body weight.

During the lifetime the human being faces a number of differences regarding the age, sex, constitution, race and symmetry. Ontogeny as a science, studies the development and morphological- functional transformations of the organism from fertilization until death. It is known prenatal stage between fertilization and birth and a postnatal stage (Enciulescu, Bânzaniuc, Butilcă, 2004).

Factors that may influence a woman in desiring to conceive, and to accept pregnancy are the socio-economic conditions, legal provisions, degree of development of medical and pharmaceutical sciences, local and regional traditions, divorce (Farkas, 2013).

Factors influencing the development of intrauterine shows a growing interest and the specialists in this field seek settlement for a deeper knowledge of the initial phenomena of reproduction (Roşca, Ifrim, 2007).

Pregnancy is considered a natural phenomenon, and in this period are produced many morphological and functional changes in the pregnant woman's life (Balint, 2010).

In most women, the nature ensures that pregnancy to be carried out without incident but with a regular specialist supervision materialized by clinical laboratory, which will bring to the future mother a calm and optimism throughout the pregnancy.

Pregnancy extends for a period of 40 weeks, respectively 280 days from the last day of the menstrual cycle until the day of birth (Seres-Sturm, Gogolák, 2006).

The whole duration of pregnancy is divided into three quarters that have about 12 to 14 weeks each. The first quarter is considered up to the 13th week, the second quarter is around 26 weeks and the third ends between 38-42 weeks (Cucerea, Simon, 2009).

The woman, even if is well informed and documented the many changes she cannot imagine the multiple changes her body will pass through in a relatively short time, that of the pregnancy.

Interdisciplinarity of physical therapy allows new guidelines aiming towards a dynamic psychological-body approach of the pregnant woman.

In psycho-mental hygiene, specific therapies can highlight the relational-corporal abilities with those psycho-corporals (Buiac, 2013).

Expanding the knowledge on preventing poor hygiene (Stan, 2004), it has an important role throughout the pregnancy.

The pregnant woman must be monitored throughout the whole pregnancy, complying with proper hygiene measures and practices, and also with its nutrition (Stamatian, et al., 2014).

Food hygiene will consider the increased needs due to the pregnancy, but there will be no abuse of any kind. It will be followed a healthy diet ensuring a caloric intake between the values 2400-2800 calories (Crăciun, 2014).

Proper nutrition and a balanced diet are essential during pregnancy, being elementary things both for mother and foetal health.

Pregnancy brings with it profound emotional changes and changes in the woman's body due to the dynamic development and growth of the foetus (Simkin, Whalley, Keppler, 2012)

All major organs and functions of the pregnant woman will be influenced by fluctuating proportions (Balint, 2010).

From the morphologically point of view the most visible transformation on pregnant woman is considered the weight gain with an average of 10 kg to 15 kg (Ellemberg, 2013). This increase in weight brings a change in the centre of gravity and causes changes in body balance, which can lead in exaggeration of lumbar lordosis, dorsal kyphosis and back pain occurrence.

Good posture during pregnancy is very important and prenatal kinetoprophylaxy considers it as a benchmark.

As the weight increases and the pregnant woman's body changes its shape, her posture should be adjusted because she must maintain her balance. Prenatal kinetoprophylaxy will teach pregnant women to perform daily activities during the pregnancy, too and the right learned movements will result in reduced muscle tension, fatigue or even the various pains that may occur during this period of women (Simkin, Whalley, Keppler, 2012).

The hypothesis of the study

- Practicing prophylactic exercise positively influences the changes in body weight during pregnancy.

Objectives of the study

- Development and implementation of a comprehensive program of prenatal training.
- Analysis and interpretation of results.
- Establishing and drawing conclusions.

Period and location of carrying out the study

Our research was conducted on a period of 42 months from 1st November 2010 until 30th June 2014.

Research locations were Clinics of Obstetrics and Gynecology number 1 and 2 in Târgu Mureș, Clinics of Neonatology number 1 and 2 in Târgu Mureș and Rheum Care Foundation, with its seat in Târgu Mureș.

The subjects

In our study group were included 400 pregnant women who were recorded in Neonatology Clinics 1 and 2 Târgu Mureș.

Inclusion criteria were:

- Confirmation of pregnancy by Specialist Physician in Obstetrics-Gynecology.

- Pregnant women who received the consent of Gynecologist-Obstetricians Specialist Physicians to participate in research and agreed to participate in this research.

