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EDITORIAL

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Voluntariatul în sport

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Volunteering

The dictionary defines *volunteering* as an activity carried out for the benefit of people or society, without being aimed at financial gain (1). In other words, volunteering is a free, unpaid activity that is voluntarily assumed. This does not mean that volunteer work does not generate costs.

Volunteering in the EU

According to the European Youth Forum, the main characteristics of volunteering are the following (2):

- it is an unpaid activity, but this may include the reimbursement of direct expenses made for the purpose of volunteer work;
- it is non-profit and is mainly performed by a non-governmental organization; consequently, it cannot be motivated by material or financial gain;
- it should not be used to replace paid work.

In the EU, the most common areas in which volunteers play an active role are the following:

- sport
- social charity and health activities
- religious organizations
- culture
- leisure activities
- education, professional training and research.

A Eurobarometer survey conducted in 2006 shows that 3 out of 10 Europeans ask to participate in a volunteer organization and that almost 80% of the respondents consider that volunteering is an important part of democratic life in Europe (3).

In European countries, volunteering is an economic factor. The voluntary work sector contributes an estimated 5% to the GDP of national European economies; volunteering generates costs that help in consolidating the GDP.

Volunteering leads to the direct participation of citizens in local development, thus playing a very important role in encouraging civil society and democracy. For example, for the majority of volunteers in sport, allocating their time to a club is an opportunity to actively contribute to the community to which they belong.

Volunteers and volunteer organizations frequently provide vital activities and services that are used by the community members. These can vary from services in local sports clubs to transportation for the elderly or special health care services, all of which have a significant impact on their life and the welfare of the local population, as well as on the local environment. Sports clubs are one of the best examples, because the sport movement mainly relies on volunteers throughout Europe. In the majority of the member states, countless volunteers are attracted to the field of sport in particular (e.g. in Austria, there are 14% employed staff and 86% volunteers; in France, approximately 20% employed staff and almost 80% volunteers, in Netherlands, 13% employed staff and 87% volunteers). Volunteer commitment allows sports clubs to maintain low taxes for their members, thus removing financial barriers to participation (3). In the White Paper on Sport, the European Council defines sport as "all forms of physical activity which, through casual or organised participation, aim at expressing or improving physical fitness and mental well-being, forming social relationships or obtaining results in competition at all levels" (***, 2007).

EU policy regarding volunteering

Volunteering plays an important role in very different areas such as education, youth, culture, sport, environment, health, social assistance, consumer protection, humanitarian aid, development policy, research, equality of chances and external relations. The European Commission has identified strong relationships between volunteering and the following political areas:

- active citizenship
- youth
- professional education and training
- employment and social policy
- *sport*
- external relations and international development
- environment.

A proportion of 33% of Irish people and 36% of Germans participate in volunteer activities in their countries; the highest percentage - 60% is found in Austria.

The lowest level of participation in volunteer work among all EU countries is in Bulgaria (10% of the population), followed by Romania and Poland, with 18%

each, and Baltic countries, with percentages ranging between 24-27% of the population. In Western European countries, as a result of the demographic phenomenon of population aging, there are more elderly volunteers, while in Eastern European countries, most volunteers are young, aged between 15-25 years.

About 100 million persons residing in EU countries, which is approximately 24% of the EU population, participate in volunteer activities. About 20 million volunteers live in Eastern European countries, representing 20% of the number of volunteers in EU countries (4).

Volunteering in Romania

Although the number of volunteers in Romania is on a slight increase, in sport, this is continuously decreasing. The exact number of volunteers in Romania is quite difficult to establish, because there is no accurate monitoring of these. This study was mainly based on the reports sent by County Sports Authorities, according to which a number of 4000-5000 volunteers was estimated at national level. The exact number could be found out based on the number of volunteer contracts recorded, but unfortunately, these are very few, volunteer activity being generally carried out without the conclusion of a contract. Thus, of the estimated number, only 300-400 volunteers have a contract (Voicu & Voicu, 2003).

In general, volunteers are persons around the age of retirement, usually former athletes or persons who worked in the field of sport. There is also an important segment of students, but these participate selectively, in high-level events: UEFA cup matches, tennis tournaments, etc. Currently, the age distribution of volunteers in Romania is as follows: 16-24 years – less than 1%; 25-34 years – about 10%; 35-50 years – about 10%; over 50 years – about 80% (Voicu & Voicu, 2003).

In Romania, less than 0.1% of the population *volunteer in sport* compared to Finland (16%), Ireland (15%), Netherlands (11%), Germany (10.9%) Malta (9.2%). A similar situation to that of Romania is that of Estonia (1.1%), Greece (0.5%) and Lithuania (0.1%) (Voicu &Voicu, 2013).

Regarding legislation, Romania is better equipped than other countries; the Law on Volunteering, introduced in 2001 and modified in 2006 and 2014, provides a special legal framework for volunteering. Romania is one of the countries that have a legal definition of the volunteer. Austria, Denmark, Germany, France, Netherlands, United Kingdom are states that have no special legal definition. In Poland, in order to perform volunteer work, one has to prove one's skills and qualification for this activity. In France, the difference between volunteers and employed staff is even less clear; volunteers can be paid for their work. In Netherlands, in addition to the aspect of remuneration, the state obliges certain people (e.g. persons included in rehabilitation programs after the execution of prison penalties) to perform a certain number of hours of volunteering, which raises the question if this is really volunteering.

Volunteering in sport - legislation

In Romania, the main promoter of volunteering in sport is the Ministry of Youth and Sport (MTS). Depending on the allocated time, volunteer participation is different (Voicu & Voicu, 2003):

- in the long term – for 2-3 months before the event (about 4-6 hours/week);
- in the medium term – for a month before the event (about 6-8 hours/week);
- during the event (6-8 hours/day).

Work can be done in one of the following key areas of the event: the registration space; information points; the start/finish area; hydration and first aid areas; the prize award area; the mobile team, responsible for branding, unbranding, logistics; the IT team (networking cables, the prize award stage) (Voicu & Voicu, 2003).

Over the past years, *volunteer fairs* have begun to be organized in Romania, which are aimed at changing the people's mentality and perception regarding humanitarian actions, some of which in the field of sport. An example is the Project Fair that is held periodically by the Organization of Medical Students of the *Iuliu Haţieganu* University of Medicine and Pharmacy in Cluj-Napoca. One of the projects, entitled *Sport for health*, is intended for children of different ages from the schools of Cluj, and is aimed at increasing the awareness of the role of physical education in the formation of a healthy lifestyle. The project includes the organization of sports activities (Bocu, 2008).

The new Law on Volunteering brings substantial changes in regulations in this area compared to the previous situation (***, 2014).

- The volunteer contract becomes compulsory. This should detail the *rights and obligations* of the volunteer and of the host organization.
- Volunteering is included in the length of service. According to the new provisions, volunteering is considered to be professional and/or specialized experience, depending on the type of activity, if this is carried out in the field of the graduated studies.
- During the period of the volunteer activity, as well as at the end of the volunteer activity, the host organization has the obligation, on the volunteer's request, to issue a *volunteer certificate*, to which a *report of activity* is attached.
- The obligation of the host organization to cover food, accommodation and transport expenses for volunteers during their volunteer work.
- The obligation of the host organization to cover other costs incurred by the volunteer activity, except for those related to the work carried out by the volunteer.
- In competitions for a position, if two or more candidates obtain equal scores, public authorities and institutions as well as natural or legal employers can give additional points to candidates who provide one or more volunteer certificates obtained based on volunteer activities, issued under the conditions of the present law, provided these are considered as selection criteria.

* * *

Voluntariatul

Dicţionarul defineşte *voluntariatul* ca o activitate desfăşurată în folosul altor persoane sau al societăţii, fără a

urmări un câştig material (1). Cu alte cuvinte, voluntariatul este o activitate gratuită şi neremunerată şi asumată benevol. Aceasta nu înseamnă că activitatea voluntară nu generează costuri.

Voluntariatul în UE

În concepţia Forumului European al Tineretului (European Youth Forum), principalele caracteristici ale voluntariatului sunt următoarele (2):

- constituie o activitate neremunerată, dar aceasta poate include rambursarea cheltuielilor directe efectuate în vederea activităţii voluntare;
- este non profit şi în principal este realizată de o organizaţie non-guvernamentală; în consecinţă nu poate fi motivată de câştigul material sau financiar;
- nu trebuie sa fie utilizat pentru a substitui munca remunerată.

În UE, cele mai frecvente sectoare în care sunt activi voluntarii sunt următoarele:

- sportul
- activităţile sociale, de binefacere şi de sănătate
- organizaţiile religioase
- cultura
- activităţile de recreere (loisir)
- educaţia, formarea profesională şi cercetarea.

Un sondaj Eurobarometru realizat în 2006 arată că 3 din 10 europeni solicită să activeze într-o organizaţie de voluntari şi că aproape 80% dintre respondenţi consideră că activităţile de voluntariat reprezintă o parte importantă a vieţii democratice din Europa (3).

În ţările Europei, voluntariatul reprezintă un factor economic. Sectorul voluntar contribuie în procent estimat de 5% la PIB-ul economiilor naţionale europene; voluntariatul generează costuri, care ajută la consolidarea PIB-ului.

Voluntariatul conduce la implicarea directă a cetăţenilor în dezvoltarea locală şi astfel joacă un rol foarte important în încurajarea societăţii civile şi a democraţiei. De exemplu, pentru majoritatea voluntarilor din sport, oferirea timpului lor unui club este o oportunitate pentru a contribui activ la comunitatea din care provin.

Voluntarii şi organizaţiile de voluntari oferă adesea activităţi şi servicii vitale, care sunt folosite de către membrii comunităţii. Acestea pot varia de la serviciile din cluburile locale de sport, până la transportul pentru persoanele în vârstă sau servicii speciale de îngrijire a sănătăţii, care toate au un impact semnificativ aspra vieţii lor şi bunăstării populaţiei locale, precum şi asupra mediului local. Cluburile de sport reprezintă unul dintre cele mai bune exemple, deoarece mişcarea sportivă se bazează în principal pe voluntari din toată Europa. În majoritatea statelor membre, în domeniul sportului, în special, sunt atraşi nenumăraţi voluntari (de ex. Austria deţine 14% personal salariat şi 86% voluntari; Franţa aproximativ 20% personal salariat şi aproape 80% voluntari, Olanda 13% personal salariat şi 87% voluntari). Angajamentul voluntar permite cluburilor sportive să menţină taxe reduse pentru membrii acestora, îndepărtând astfel barierele financiare de participare (3). În Cartea albă privind sportul, Consiliul Europei defineşte sportul ca „totalitatea formelor de activităţi fizice care, printr-o participare mai mult sau mai puţin organizată, au drept obiectiv expresia sau ameliorarea condiţiei fizice şi psihice, dezvoltarea relaţiilor sociale sau dobândirea unor rezultate pozitive în competiţiile de toate nivelurile" (***, 2007).

Politica UE în ceea ce priveşte voluntariatul

Voluntariatul ocupă un loc important în sectoare foarte diferite cum ar fi educaţia, tineretul, cultura, sportul, mediul, sănătatea, ajutorul social, protecţia consumatorului, ajutorul umanitar, politica de dezvoltare, cercetarea, egalitatea de şanse şi relaţiile externe. Comisia Europeană a identificat legături puternice între voluntariat şi următoarele domenii politice:

- Cetăţenia activă
- Tineretul
- Educaţia şi formarea profesională
- Ocuparea forţei de muncă şi politica socială
- *Sportul*
- Relaţiile externe şi dezvoltarea internaţională
- Mediul.

Un procent de 33% din irlandezi şi 36% din germani participă la activităţi de voluntariat în ţările lor; procentul cel mai ridicat - 60% se întâlneşte în Austria.

Nivelul cel mai mic de participare la activităţi voluntare, din toate ţările membre UE îl are Bulgaria (10% din populaţie), urmată de România şi Polonia, cu câte 18% din populaţie şi Ţările Baltice cu procente cuprinse între 24-27% din populaţie. În ţările din vestul Europei, ca urmare şi a fenomenului demografic de îmbătrânire a populaţiei sunt mai mulţi voluntari de vârsta a III-a, în timp ce în ţările din estul Europei, cei mai mulţi voluntari sunt tinerii, cu vârste cuprinse între 15-25 de ani.

Aproximativ 100 milioane persoane, domiciliate în ţările membre UE, deci aproximativ 24% din populaţia UE participă la activităţi de voluntariat. Aproximativ 20 milioane de voluntari locuiesc în ţări din estul Europei, deci ei reprezintă aproximativ 20% din numărul de voluntari din ţările membre UE (4).

Voluntariatul în România

Deşi numărul voluntarilor în general, în România, este într-o uşoară creştere, la nivelul sportului acesta este în continuă scădere. Numărul exact al voluntarilor din România este destul de greu de stabilit, datorită faptului că nu există o monitorizare exactă a acestora. Studiul s-a bazat mai mult pe rapoartele trimise de către Direcţiile Judeţene de Sport, în urma cărora s-a aproximat un număr de 4000-5000 de voluntari la nivel naţional. Un număr exact ar putea fi aflat după numărul de contracte de voluntariat înregistrate dar, din păcate, foarte puţine sunt înregistrate, activitatea de voluntariat practicându-se fără încheierea vreunui contract. Astfel, din numărul estimat doar 300-400 de voluntari au şi contract (Voicu & Voicu, 2003).

Persoanele care fac voluntariat sunt în general în jurul vârstei pensionării, de obicei foşti sportivi sau persoane care au lucrat în domeniul sportului. Există şi un segment important la nivelul studenţilor care însă se implică selectiv, la evenimente mari: meciuri din cupa UEFA, turnee de tenis etc. În prezent, în România, repartizarea voluntarilor pe vârste se prezintă astfel: 16-24 ani - sub 1%; 25-34 ani aproximativ 10%; 35-50 ani aproximativ 10%; peste 50 de ani aproximativ 80% (Voicu & Voicu, 2003).

În România sub 0,1% din populaţie face *voluntariat sportiv,* comparativ cu Finlanda (16%), Irlanda (15%), Olanda (11%), Germania (10,9%) Malta (9.2%). Aproape de România ar fi Estonia (1,1%), Grecia (0,5%) şi Lituania (0,1%) (Voicu &Voicu, 2013).

La capitolul legislaţie, România stă mai bine ca alte state, având un cadru legal special pentru voluntariat, prin Legea Voluntariatului introdusă în 2001 şi completată în 2006 şi 2014. România este printre statele care au o definiţie legală a voluntarului. Austria, Danemarca, Germania, Franţa, Olanda, Anglia sunt state care nu au o definiţie legală specială. În Polonia, pentru a face voluntariat trebuie să dovedeşti că ai abilităţi şi eşti calificat pentru acea activitate. În Franţa, diferenţa dintre voluntari şi angajaţi este şi mai neclară, voluntarii putând fi remuneraţi pentru activitatea lor. În Olanda, pe lângă aspectul remunerării, statul obligă anumite persoane (ex: persoane în programele de reabilitare după executarea de pedepse cu închisoarea) să facă un anumit număr de ore de voluntariat, rezultând întrebarea dacă acele ore sunt într-adevăr ore de voluntariat.

Voluntariatul în sport - legislaţie

În România, principalul promotor al voluntariatului în sport este Ministerul Tineretului şi Sportului (MTS). În funcţie de timpul disponibil, ca şi voluntar, implicarea este diferită (Voicu & Voicu, 2003):

- pe termen lung - timp de 2-3 luni înainte de eveniment (aproximativ 4-6 ore/săptămână);
- pe termen mediu - timp de o lună înainte de evenimente (aproximativ 6-8 ore/săptămână);
- pe durata evenimentelor (6-8 ore/zi).