- Pregnant women who received the consent of Gynecologist-Obstetricians Specialist Physicians to participate in research and agreed to participate in this research without participating in primary kinetoprophylactic specially adapted and customized for pregnant women.

- Pregnant women living in Târgu Mureş.

- The pregnant woman being at her first pregnancy.

- The gestational age of 14-16 weeks.

Exclusion criteria:

- Pregnant women who received the consent of Gynecologist-Obstetricians Specialist Physicians to participate in research and have not agreed to participate in this research.

- Pregnant women who do not reside in Târgu Mureş.

- Pregnant is not at her first pregnancy.

- Gestational age is greater or less than 14 to 16 weeks.

Profile of pregnant woman both in the experimental group and in the control group, was a homogeneous group of pregnant women who receive no statistically significant differences following to the analysis of the two groups according to age and level of education.

Study methods and means

Implementation of kinetoprophylactic program of pregnant woman included the theoretically, physically and psychologically training.

Complex of prophylactic exercise specially designed for pregnant women helps them to improve their physical and mental condition and to better support the pregnancy (Mongan, 2005).

The first step in establishing a primary kinetoprophylaxy program is the medical assessment of the pregnant woman.

Once a pregnant woman has the consent and favourable opinion from specialist physicians in gynecology and obstetrics, being considered healthy, they can enrol in the primary kinetoprophylactic program called “School of pregnant women.”

Beneficiaries of this School of pregnant women participated in activities of primary kinetoprophylaxy with a frequency of twice a week and during of meetings was of 90 minutes / meeting.

Classification of kinetoprophylactic exercises according to their effects were determined after consultation of specialists physicians in obstetrics and gynecology.

Measurement and evaluation of weight gain during pregnancy were conducted as follows:

a. in the experimental group: initial body weight, before pregnancy, acquired based on anamnesis, and the final one, based on measurement conducted at the last kinetoprophylactic activity before birth.

b. in the control group: the data was taken from specialist physicians with whom we worked.

Results

Analysis of the results was focused on comparing the three groups of levels of weight gain as follows:

- Weight gain between 0-9 kilograms at this level ascertaining the frequency of 17 subjects in the experimental group 8.5% and 7 subjects in the control group representing 3.5%.

- Weight gain between 9-15 kilograms; at this category, it has been found a frequency of 173 subjects, ie 84.5% in the experimental group and 161 subjects, ie 80.5% in the control group.

- Increase in weight over 15 kg, it was found a frequency of 10 subjects, i.e., 5% of the experimental group and 32 subjects, meaning 16% in the control group, of the total subjects of our research group.

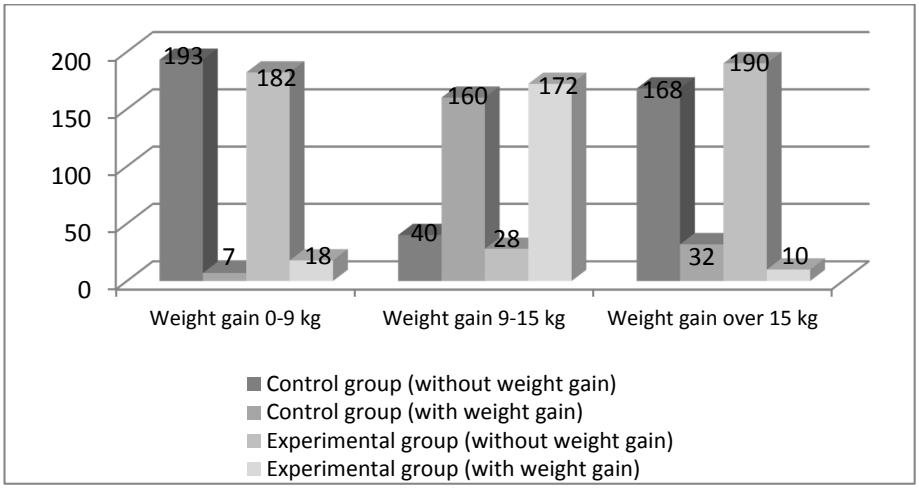


Figure 1. Graphic presentation on the weight gain of the subjects group of our research.

Discussions

The study conducted by Evenson and Wen in 2010 in the United States on the body excess weight during pregnancy, revealed that of all pregnant women receiving the consent and recommendation of specialists in obstetrics and gynecology in performing prenatal prophylactic physical exercises only 25% of them comply with these guidelines (May, 2012).