Se poate opta pentru prestarea lucrului în unul din următoarele puncte-cheie ale evenimentului: spaţiul de înscriere; puncte de informare; zona de start/finish; zonele de rehidratare şi prim-ajutor de pe traseu; zona de premiere; echipa mobilă, care se ocupă de branding, unbranding, logistică; echipa de IT (cabluri, reţelistică, scena de premiere) (Voicu & Voicu, 2003).

În ultimii ani, în România au început să se organizeze *târguri de voluntariat* care au ca scop să producă o schimbare în mentalitatea şi percepţia celor din jur asupra acţiunilor umanitare, unele din acestea pe domeniu sportiv. Oferim spre exemplu Târgul de proiecte, care se organizează periodic de către Organizaţia Studenţilor Medicinişti din Universitatea de Medicină şi Farmacie *Iuliu Haţieganu* din Cluj-Napoca. Unul din proiectele oferite se intitulează *Sport pentru sănătate*, adresat copiilor de vârste diferite din şcolile clujene, care are ca scop conştientizarea rolului educaţiei fizice în formarea unui stil de viaţă sănătos. Proiectul include şi organizarea de activităţi sportive (Bocu, 2008).

Noua Lege a voluntariatului aduce modificări substanţiale în reglementările din domeniu, faţă de situaţia anterioară (***, 2014).

- Contractul de voluntariat devine obligatoriu. În cadrul contractului de voluntariat trebuie să fie specificate *drepturile şi obligaţiile* voluntarului şi cele ale organizaţiei-gazdă.
- Voluntariatul ca vechime în muncă. Noile prevederi stabilesc că activitatea de voluntariat se consideră experienţă profesională şi/sau în specialitate, în funcţie de tipul activităţii, dacă aceasta este realizată în domeniul studiilor absolvite.
- Pe durata perioadei activităţii de voluntariat, precum şi la încheierea activităţii de voluntariat, organizaţia-gazdă, la cererea voluntarului, are obligaţia de a elibera un *certificat de voluntariat* la care este anexat un *raport de activitate*.
- Obligaţia organizaţiei gazdă de a suporta cheltuielile de hrană, cazare şi transport pentru voluntar în desfăşurarea activităţii sale de voluntariat.
- Obligaţia organizaţiei gazdă de a suporta alte cheltuieli ocazionate de desfăşurarea activităţii de voluntariat, cu excepţia celor aferente muncii prestate de către voluntar.
- La concursurile organizate pentru ocuparea posturilor, dacă doi sau mai mulţi candidaţi obţin punctaje egale, autorităţile şi instituţiile publice şi angajatorii persoane fizice sau juridice pot acorda punctaj suplimentar candidaţilor care prezintă unul sau mai multe certificate de voluntariat obţinute din activităţi de voluntariat, eliberate în condiţiile prevăzute de prezenta lege, în situaţia în care acestea constituie criterii de selecţie.

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ORIGINAL STUDIES
ARTICOLE ORIGINALE

The role of lifestyle in cancer prevention: opinions of Romanian cancer patients' relatives

Rolul stilului de viaţă în prevenirea cancerului: opiniile rudelor pacienţilor români cu diagnostic de cancer

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Abstract

Background. Different studies have underlined the importance of avoiding active and passive smoking, alcohol abuse, overweight, unhealthy alimentary habits and inappropriate physical activity as important components of health promotion and cancer prevention

Aims. This study aims to investigate opinions regarding the role of lifestyle in cancer prevention among Romanian adults having relatives with cancer.

Methods. A cross-sectional study was conducted in the "Ion Chiricuţă" state oncological institute from Cluj-Napoca, Romania. It included 320 adults (160 men and 160 women) who had relatives with cancer. The participants filled in an anonymous questionnaire.

Results. The results of the study show that the majority of Romanian cancer patients' relatives from our study know the relationship between active and passive smoking, alcohol use and cancer. Two thirds of participants are aware about the link between physical activity and cancer prevention, but less than half know about the risk posed by being overweight. The percentages of the participants aware about the role of diet in cancer prevention varied from one third knowing the role of foods rich in dietary fibers to 50% recognizing the risk of consuming high quantities of red meat and to 74% being aware about the protective effect of fruits and vegetables. Several age, educational and residence (urban-rural) differences were identified for several opinions.

Conclusions. These data call for information and education actions, which help Romanian adults who have relatives with cancer to be aware of the lifestyle related risks, as a first step in the process of adopting healthy behaviors which protect against several types of cancer.

Key words: cancer prevention, lifestyle, Romania, adults having relatives with cancer.

Rezumat

Premize. Diferite studii au subliniat importanţa evitării fumatului activ şi pasiv, a consumului excesiv de alcool, a unei greutăţi corporale crescute, a obiceiurilor alimentare nesănătoase şi a sedentarismului, ca şi componente importante ale promovării sănătăţii şi prevenirii cancerului.

Obiective. Obiectivul acestui studiu este reprezentat de evaluarea opiniilor privind rolul stilului de viaţă în prevenirea cancerului în rândul adulţilor din România, care au rude cu diagnostic de cancer.

Metode. A fost realizat un studiu transversal in Institutul oncologic „Ion Chiricuţă" din Cluj-Napoca, România. Studiul a inclus 320 de adulţi (160 femei, 160 bărbaţi), care au rude cu diagnostic de cancer. Subiecţii au fost rugaţi să completeze un chestionar anonim.

Rezultate. Rezultatele studiului arată faptul că majoritatea rudelor pacienţilor cu diagnostic de cancer, care au fost incluse în studiu cunosc relaţia dintre fumatul activ, fumatul pasiv, consumul de alcool şi cancer. Două treimi dintre participanţi sunt conştienţi de legătura dintre activitatea fizică şi prevenirea cancerului, dar mai puţin de jumătate cunosc riscul pe care îl implică o greutate corporală crescută. Procentul persoanelor care recunosc rolul alimentaţiei în prevenirea cancerului variază, o treime dintre participanţi cunoscând rolul alimentelor bogate în fibre, jumătate fiind de acord cu riscul consumului crescut de carne roşie şi 74% fiind conştienţi de rolul protector al fructelor şi legumelor. Au fost observate diferite diferenţe în funcţie de vârstă, educaţie şi mediul de rezidenţă (urban-rural) cu privire la opiniile exprimate de participanţi.

Concluzii. Aceste date arată faptul că este nevoie de acţiuni de informare şi educare, care să îi ajute pe adulţii din România, care au rude cu diagnostic de cancer, să cunoască riscurile relaţionate cu stilul de viaţă, ca un prim pas în procesul de adoptare a unor comportamente sănătoase care protejează împotriva a diferite tipuri de cancer.

Cuvinte cheie: prevenirea cancerului, stil de viaţă, România, adulţi care au rude cu diagnostic de cancer.

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Introduction

According to the World Health Organization, cancers figure among the leading causes of morbidity and mortality worldwide, with approximately 14 million new cases and 8.2 million cancer related deaths in 2012 (***a, 2015). Among men, the 5 most common sites of cancer diagnosed in 2012 worldwide were the lung, prostate, colorectum, stomach, and liver. Among women, the 5 most common sites diagnosed in the world were the breast, colorectum, lung, cervix, and stomach (***a, 2015; Stewart & Wild, 2014).

Different studies underline the relationship existing between lifestyle and cancer development and progression (***a, 2015; ***, 2014; ***, 2007). The World Health Organization emphasizes that around one third of cancer deaths are due to the 5 leading behavioral and dietary risks: tobacco use, alcohol use, high body mass index, low fruit and vegetable intake, lack of physical activity (***a, 2015).

Tobacco use is the most important risk factor for cancer, causing around 20% of global cancer deaths and around 70% of global lung cancer deaths (***a, 2015). Tobacco use is the main cause of lung cancer, but it is also linked to cancers with other localizations such as the head and neck, breast, cervix, urinary bladder and kidneys, pancreas and colon (***a, 2015; ***, 2014). Passive smoking is also a risk factor for lung cancer, but some research also suggests that secondhand smoke may increase the risk of breast cancer, nasal sinus cavity cancer, and nasopharyngeal cancer in adults, as well as the risk of leukemia, lymphoma, and brain tumors in children (***, 2013).

The international report on "Food, Nutrition, Physical Activity and the Prevention of Cancer: A Global Perspective" (***, 2007) shows that the evidence is that alcoholic drinks are a cause of cancers of the mouth, pharynx, and larynx; the oesophagus; the colorectum in men, and the breast; and probably of liver cancer and colorectal cancer in women. Hence, the recommendations are, if alcoholic drinks are consumed, to limit consumption to no more than two drinks a day for men and one drink a day for women (one 'drink' contains about 10-15 grams of ethanol) (***, 2007).

The same report underlines that the strongest evidence, corresponding to judgments of 'convincing' and 'probable', shows that greater body fatness and greater abdominal fatness are causes of cancer of the colorectum; that greater body fatness is additionally a cause of cancers of the oesophagus (adenocarcinoma), pancreas, breast (postmenopause), endometrium, and kidney; and (probably) gallbladder. It also shows that greater abdominal fatness is probably a cause of cancers of the pancreas, breast (postmenopause), and endometrium; but that greater body fatness probably protects against premenopausal breast cancer. Hence, the report concludes with the recommendation to maintain body weight within the normal range (as issued by national governments or the World Health Organization) (***, 2007).

The report also presents the role of different food products in cancer prevention. According to the data presented in the report, foods containing dietary fiber probably protect against colorectal cancer; and there is limited evidence suggesting that such foods protect against oesophageal cancer. Dietary fiber is found in plant foods: vegetables, fruits, and pulses (legumes), as well as in cereals, roots, tubers, and plantains. All these foods are highest in dietary fiber when in whole or minimally processed form. Foods high in dietary fiber may have a protective effect because of being bulky and relatively low in energy (***, 2007). Moreover, non-starchy vegetables probably protect against cancers of the mouth, pharynx, and larynx, and those of the oesophagus and stomach. There is limited evidence suggesting that they also protect against cancers of the nasopharynx, lung, colorectum, ovary, and endometrium. Allium vegetables probably protect against stomach cancer. Garlic (an allium vegetable, commonly classed as a herb) probably protects against colorectal cancer. At the same time, fruits in general probably protect against cancers of the mouth, pharynx, and larynx, and of the oesophagus, lung, and stomach. There is limited evidence suggesting that fruits also protect against cancers of the nasopharynx, pancreas, liver, and colorectum. Pulses (legumes), including soy and soy products, protect against stomach and prostate cancers (***, 2007). The report concludes with the following recommendations (***, 2007):

a) Eat at least five portions/servings (at least 400 g or 14 oz) of a variety of non-starchy vegetables and of fruits every day (this is best made up from a range of various amounts of non-starchy vegetables and fruits of different colors including red, green, yellow, white, purple, and orange, including tomato-based products and allium vegetables such as garlic).

b) Eat relatively unprocessed cereals (grains) and/or pulses (legumes) with every meal (relatively unprocessed cereals (grains) and/or pulses (legumes) to contribute to an average of at least 25 g non-starch polysaccharide daily).

c) Limit refined starchy foods.

The report also shows the strongest evidence, corresponding to judgments of 'convincing' and 'probable', that red meat and processed meat are causes of colorectal cancer, and limited evidence suggesting that red meat and processed meat are causes of other cancers. Hence, the panel of experts conclude that people who eat red meat should consume less than 500 g (18 oz) a week, and very little if any should be processed ('red meat' refers to beef, pork, lamb, and goat from domesticated animals, including that contained in processed foods; 'processed meat' refers to meat preserved by smoking, curing or salting, or addition of chemical preservatives, including that contained in processed foods) (***, 2007).

The report shows that physical activity of all types protects against cancers of the colon, and also of the breast (postmenopause) and endometrium. Moreover, the panel of experts also agree that since physical activity protects against overweight, weight gain, and obesity, it also protects against cancers for which the risk is increased by these factors. Hence the recommendations are (***, 2007):

a) Be moderately physically active, equivalent to brisk walking, for at least 30 minutes every day.

b) As fitness improves, aim for 60 minutes or more of moderate, or for 30 minutes or more of vigorous, physical activity every day.

c) Limit sedentary habits such as watching television.

Studies from different countries underline the necessity of educating and helping different population groups to adopt healthy behaviors which contribute to cancer prevention (Wright et al., 2015; Sanz-Barber et al., 2015; Murphy et al., 2015; Lopez et al., 2007; Kruk et al., 2014; Carlos et al., 2014; Costa et al., 2015; Falzon et al., 2012) .

Hypothesis

This article focuses on opinions regarding the role of lifestyle in cancer prevention among Romanian adults having relatives with cancer. The study has three objectives. First, it investigates if the participants recognize the link between several lifestyle components - active and passive smoking, alcohol use, body composition, different unhealthy alimentary habits, physical activity - and cancer. The second objective is to assess possible correlations between several opinions related to these issues. Finally, the study aims to identify socio-demographic factors which might influence the participants' opinion regarding the role of different lifestyle components in cancer prevention.

Material and methods

Research protocol

a) Period and place of the research

A cross-sectional study was conducted between October 2010 - February 2011 in the "Ion Chiricuță" State Oncological Institute in Cluj-Napoca, a city with approximately 330,000 inhabitants from North-West Romania. It provides medical care to oncological patients from North-West Romania and, sometimes, also from other Romanian regions. Ethical approval for the study was obtained from the hospital directorate - the standard procedure in Romania at the moment when the study was performed (Lotrean et al., 2013).

b) Subjects and groups

The study involved first degree relatives (parents, siblings, and offspring) of patients diagnosed with various types of cancer, who came to different departments of the oncological hospital (Surgery, Radiotherapy, Chemotherapy, Oncological Pediatrics) for treatment or medical checks.

c) Tests applied

The study used an anonymous questionnaire, which was filled in by the participants. The questionnaire was based on literature data and included items related to demographics, as well as the opinion of the participants regarding the role of different lifestyle components for cancer prevention (***, 2007; Bauman et al., 2009; Humpel et al., 2007).

The socio-demographic items assessed by the study were gender (0-female, 1-male), age, educational level (0-low, 1-medium, 3-high), residence (1-rural, 2-urban). Five questions investigated the opinion of the participants regarding the connection between cancer prevention and different lifestyle components: active smoking, passive smoking, alcohol use, excessive body weight, consumption of fruits and vegetables, consumption of foods rich in dietary fibers such as whole grains and pulses, involvement in physical activity. The possibilities of answers were: I totally agree (2), I agree (1), I do not know (0), I disagree (-1), I totally disagree (-2).

The study subjects were contacted for participation in the study during their presence in the oncological hospital for accompanying or visiting their cancer relatives. An informed oral consent for participation was obtained from all participants. The refusal rate was 8.5% among female subjects and 11.5% among male subjects (Lotrean et al., 2013).

d) Statistical processing

Bivariate correlations were used in order to estimate the association between different opinions, as well as between different socio-demographic characteristics and the participants' opinions.

Data analysis was performed with the SPSS-20.0 statistics program. Significant results were reported at $p < 0.05$.

Results

The study sample consisted of 160 men and 160 women aged 18-70 years from both rural (93 participants) and urban areas (227 subjects) of Romania. The educational level of the participants was as follows: 16.2% with a low educational level (junior high school or less), 42.8% with a medium educational level (high school), and 41.0% with a high educational level (university studies).