Conclusions

Presentation of increase in body weight of the two groups studied and viewed in Figure 1 – Graphic presentation of weight gain, refute us the hypothesis of the study and reveals that there is no significant difference between the two groups in the study. Thus, there is no association between practicing prophylactic exercises and weight gain during pregnancy.

Through this study we wanted to verify if there is compliance between primary prenatal kinetoprophylaxy and weight gain of pregnant women. Even if the analysis of weight gain frequency appears to refute working hypothesis, this aspect we consider positive as it reveals us a trend in society regarding the principles of care of the mother during pregnancy and weight control and if she does not participate in special programs such as the "School of pregnant women."

R E F E R E N C E S

Balint, N.T. (2010). *Kinetoprofilaxie curs studii de licență.* Bacău: Editura Alma Mater, pp.139, 139-140.

Buiac, D. (2013). *Elemente de psihokinetoterapie.* Cluj-Napoca Editura: Eikon, pag. 8.

Cucerea, M. & Șimon, M. (2009). *Nou născutul normal, evaluare, îngrijiri, nutriție.* Târgu Mureș: Editura University Press, pp. 5,169-170.

Ellemberg, D. (2013). *Exercise during pregnancy gives new-born brain development a head start.* Retrieved from *www.nouvelles.umontreal.ca.*

Enciulescu, C., Brânzaniuc, K. & Butilcă, F. (2004). *Anatomie Generalități membre. ediția a II-a revizuită, vol. I* .Târgu Mureș: Editura University Press, pag. 2.

Farkas, E. (2013). *Népegészségtan és egészségügyi menedzsment előadások.* Târgu Mureș: Litografia UMF, pag. 38.

May, L.E. (2012). *Physiology of Prenatal Exercise and Fetal Development.* New York: Springer, pp. 35-36.

Mongan, M.F. (2005). *Szülés, ahol én irányitok*. Budapest: Sanoma Kiado, pag.139.
Munteanu, L. (2014). Modificari anatomice si fiziologice ale femeii in timpul sarcinii. Retrieved from *http://www.bebelu.ro/modificari-anatomice-si-fiziologice-ale-femeii-timpul-sarcinii.html*, preluat în data de 16.07.2014.
Roşca, E. & Ifrim, M. (2007). *Embriologie umană normală şi patologică.* Arad: Editura "Vasile Goldiş" University Press, pag. 11.
Seres-Sturm, L. & Gogolák, H.E. (2006). *Általános embriológia.* Târgu-Mureş: University Press, pag. 7.
Simkin, O., Whalley, J. & Keppler. A. (2012). *Sarcina, naşterea şi nou-născutul, ghid complet.* Bucureşti: Editura Meteor Press, pp.38, 140.
Stamatian, F. et al. Obstetrică şi ginecologie, vol. 1, Retrieved from *www.medclub.org.md/.../591-obstetrica-si-ginecologie-vol-1*, preluat 25.03.2014.
Stan, L. (2004). *Fundamente ale succesului educational.* Iaşi: Editura Fundaţiei Axis, pag. 144.

STUDIA UBB EDUCATIO ARTIS GYMN., LXI, 1, 2016, pp. 81 - 90
(RECOMMENDED CITATION)

THE USEFULNESS OF THE BIOELECTRICAL IMPEDANCE VECTOR ANALYSIS

ÁGNES SIMON-UGRON[1], MARIA-DANIELA MACRA-OŞORHEAN[1]

ABSTRACT. Bioimpedance vector analysis (BIVA) is valid for body composition analysis both in healty and pathological population. It is a useful method to evaluate tissue hydration. BIVA is particularly suited to follow hydration states in haemodialysis, to analyse emergency and ICU conditions, as well as optimize nutritional or physical activity programs.

Keywords: *bioelectrical impedance vector analysis, usefulness, body composition, hydration.*

REZUMAT. ***Utilizarea analizei vectoriale prin bioimpedanţă.*** Analiza vectorială prin bioimpedanţă (BIVA) este valid pentru analizarea compoziţiei corporale atât la populaţia sănătoasă şi la cea bolnavă; este o metodă utilă în evaluarea hidratării tisulare. BIVA este deosebit de potrivit pentru a urmări stări de hidratare în hemodializă, pentru a analiza condiţii de urgenţă şi ATI, precum şi optimizarea programelor de activităţi nutriţionale sau fizice.

Cuvinte cheie**:** *analiza vectorială prin bioimpedanţă, utilitatea, compoziţia corporală, hidratare*.