Table I shows that almost all of the subjects recognized (they totally agreed or agreed) the role of active smoking in cancer development, and around 80% knew the risk for cancer caused by passive smoking. At the same time, around 76% were aware of the link between alcohol use and cancer.

On the other hand, less than half of the participants (45%) knew that overweight increased the risk for different types of cancer. With regard to the relationship between alimentary habits and cancer, many participants (74%)

Table I

Opinions of participants about the link between lifestyle and cancer.

Opinions	I totally agree %	I agree %	I do not know %	I partially disagree %	I disagree %
Active smoking could increase the risk of cancer	61.3	33.2	5.5	0	0
Passive smoking could increase the risk of cancer	43.1	36.2	17.1	3.3	.3
Alcohol consumption could increase the risk of cancer	38.1	38.2	20.1	3.3	.3
Increased body weight could increase the risk of cancer	21.5	23.5	45.0	7.7	2.3
Consumption of fruits and vegetables could contribute to cancer prevention	39.5	34.6	18.0	5.6	2.3
Consumption of foods rich in dietary fibers such as whole grains and pulses could contribute to cancer prevention	11.1	28.5	52.8	7.6	0
Consumption of red meat could increase the risk of cancer	17.6	31.9	42.7	7.8	0
Physical activity could contribute to cancer prevention	27.3	39.1	26.7	6.9	0

were aware of the protective role of fruit and vegetable consumption, but only one out of three was aware of the importance of consuming fiber-rich foods, and one out of two participants knew about the risk posed by high red meat consumption. Two thirds of the participants recognized the fact that physical activity could contribute to cancer prevention.

As presented in Table II, there were statistically significant positive correlations between all the favorable opinions regarding the role of each investigated lifestyle component and cancer prevention. The strongest correlation was between recognizing the role of active smoking, passive smoking and alcohol use. Recognizing the risk of overweight had the strongest association with being aware about the risk of red meat consumption. Agreeing with the fact that fruit and vegetable consumption helps cancer prevention had the strongest association with recognizing the role of consuming fiber-rich foods. Besides, stronger opinions about the role of fiber-rich foods had one of the strongest associations with awareness about the risk of red meat consumption. Stronger opinions about the role of physical activity had the strongest correlation with awareness of the link between cancer and consumption of fruits and vegetables, consumption of fiber-rich foods, respectively.

Table III shows that there were no gender differences, except for the fact that women had a stronger opinion about the role of fruit and vegetable consumption in cancer prevention. Small age related differences were also found, and they concerned the fact that younger participants were less convinced about the role of alcohol use and red meat consumption in cancer development. On the other hand, the educational level was associated with an increased awareness of the role played by passive smoking, alcohol use, overweight, consumption of fiber-rich foods and consumption of red meat, as well as physical activity. Living in urban or rural areas made no difference in opinions about the role of active and passive smoking and alcohol use, but people from urban areas were more aware of the importance of body weight, fruit and vegetable consumption, red meat consumption and physical activity.

Discussion

This study presents data on the opinions of Romanian adults having relatives with cancer about the role of lifestyle related behaviors in cancer prevention. The results show that the relationship between active and passive smoking and cancer was recognized by the majority of the participants. Another Romanian study also underlines that this message is clear to many Romanian adults, as a result of several information and education activities (Irimia, 2012). No gender, age, educational or residence (rural-urban) related differences were found, except for the fact that people with a higher educational level were more convinced about the relationship between passive smoking and cancer.

The link between alcohol use and cancer was recognized by 76% of the participants. A recent study performed among the general adult population from USA shows that less than half of the Americans are aware of this link (***b, 2015). In our study, the percentage of people recognizing this link was higher and it was noted that older people and participants having a higher educational level better recognized this relationship.

The fact that overweight might increase the risk for several cancers was recognized by 45% of the participants, with people from urban areas being more aware of this. Two recent studies performed among the general adult population from USA and UK show that this risk factor was known to 52% of the Americans and nearly two thirds of Britons (with people from higher social classes and those born before 1981 being much more aware of this link) (***b, 2015; ***c, 2015).

A percentage of 74% of our study participants recognized the protective effect of fruit and vegetable consumption against cancer, women and people from urban

Table II

Bivariate correlations between the participants' opinions.

Indicator	Passive smoking	Alcohol use	Body composition	Consumption of fruits and vegetables	Consumption of fiber-rich foods	Consumption of red meat	Physical activity
Active smoking	.723***	.583***	.236**	.278**	.301***	.186***	.423***
Passive smoking		.572**	.231**	.270**	.311***	.183***	.407***
Alcohol use			.205**	.331**	.342***	.309***	.431***
Body composition				.182**	.158**	.365***	.296***
Consumption of fruits and vegetables					.394***	.277***	.539***
Consumption of fiber-rich foods						.392***	.483***
Consumption of red meat							.323***

*- P<0.05, **- P<0.01, ***-P<0.001.

Table III

Bivariate correlations between socio-demographics and the participants' opinions.

Indicator	Gender	Age	Educational level	Residence
Active smoking	NS	NS	NS	NS
Passive smoking	NS	NS	.154**	NS
Alcohol use	NS	.117*	.180**	NS
Body composition	NS	NS	NS	.165**
Consumption of fruits and vegetables	-.121*	NS	NS	.238
Consumption of fiber-rich foods	NS	NS	.140*	NS
Consumption of red meat	NS	0.113*	.215**	.127*
Physical activity	NS	NS	.212*	.185***

*- P<0.05, **- P<0.01, ***-P<0.001, NS - non-significant.

areas having stronger opinions about this. The benefits of fiber-rich food consumption for cancer prevention were recognized by one third of the participants, those with a higher educational level being more convinced about these. Half of the participants knew the link between the consumption of red meat and cancer; older people, those with a higher educational level and those living in urban areas were more aware of it. The awareness of our study participants about the relationship between different alimentary habits and cancer prevention was higher than in the general American population; in the American study, only 42% of the participants recognized the link between fruit and vegetable consumption and cancer, while only 35% knew the risk related to red meat consumption (***b, 2015). The UK study only investigated the general opinion if there was a relationship between alimentary habits and cancer prevention, and the results showed that 58% of the general population thought that there was a link between a poor diet and increased cancer risk (with people from higher social classes being much more aware of this link) (***c, 2015).

The role of physical activity in cancer prevention was recognized by two thirds of our study sample, people from urban areas and those having a higher educational level being more aware of this. The percentage was higher than among the general US population, where the proportion was 42% (***c, 2015) and the general UK population where the percentage was 49% (again, with people from higher social classes being much more aware of this link) (***c, 2015).

Moreover, the results show significant positive correlations between the participants' opinions about lifestyle components and cancer prevention. These data suggest that there are people who are better informed and educated regarding the role of different lifestyle related behaviors in cancer prevention, which helps them develop stronger opinions about the role of smoking prevention, alcohol abuse prevention, healthy weight management, healthy alimentary habits and active lifestyle, not only about one isolated behavior. Future activities should focus on identifying ways to reach and educate cancer patients' relatives about comprehensive healthy lifestyle promotion and cancer prevention, as a first step in order to motivate them and help them avoid unhealthy behaviors and prevent several types of cancer.

This study is subject to limitations. Due to funding and logistical restrictions, the studies did not include a national representative sample, which limits the generalization of the findings of the present study beyond its sample. Secondly, another common limitation with most studies on this topic is the reliance on the participants' self-reports. Although some respondents may have not reported truthfully, the likelihood of honest responses was maximized in this survey by conducting it anonymously.

Conclusions

1. The results of the study show that the majority of the Romanian cancer patients' relatives from our study know the relationship between active and passive smoking, alcohol use and cancer.

2. Two thirds of the participants are aware of the link between physical activity and cancer prevention, but less than half know about the risk posed by overweight.

3. The percentages of the participants aware about the role of diet in cancer prevention vary from one third knowing the role of fiber-rich foods to half recognizing the risk of consuming high amounts of red meat, and to 74% being aware of the protective effect of fruits and vegetables.