Introduction

Bioimpedance vector analysis (BIVA) is a useful method to evaluate tissue hydration (Piccoli, 1994; Dumler, 2003; Savastano, 2010; Espinosa Cuevas, 2010; Erdogan, 2013).

[1] *Universitatea „Babeş-Bolyai" Cluj-Napoca, Facultatea de Educaţie Fizică şi Sport*
[*] *Corresponding Author: ugron.agnes@ubbcluj.ro*

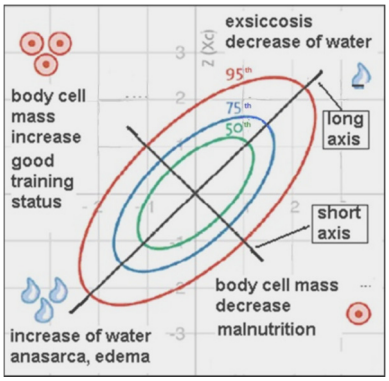
BIVA results are very easy to interpret. As previously discussed, fluids are good conductors, so the length of vector, which represents the body's impedance, is inversely related to fluid volume. Moreover, several studies have agreed to define the 75% tolerance ellipse as the boundary of normal volume status. Consequently, vectors outside the upper pole of the 75% tolerance ellipse indicate dehydration, whereas vectors outside the lower pole of the 75% tolerance ellipse represent over hydration or fluid overload. Thus, a short vector is associated with a fluid overload condition and oedema, while a longer one with a dehydration condition (Di Somma, 2014).

The RXc graph method was used to identify bivariate pattern distributions of mean vectors (95% confidence ellipses by sex, age, and body mass index), and individual impedance vectors (50%, 75%, and 95% tolerance ellipses) (Piccoli 2002; Norman, 2009).

Comprehensive Body Composition Analysis with Bodygram PRO: Resistance (Rz) in Ohms; Reactance (XC) in Ohms; Phase angle (PA) in degrees; Bio-active cell mass (BCM) in kilograms and percent; Total body water (TBW) in liters and percent; Extra cellular water (ECW) in liters and percent; Intra cellular water (ICW) in liters and percent; Fat free mass (FFM) in kilograms and percent; Fat mass (FM) in kilograms and percent; Muscle mass (MM) in kilograms and percent; Sodium/Potassium exchange and Basic Metabolic Rate (BMR) in kilocalories/kilojoules. An the graphical one-glance evaluation by: BiaVector® for the assessment of nutritional and hydration status and BiaGram enhancing the assessment of hydration state.

The test itself takes only a few seconds. Preparing the test and performing the evaluation with take a total of three to five minutes.

Impedance vector analysis enables classification (under-, normal and overhydration) and ranking of hydration (more or less than before intervention), as well as soft-tissue mass, for an individual by examining the position of the vector relative to a healthy reference population. Vector position on the RXc graph is interpreted relative to the two directions on the RXc plane. Vector displacements parallel to the major axis of tolerance ellipse indicate progressive changes in tissue hydration; dehydration is associated with long vectors outside of the upper region of 50% tolerance ellipse, and fluid overload with apparent oedema is characterised with short vectors out of the lower pole of the 50% ellipse. Peripheral vectors in the left side of the major axis, or in the right side of the major axis, of tolerance ellipse indicate more or less cell mass, respectively.



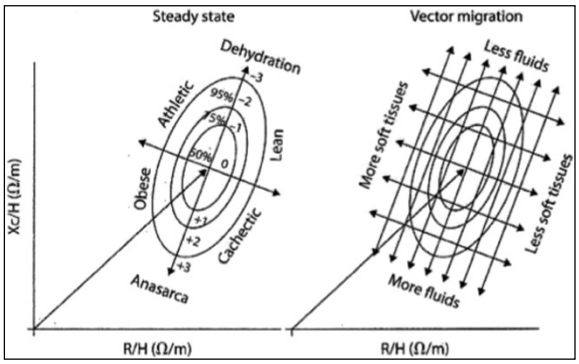


Fig. 1. BIVA Normogram and axe *(https://www.google.ro/search?q=biva+nomogram)*
Fig. 2. BIVA-Nomogram *(https://www.google.ro/search?q=biva+nomogram&biw)*

The length of the impedance vector is inversely related to TBW, and the combination of the vector length and its direction, defined as the phase angle, is an indicator of tissue hydration status (Stahn, 2012).

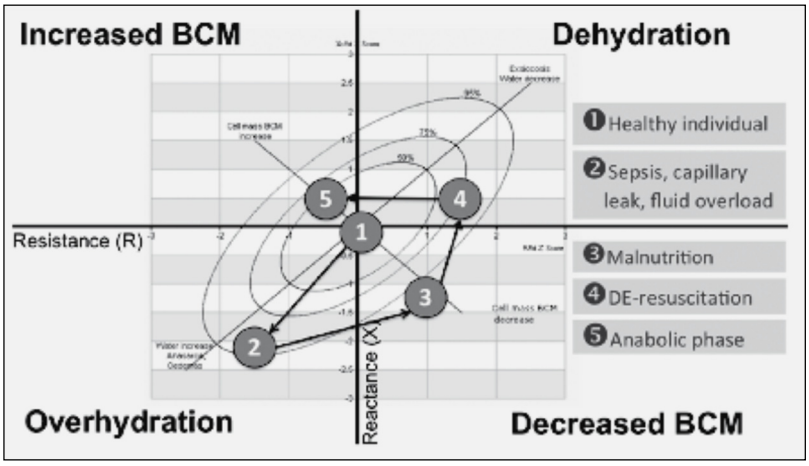


Fig. 3. BIVA-status (Malbrain, 2014)

The usefulness of the bioelectrical impedance vector analysis

The essential fundamentals of bioimpedance measurement in the human body and a variety of methods are used to interpret the obtained information. In addition there is a wide spectrum of utilization of bioimpedance in healthcare

facilities such as disease prognosis and monitoring of body vital status. Furthermore, there are comprehensive literatures, which analyse this topic. There are researches in cardiology (Di Somma, 2014), geriatrics (Buffa, 2014; Camina Martín, 2014), nephrology (Espinosa Cuevas, 2010; Teruel-Briones, 2012; Erdogan, 2013), pediatrics (Guida, 2008; Margutti, 2012), nutirion (Wright, 2008; Buffa, 2009; Marini, 2012).

However, several studies have suggested that the window of tolerance for hyper- or dehydration may vary in patients with different diseases (Di Somma, 2014). A positive fluid balance is a predictor of hospital mortality (Lansen, 2016).

Guida et al. in their observational study involving 464 healthy 8-year-old children drown the conclusion, that the BIVA may be useful for clinical purposes due to ability to detect changes in hydration or body composition in children (Giuda, 2008).

Espinosa Cuevas M.A. et al. in their studies suggest that vector-BIA offers a comprehensive and reliable reproducible means of assessing both volume and masses at the bedside and can complement the traditional method (Espinosa Cuevas, 2010).

Norman et al. observed: BIVA has been shown to provide information about hydration and body cell mass and therefore allows assessment of patients in whom calculation of body composition fails due to altered hydration. BIVA is recommended for further nutritional assessment and monitoring, in particular when calculation of body composition is not feasible (Norman, 2012).

BIVA should be used with caution for evaluating body composition in the elderly. Specific bioelectrical values proved effective, showing promise as a methodological variant of BIVA, suitable for identifying age-related changes in body fatness (Marini, 2013).

The association between the impedance index and total body water was not modified by hydration status, which may support the utilization of leg-to-leg bioimpedance for the assessment of body composition in the very old (Siervo, 2015). Additionally, errors are minimized by using the BIVA as there is no need for the subject to be normally hydrated and it does not require the use of predictive models.

Saragat et al. obtain reference values for the healthy elderly Italian population, and they need to study age- and sex-related differences in body composition. Specific tolerance ellipses can be used for reference purposes for the Italian population when assessing body composition in gerontological practice and for epidemiological purposes (Saragat, 2014). Ibáñez et al. in their researches highly emphasize the need for new specific tolerance ellipses that can be used as references for assessing body composition in young adults from Western Mediterranean populations (Ibáñez, 2015).

In healthy elderly, impedance vectors clearly indicate the age associated reduction of soft tissue, particularly after the age of 80. *Xc*/*H* and phase angle decrease with age in both men and women. In patients with Alzheimer disease, mean vector position was significantly different in the patients with mild-moderate Alzheimer disease with respect to controls, indicating lower soft tissue. Women with severe Alzheimer disease also showed both reduced tissue mass and dehydration when compared with patients with mild–moderate disease severity (Norman, 2012).

BIVA detected muscle-mass variations in sarcopenic individuals, and specific BIVA was able to discriminate sarcopenic individuals from sarcopenic obese individuals. These procedures are promising tools for screening for presarcopenia, sarcopenia, and sarcopenic obesity in routine practice (Marini, 2012).