4. These data call for information and education actions, which might help Romanian adults who have relatives with cancer to be aware of lifestyle related risks, as a first step in the process of adopting healthy behaviors which can protect against several types of cancer.

5. Several age, educational and residence (urban-rural) differences were identified for several opinions, underlying a stronger need of educational activities for people from rural areas and those having a lower educational level.

Conflicts of interests

The authors have no conflict of interest.

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Coenzyme Q10 Forte product influence on muscle soreness and muscle fatigue sensation, in acute intense physical stress

Influenţa produsului Coenzima Q10 forte, asupra senzaţiei de durere musculară şi de oboseală musculară, în stresul fizic acut intens

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Abstract

Background. Fatigue is associated with low levels of Coenzyme Q10 (CQ10).

Objectives. The objective is to highlight the influence of the Coenzyme Q10 Forte product (CoQ12F) on muscle soreness sensation (MSS) and muscle fatigue sensation (MFS), in acute intense physical stress.

Methods. The selected subjects (n=42 men) were randomly divided into two groups, who received: placebo (P=21) and CoQ10F (CoQ=21), for 21 days before the physical stress. Stress was represented by physical exercise, carried out on a Excite+ Run MD treadmill, 240 watt. The following were analyzed: MSR, using the 100 mm visual analogue scale; and MFS, using the 5-point Likert scale. Statistical evaluation was made on the basis of Student test.

Results. Parameters, in CoQ compared to P, were significantly reduced immediately after the stress: MSS (p=0.01) and MFS (p=0.002). There were differences in the dynamic developments between CoQ and P groups, for both parameters. CoQ10F influence was more intense on MSS than on MFS, immediately post-stress.

Conclusions. 1) Under CoQ10F influence, compared to P, MSS and MFS were reduced after the stress. 2) CoQ10F influence was higher immediately post-stress for MSS and after 24 h, for MFS. 3) Due to these effects, CoQ10F could be largely used in acute intense physical stress in order to decrease muscle soreness sensation and muscle fatigue sensation. 4) Further studies of CoQ10F would be required to bring additional details in this direction.

Key words: coenzyme Q10, physical stress, muscle soreness, muscle fatigue.

Rezumat

Introducere. Obosela este asociată cu niveluri scăzute de coenzimă Q10 (CoQ10).

Obiective. Obiectivul este evdenţierea influenţei produsului Coenzima Q10 Forte (CoQ12F), asupra senzaţiei de durere musculară (SDM) şi senzaţiei de oboseală musculară (SOM), în stresul fizic intens acut.

Metode. Subiecţii aleşi (n=42 bărbaţi) au fost împărţiţi randomizat în două grupuri, care au primit: placebo (P=21) şi CoQ10F (CoQ-21), pentru 21 zile înainte de stresul fizic. Stresul a foat reprezentat de un efort fizic, realizat pe un covor rulant Excite+ Run MD treadmill, la 240Watt. Au fost evaluate: SDM, utilizând scara vizuală analogă de 100 mm şi SOM, utilizând chestionarul stării de oboseală al scalei Likert, cu 5 puncte. Evaluarea statistică s-a făcut pe baza testului Student.

Rezultate. La CoQ, comparativ cu P, parametrii au fost semnificativ reduşi, imediat după stres: SDM (p=0,01) şi SOM (p=0,002). Au existat diferenţe între CoQ şi P, în evoluţia dinamică a ambilor parametri. Influenţa CoQ10F a fost mai intensă asupra SDM decât asupra SOM, imediat după stres.

Concluzii. 1) Sub influenţa CoQ10F, comparativ cuP, SDM şi SOM au fost reduse după stres. 2) Influenţa CoQ10F a fost mai mare imediat după stres. 3) Datorită acestor efecte, CoQ10F ar putea fi utilizată în stresul fizic acut, cu scopul de a reduce senzaţia de durere musculară şi senzaţia de oboseală musculară. 4) Studii viitoare referitoare la CoQ10F ar fi necesare, pentru a aduce detalii suplimentare în această direcţie.

Cuvinte cheie: coenzima Q10, stres fizic, durere musculară, oboseală musculară.

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Introduction

a) Physical exercise-induced muscle soreness and muscle fatigue

Intense exercise has multiple consequences, including muscle soreness and muscle fatigue. Muscle soreness usually occurs after intense training or exercise that involves a large amount of muscle contractions (Wessel & Wan, 1994; Gulick, Kimura, 1996; Clarkson, Hubal, 2002). Muscle fatigue is described by Gandevia as an "exercise-induced reduction in maximal voluntary muscle force. It may arise not only because of peripheral changes at the level of the muscle, but also because the central nervous system fails to drive the motoneurons adequately" (Gandevia, 2001).

b) Coenzyme Q10 (CoQ10)

The history of CoQ10 starts with the two discoveries made in 1957, one by Crane, who first isolated CoQ10 from beef heart mitochondria (Crane et al., 1989), and the other by Morton, who defined a compound obtained from vitamin A deficient rat liver that he called ubiquinone, which is the same as CoQ10 (Morton et al., 1957). 21 years later, in 1978, Peter Mitchell was awarded the Nobel Prize for the vital protonmotive role of CoQ10 in energy transfer systems (Mitchell, 1991). CoQ10 has a key role in mitochondrial bioenergetics (Littarru & Tiano, 2007; Bergamini et al., 2012; Garrido-Maraver et al., 2014a; Garrido-Maraver et al., 2014b) and its increased body consumption is the presumed cause of low blood CoQ10 levels.

c) CoQ10 supplementation and physical exercise

Intense physical exercise is one of the situations of increased CoQ10 utilization. A study carried out in 2007 shows that "CoQ10 has an influence on effort capacity trough its energetic function, antioxidant role and influence in cardiovascular adaptation" (Ciocoi-Pop RD, Tache S, 2007). A recent study states that "fatigue is often described by patients as a lack of energy, mental or physical tiredness after physical activity and it is associated with low levels of CoQ10" (Filler et al., 2014). Effects of oral CoQ10 supplementation have been observed in "positive clinical and haemodynamic double-blind trials" (Overvad et al., 1999). A research in 2008 concluded that "acute and chronic supplementation of CoQ10 may affect acute and/or chronic responses to various types of exercise" (Cooke et al., 2008).

Many studies concerning the relationship between physical exercise and CoQ10 have taken into consideration the medical or the oxidative stress evaluation, and less the psychological evaluation. The present article continues a previous research of the authors concerning the psychological assessment of the relationship between physical exercise and CoQ10 (Jurcău & Jurcău, 2014).

Hypothesis

Although CoQ10 supplementation is used in exercise, little is known about its influence on muscle soreness sensation (MSS) and muscle fatigue sensation (MFS) in acute physical exercise.

Objective

The objective is to highlight the influence of the *Coenzyme Q10 Forte* product (CoQ12F) on MSS and MFS in acute intense physical stress.

Material and methods

Research protocol

a) Period and place of the research

In conformity with the Helsinki Declaration, the Amsterdam Protocol and Directive 86/609/EEC, the study was approved by the Ethics Commission of the College of Physicians, Cluj County, Romania (No. 1045/ 09.05.2013). The study and the measurements were carried out between March and May 2014, in the Medical Family Office 122 in Cluj-Napoca.

b) Subjects and groups

42 voluntary male subjects were selected. The selected subjects were sedentary. Persons with mental disorders, cortisone therapies of any kind and toxic addiction - alcohol, tobacco, drugs, coffee were excluded from the trials. The participants were randomly assigned to one of the two groups: a) the first group received placebo = P; b) the second group received CoQ10F = CoQ. The main characteristics of the participants were: number of subjects - 21 (P); 21 (CoQ); mean age – 21.3± 2 (P); 24.4±4 (CoQ). The two groups were subjected to the same type of physical exercise, on the treadmill.

c) Tests applied

- *Study design*

Method of exercise testing: before physical testing, each participant performed a 4-min muscle warm-up, on an Excite + Run MD treadmill, adjusted to 12 watts (W); after a 4-min break, the test was carried out on the same treadmill; physical exercise was started at a power output of 24 W, for 3 minutes, which was gradually increased by 24 W every 3 min, up to 240 W. The chosen preparation was "CoQ10 Forte" (CoQ10F), containing 100 mg CoQ10, produced by Dacia Plant company, Brasov, Romania (1). Both CoQ10F and P were administered for 21 days, 3 capsules a day, at 8.00-14.00-20.00, prior to the day on which the physical treadmill exercise test was initiated.