Piccoli et al. observed, that the agreement between BIVA and central venous pressure indications was good in the high central venous pressure group (93% short vectors), moderate in the medium central venous pressure group (35% normal vectors), and poor in low central venous pressure group (10% long vectors). The combined evaluation of intensive care unit patients by BIVA and central venous pressure may be useful in therapy planning, particularly in those with low central venous pressure in whom reduced, preserved, or increased tissue fluid content can be detected by BIVA (Piccoli, 2000).

In conclusion, the above mentioned studies emphasize the usefulness of the value of BIVA in physiological and clinical conditions. Over hydration was identified in late pregnancy and postpartum, as well as in weight-reduced obese adults with BIVA, and validated with isotope dilution methods. The use of BIVA improved the prescription of ultrafiltration in dialysis by monitoring the backward–forward displacement of vectors in relation to the wet–dry cycle of haemodialysis, and enhanced decision-making in dialysis by facilitating the interpretation of alterations in blood pressure relative to hydration status and thus adjusting ultrafiltration. Recent evidence supports the use of BIVA in the assessment of volume overload in patients with acute heart failure and discriminating pulmonary compared with cardiac dyspnoea, as well as its importance in guiding individualised volume reduction therapy because of its high sensitivity and specificity. Importantly, the combination of BIVA assessment of hydration status in conjunction with measurements of brain natriuretic peptide significantly decreased readmission rates of patients discharged with a diagnosis of heart failure (Lukaski, 2007). Further work is needed to determine how BIVA can be used to guide the management of fluid states in advanced cancer (Nwosu, 2014).

The RXc graph method could be useful in the planning of the individual climber's appropriate dehydration and fluid intake at altitude since a feedback control of the hydration is allowed without any assumption of body composition (Piccoli et al, 1996).

According to Maughan and Shirreffs the dehydration, if sufficiently severe, impairs both physical and mental performance, and performance decrements are greater in hot environments and in long-lasting exercise. Athletes should begin exercise well hydrated and should drink during exercise to limit water and salt deficits. Many athletes are dehydrated to some degree when they begin exercise. During exercise, most drink less than their sweat losses, some drink too much and a few develop hyponatraemia. Athletes should learn to assess their hydration needs and develop a personalized hydration strategy that takes account of exercise, environment and individual needs. Pre-exercise hydration status can be assessed from urine frequency and volume, with additional information from urine colour, specific gravity or osmolality. Changes in hydration status during exercise can be estimated from the change in body mass: sweat rate can be estimated if fluid intake and urinary losses are also measured (Maughan, 2010).

Table.1. Measured parameters before and after the exercise dehydration plus cooling session (Gatterer, 2014)

	Pre	Post	p-value
body mass (kg)	72.29±6.34	70.78±6.18	<0.001
Posm (mOsm/kg)	295.5±4.4	301.6±3.0	<0.001
Hct (g/dl)	45.7±3.5	47.4±2.7	0.033
R/H (Ω/m)	284.1±23.0	298.0±26.0	<0.001
Xc/H (Ω/m)	37.5±3.3	39.8±3.2	<0.001
vector length	286.6±23.1	300.6±26.0	<0.001
skin temperature (°C)	29.3±1.1	28.8±1.3	0.105

* Plasma osmolarity (Posm), resistance divided by body height (R/H), reactance divided by body height (Xc/H).

Gatterer et al. in your study demonstrates that the BIVA graph reflects fluid loss after exercise within this specific setting. The lengthening of the vector along the major axis of the tolerance ellipse indicates fluid loss and is supported by the finding that the length of the vector is inversely related to TBW (Lukaski, 2012; Gatterer, 2014). Conversely also body mass measurements might have led to erroneous body fluid balance estimates. Even though body changes are usually considered to be useful in detecting short term body hydration changes, several exercise-related factors, such as sweat rate, respiratory water loss and oxidative water production may lead to substantial body mass loss without an effective net negative fluid balance. Beside body weight changes, plasma osmolarity (Posm) is proposed as an adequate dehydration marker, despite controversy regarding its specificity and sensitivity to detect dehydration.

In conclusion this study demonstrated that BIVA changes convincingly mirrors water loss within an exercise and heat induced fluid loss trial. Additionally Δ Xc/H values, reflecting changes in intracellular fluid content, might be useful to evaluate fluid shifts between compartments. However more studies are needed to establish if BIVA can be considered a reliable method for monitoring hydration status (Gatterer, 2014).

Mala et al. purposed to identify and compare the body composition (BC) variables in elite female athletes (age ± years): volleyball (27.4 ± 4.1), softball (23.6 ± 4.9), basketball (25.9 ± 4.2), soccer (23.2 ± 4.2) and handball (24.0 ± 3.5) players. The results did not indicate any significant differences in percentage of fat mass (FMP) or α among the tested groups ($p > 0.05$). Significant changes in other BC variables were found in analyses when sport was used as an independent variable. Soccer players exhibited the most distinct BC, differing from players of other sports in 8 out of 10 variables. In contrast, the athletes with the most similar BC were volleyball and basketball players, who did not differ in any of the compared variables. Discriminant analysis revealed two significant functions ($p < 0.01$). The first discriminant function primarily represented differences based on the fat-free mass (FFM) proportion (volleyball, basketball vs. softball, soccer). The second discriminant function represented differences based on the extracellular water (ECW) proportion (softball vs. soccer) (Mala, 2015).

Contemporary applications of bioimpedance emphasise the value of bioimpedance variables per se in some novel biomedical applications with the objective of identifying opportunities for future outcome-based research (Lukaski, 2013).

Furthermore, another review is directed to define the efficacy of BIVA for assessing two-compartment body composition. A systematic literature review using MEDLINE database up to 12 February 2014 was performed. The list of papers citing the first description of BIVA, obtained from SCOPUS, and the reference lists of included studies were also searched. Specific BIVA is a promising alternative to classic BIVA for assessing two-compartment body composition, with potential application in nutritional, sport and geriatric medicine (Buffa, 2014).

REFERENCES

Buffa, R., Floris, G. & Marini, E. (2009). Assessment of nutritional status in free-living elderly individuals by bioelectrical impedance vector analysis. *Nutrition 25*: 3–5.

Buffa, R., Mereu, E., Comandini, O., Ibanez, M.E. & Marini, E. (2014). Bioelectrical impedance vector analysis (BIVA) for the assessment of two-compartment body composition. *Eur J Clin Nutr. 68*(11):1234-1240.

Camina Martín, M.A., de Mateo Silleras, B. & Redondo Del Río, M.P. (2014). Body composition analysis in older adults with dementia. Anthropometry and bioelectrical impedance analysis: a critical review. *Eur J Clin Nutr. 68*(11):1228-1233.

Di Somma, S., Vetrone, F. & Maisel, A.S. (2014). Bioimpedance vector analysis (BIVA) for diagnosis and management of acute heart failure. *Curr. Emerg.Hosp. Med. Rep. 2*: 104-111.

Dumler, F. & Kilates, C. (2003). Body composition analysis by bioelectrical impedance in chronic maintenance dialysis patients: comparisons to the National Health and Nutrition Examination Survey III. *J Ren Nutr.13*(2):166-172.

Erdoğan E. et al. (2013). Reliability of bioelectrical impedance analysis in the evaluation of the nutritional status of hemodialysis patients - a comparison with Mini Nutritional Assessment. *Transplant Proc. 45*(10):3485-3488.

Espinosa Cuevas, M.A. et al. (2010). Body fluid volume and nutritional status in hemodialysis: vector bioelectric impedance analysis. *Clin Nephrol. 73*(4):300-308.

Gatterer, H. et al. (2014). Bioimpedance identifies body fluid loss after exercise in the heat: A pilot study with body cooling. *PLoS One. 9*(10): e109729.

Guida B. et al. (2008). Body mass index and bioelectrical vector distribution in 8-year-old children. *Nutr Metab Cardiovasc Dis. 18*(2):133-141.

https://www.google.ro/#q=biva+nomogram&tbm=isch&facrc=_&imgrc=BZjl-hXgziY6pM%3A

Ibáñez, M.E. et al. (2015). New specific bioelectrical impedance vector reference values for assessing body composition in the Italian-Spanish young adult population. *Am J Hum Biol. 27*(6):871-876.

Larsen, T.R., Singh, G., Velocci, V., Nasser, M. & McCullough, P.A. (2016). Frequency of fluid overload and usefulness of bioimpedance in patients requiring intensive care for sepsis syndromes. *Proc (Bayl Univ Med Cent). 29*(1):12-15.

Lukaski, H.C., Hall, C.B. & Siders, W.A. (2007) Assessment of changes in hydration in women during pregnancy and postpartum with bioelectrical impedance vectors. *Nutrition 23*: 535–550.

Lukaski, H.C. & Piccoli, A. (2012). Bioelectrical impedance vector analysis for assessment of hydration in physiological states and clinical conditions. In: Preedy V.R., editor. *Handbook of Anthropometry: Physical Measures of Human Form in Health and Disease*. London: Springer. pp. 287–306.