The evaluation time points for both P and CoQ were as follows:

time 2 = T2 - in the morning, before the exercise stress test, at 8.00 a.m.;

time 3 = T3 - 15 min after the exercise stress test;

time 4 = T4 - 24 hours after the exercise stress test.

- *Explorations*

The examined parameters were: muscle soreness sensation (MSS); muscle fatigue sensation (MFS). MSS: determined on the 100 mm visual analogue scale: 0 = no muscle soreness, 100 = impaired movement due to muscle soreness (Saunders et al., 2009). MFS: determined on the 5-point Likert scale - the participant placed a check mark in the specific box that correlated with their perceived level of fatigue: 1 - strongly disagree, 2 - disagree, 3 - neutral, 4 - agree, 5 - strongly agree (Likert, 1932; Norman, 2010).

d) Statistical processing

- The results obtained were analyzed using the SPSS 13.0. statistical package.

- For continuous data examination, the Student's t test was used.

- The differences were considered significant at a $p<0.05$.

Results

Note that the *reference time* was considered to be T_1.

a) Muscle soreness sensation (MSS) (Table I, Fig. 1). For P, compared to CoQ, MSS was significantly increased at T2 (p=0.05) and at T3 (p=0.005). At T2 compared to T1, MSS was increased significantly for P (p=0.03) and insignificantly for CoQ. There were significant differences between T1-T3, both for P (p=0.0001) and CoQ (p=0.01).

Table I. Changes of MSS in physical exercise.

Group	Mean	SD	SEM	p
T1P	24.6	15.2	3.317	0.03
T2P	40.6	17.2	3.753	
T1P	24.6	15.2	3.317	0.0001
T3P	70.1	31.2	6.806	
T1CoQ	28	17	3.71	0.01
T3CoQ	44.4	24.2	5.281	
T2P	40.6	17.2	3.753	0.05
T2CoQ	31	13.2	2.880	
T3P	70.1	31.2	6.806	0.005
T3CoQ	44.4	24.2	5.281	

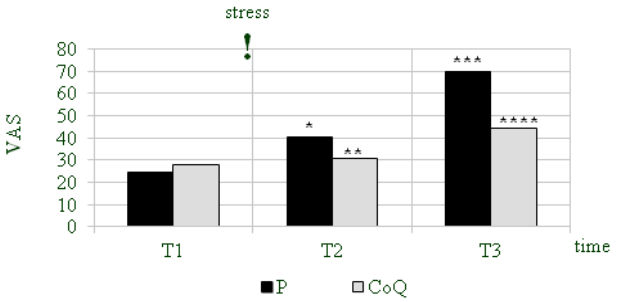

Fig. 1 – Changes of MSS in physical exercise
*p=0.03, **p=0.05, ***p=0.0001, ****p=0.005,
*= T2P-T1P, **= T2P-T2CoQ, ***= T3P-T1P, ****= T3P-T3CoQ
"stress" = time of acute and brief physical exercise

Table II. Changes of MFS in physical exercise

Group	Mean	SD	SEM	p
T1P	1.3	1.03	0.224	0.0001
T2P	5	3.1	0.676	
T1P	1.3	1.03	0.224	0.05
T3P	2	1.2	0.262	
T1CoQ	1.7	1.3	0.284	0.02
T2CoQ	3	2.1	0.458	
T2P	5	3.1	0.676	0.02
T2CoQ	3	2.1	0.458	
T3P	2	1.2	0.262	0.05
T3CoQ	1.3	1	0.218	

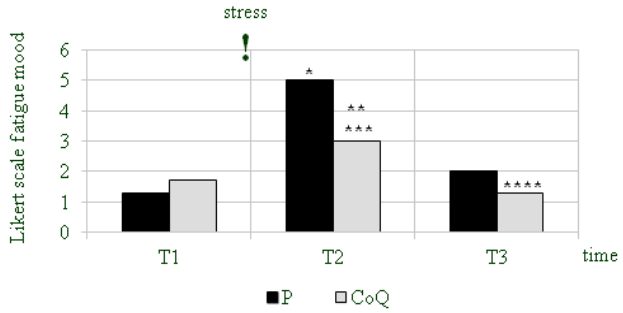

Fig. 2 – Changes of MFS in physical exercise
*p=0.0001, **p=0.02, ***p=0.02, ****p=0.05
*= T2P-T1P, **= T2CoQ-T1CoQ, ***= T2P-T2CoQ, ****= T3P-T3CoQ
"stress" = time of acute and brief physical exercise

b) Muscle fatigue sensation (MFS) (Table II, Fig. 2). For P, compared to CoQ, MFS was significantly increased at T2 (p=0.02) and T3 (p=0.05). At T2 compared to T1, MFS was significantly increased both for P (p=0.0001) and CoQ (p=0.02). There were differences between T1-T3: significant for P (p=0.05) and insignificant for CoQ.

c) Comparison between the influence of stress on MSS and MFS, at T2 and T3, by the P/CoQ ratio (Fig. 3). Influence of physical exercise: higher, but insignificant, on MFS (T2P/T2CoQ = 1.7) compared to MSS (T2P/T2CoQ = 1.3) at T2; almost equal on MSS (T3P/T3CoQ = 1.57) and MFS (T3P/T3CoQ = 1.53) at T3.

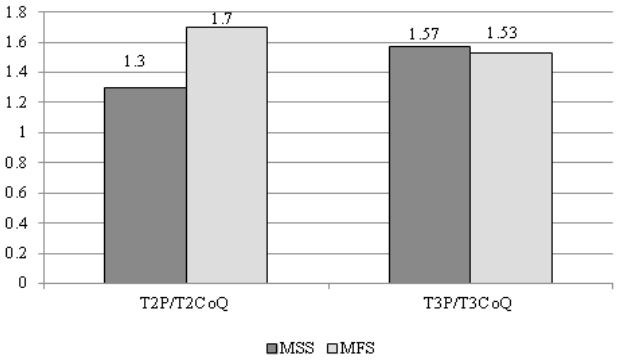

Fig. 3 – Comparison between the influence of stress on MSS and MFS at T2 and T3.

d) Comparison of the impact of CoQ10F on MSS and MFS, at T2 and T3 (Fig. 4). CoQ10F impact was higher, but insignificant: a) on MSS (T2CoQ/T1CoQ = 1.11) compared to MFS (T2CoQ/T1CoQ = 1.76) at T2; b) on MFS (T3CoQ/T1CoQ = 0.76) compared to MSS (T3CoQ/T1CoQ = 1.59) at T3.

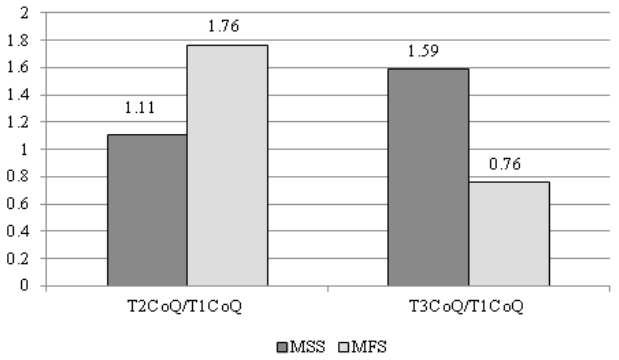

Fig. 4 – Comparison of the CoQ10F impact on MSS and MFS at T2 and T3.