Lukaski, H.C. (2013). Evolution of bioimpedance: a circuitous journey from estimation of physiological function to assessment of body composition and a return to clinical research. *Eur J Clin Nutr 67.* Suppl 1: 2–9.

Mala, L. et al. (2015). Body composition of elite female players in five different sports games. *J Hum Kinet. 45*: 207–215.

Malbrain, M. et al. (2014). The use of bio-electrical impedance analysis (BIA) to guide fluid management, resuscitation and deresuscitation in critically ill patients: a bench-to-bedside review. *Anaesthesiol Intensive Ther. 46* (5):381-391.

Margutti, A.V. et al. (2012). Bioelectrical impedance vector analysis (BIVA) in stable preterm newborns. *J Pediatr (Rio J). 88*(3):253-258.

Marini, E. et al. (2012). The potential of classic and specific bioelectrical impedance vector analysis for the assessment of sarcopenia and sarcopenic obesity. *Clin Interv Aging. 7*:585-591.

Marini, E. et al. (2013). Efficacy of specific bioelectrical impedance vector analysis (BIVA) for assessing body composition in the elderly. *J Nutr Health Aging. 17*(6):515-521.

Maughan, R.J. & Shirreffs, S.M. (2010). Dehydration and rehydration in competative sport. *Scand J Med Sci Sports. Suppl 3*:40-47.

Norman, K. et al. (2009). Bioimpedance vector analysis as a measure of muscle function. *Clin Nutr. 28*(1):78-82.

Norman, K., Stobäus, N., Pirlich, M. & Bosy-Westphal, A. (2012). Bioelectrical phase angle and impedance vector analysis--clinical relevance and applicability of impedance parameters. *Clin Nutr. 31*(6):854-861.

Nwosu, A. et al. (2014). The use of bioelectrical impedance vector analysis (BIVA) to assess hydration in patients with advanced cancer in a specialist palliative care inpatient unit. NCRI Cancer Conference, conference.ncri.org.uk**.**

Piccoli, A., Rossi, B., Pillon, L. & Bucciante, G. (1994). A new method for monitoring body fluid variation by bioimpedance analysis: the RXc graph. *Kidney Interantional 46*: 534–539.

Piccoli, A., Piazza, P., Noventa, D., Pillon, L. & Zaccaria, M. (1996). A new method for monitoring hydration at high altitude by bioimpedance analysis. *Med Sci Sports Exerc. 28*(12):1517-1522.

Piccoli, A., Pittoni, G., Facco, E., Favaro, E. & Pillon, L. (2000). Relationship between central venous pressure and bioimpedance vector analysis in critically ill patients. *Crit Care Med. 28*(1):132-137.

Piccoli, A., Pillon, L. & Dumler, F. (2002). Impedance vector distribution by sex, race, body mass index, and age in the United States: standard reference intervals as bivariate *Z* scores. *Nutrition, 18*; 153–167.

Saragat B. et al. (2014). Specific bioelectrical impedance vector reference values for assessing body composition in the Italian elderly. *Exp Gerontol. 50*:52-56.

Savastano S. et al. (2010). Validity of bioelectrical impedance analysis to estimate body composition changes after bariatric surgery in premenopausal morbidly women. Obes Surg. 20(3):332-339.

Siervo M. et al. (2015). Serum osmolarity and haematocrit do not modify the association between the impedance index (Ht2/Z) and total body water in the very old: The Newcastle 85+ Study. Arch Gerontol Geriatr. 60(1):227-232.

Stahn, A., Terblanche, E. & Gunga, H.C. (2012). Selected applications of bioelectrical impedance analysis: body fluids, blood volume, body cell mass and fat mass. In: Preedy V.R. (ed.). *Handbook of Anthropometry: Physical Measures of Human Form in Health and Disease.* New York, USA: Springer Science+Business Media, LLC, pp 415–440.

Teruel-Briones, J.L. et al. (2012). Analysis of concordance between the bioelectrical impedance vector analysis and the bioelectrical impedance spectroscopy in haemodialysis patients. *Nefrologia. 32*(3):389-395.

Wright, C.M., Sherriff, A., Ward, S.C., McColl, J.H., Reilly, J.J. & Ness, A.R. (2008). Development of bioelectrical impedance-derived indices of fat and fat-free mass for assessment of nutritional status in childhood. *Eur J Clin Nutr. 62* (2):210-217.