Discussion

Muscle soreness and muscle fatigue in physical exercise. Chronological Pubmed evidence

For P, there were significantly elevated values: immediately after exercise (T2) for MFS (p=0.0001), and 24 h after stress (T3) for MSS (p=0.0001), which is in accordance with the results of several previous studies related to physical exercise. Thus, a 2010 study states that "exercise-induced muscle damage is associated with an acute-phase inflammatory response characterized by

phagocyte infiltration into muscle" (Fatouros et al., 2010). This idea is also confirmed for "soccer training and soccer exercise", which is "associated with excessive production of free radicals" (Djordjevic et al., 2012). A recent research evidences that "physical training programmes are based on provoking transitory states of fatigue" (García Verazaluce et al., 2014).

CoQ10 and muscle soreness sensation. Chronological Pubmed evidence

CoQ10F had significant effects on MSS 24 h after physical stress, which was demonstrated by the significantly greater reduction in CoQ compared to P, mostly at T3 (p=0.005). These results obtained for the action of CoQ10F on MSS are similar to data from recent studies on the influence of CoQ10 on muscle soreness. Thus, the results of a study performed in 2007 suggested that "coenzyme Q10 supplementation may decrease muscle pain" (Caso et al., 2007). In 2011, it was shown that "patients with Fibromyalgia had statistically significant reduction on symptoms and clinical improvement after CoQ10 treatment" (Cordero et al., 2011). In the past two years, studies have found that "for the CoQ10 treated patients, the intensity of muscle pain decreased" (Fedacko et al., 2013) and that in the CoQ10 treated group "the intensity of muscle pain, measured as the Pain Severity Score (PSS), was reduced" (Skarlovnik et al., 2014).

CoQ10 and muscle fatigue sensation. Chronological Pubmed evidence

CoQ10F had the most significant influence on MFS, immediately after physical stress, which is evidenced by the significantly greater reduction in CoQ compared to P, at T2 (p=0.02). These results obtained for the action of CoQ10F on MFS are similar to data from recent studies on the effect of CoQ10 on fatigue sensation. Thus, a study in 2008 showed that "oral administration of CoQ10 improved subjective fatigue sensation and physical performance during fatigue-inducing workload trials and might prevent unfavorable conditions as a result of physical fatigue" (Mizuno et al., 2008). A research in 2010 reported that "fatigue indexes decreased with CoQ10 supplementation, but these decreases did not differ from that seen with placebo supplementation" (Gökbel et al., 2010), while in another study from the same year, it was found that "CoQ10 improves swimming endurance and has an antifatigue effect" (Fu et al., 2010). Two studies of 2014 confirmed this last statement, concluding that "the intake of Phlebodium decumanum plus coenzyme Q10, for 4 weeks, produced delaying fatigue" (García Verazaluce et al., 2014) and "oral CoQ10 plus NADH supplementation could confer benefits on fatigue in chronic fatigue syndrome" (Castro-Marrero et al., 2014).

CoQ10 supplementation and physical exercise. Chronological Pubmed evidence

By comparing the evolution of MSS and MFS throughout the study, it can be said that CoQ10F induced: a) muscle soreness protection more than muscle fatigue protection at T2, which is proved by the differences recorded immediately after physical stress (MSS-T2CoQ/T1CoQ=1.1; MFS- T2CoQ/T1CoQ=1.76); b) muscle fatigue protection more than muscle soreness protection at T3, which is demonstrated by the differences recorded 24 h after stress (MSS-T3CoQ/T1CoQ=1.59; MFS-T3CoQ/T1CoQ=0.76). These results obtained for the action of CoQ10F on the evolution of MSS and MFS throughout the study, are found in some previous studies. Thus, a research of 2009 shows that "CoQ10 supplementation increases maximum aerobic power in young trained soccer players" (Ciocoi-Pop RD, Tache S, Bondor C, 2009). Another study, in 2012, shows that CoQ10 supplementation had beneficial effects during exercise (Okudan et al., 2012). In the same year, it was shown that CoQ10 supplementation before strenuous exercise reduced subsequent muscle damage (Díaz-Castro et al., 2012). One year later, a research concluded that "untrained female mice that received antioxidants (α-lipoic acid, vitamin E and coenzyme Q10) performed significantly better than placebo-control mice" (Abadi et al., 2013).

The literature on CoQ10 related to muscle soreness sensation and muscle fatigue sensation is scarce. Through this study, we found the benefits of the CoQ10F product to reduce muscle soreness sensation and muscle fatigue sensation in acute intense physical exercise. Further studies are needed to provide additional details in this direction.

Conclusions

1. Under the influence of the CoQ10F product, compared to P, MSS and MFS were reduced after stress.
2. CoQ10F influence was higher immediately post-stress for MSS and after 24 h, for MFS.
3. Due to these effects, CoQ10F could be largely used in acute intense physical stress, in order to decrease muscle soreness sensation and muscle fatigue sensation.
4. Further studies on CoQ10F are needed to provide additional details in this direction.

Conflicts of interest

Nothing to declare.

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Analysis of defense parameters in handball teams HCM Constanta and FC Barcelona in the competition Champions League 2011-2012

Analiza parametrilor defensivi înregistraţi de echipele HCM Constanţa şi FC Barcelona în competiţia Liga Campionilor 2011-2012

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Abstract

Background. The recent changes in male handball regarding the concept of the game, the increased speed in which the offense and defense phases are carried out, and the mobility of the players in different game systems with regard to attack and defense determined us to do a compared analysis on the evolution of male handball teams H.C.M. Constanţa, Team Champions of Romania, and FC Bracelona, winner of seven titles at international level, in the Champions League Competition 2011-2012.

Aims. The research had as an object of study the defensive performance of players in the left wing, right wing and pivot positions of teams HCM Constanta and FC Barcelona in the Champions League competition 2011-2012.

Methods. In conducting this research, we used the observation method, achieved by studying the video recordings of the games; statistical data collected was necessary to analyze the game parameters in defense obtained by the twelve players.

Results. 31 sanctions for the H.C.M. Constanta team and 19 penalties for F.C. Barcelona were given in 10 matches. Defense parameters blocked shots and interceptions had a share of 6.34% from the total of 820 defense situations regarding the Romanian team, and 8.96% for the Spanish team out of 825 such situations.

Conclusions. Defense actions performed by the players of the Spanish team in the wing positions, as well as the low number of penalties received by them, demonstrate that they have a correct technique regarding the defense elements, backed by high values of motor qualities.

Key words: high performance sport, male handball, defense parameters, game systems in defense.

Rezumat

Premize. Modificările apărute în jocul de handbal masculin privind concepţia de joc, viteza crescută în care se desfăşoară fazele jocului ofensiv şi defensiv, mobilitatea jucătorilor în diferite sisteme de atac şi apărare, ne-au determinat să efectuăm o analiză comparativă asupra evoluţiei echipelor de handbal masculin HCM Constanţa şi FC Barcelona în Liga Campionilor, sezonul competiţional 2011-2012.

Obiective. Demersul ştiinţific a avut ca obiect de studiu evoluţia defensivă a jucătorilor care activează pe posturile de apărători laterali şi centrali avansaţi, componenţi ai echipelor HCM Constanţa şi FC Barcelona în cadrul competiţiei Liga Campionilor 2011-2012.

Metode. În realizarea cercetării a fost utilizată metoda observaţiei pedagogice, prin utilizarea unei fişe de observaţie conţinând parametrii defensivi înregistraţi de către cei 12 jucători supuşi cercetării.

Rezultate. În ceea ce priveşte sancţiunile disciplinare, jucătorii echipei HCM Constanţa au primit 31 sancţiuni, iar sportivii echipei FC Barcelona, 19 penalităţi în 10 meciuri. Parametrii defensivi aruncări blocate şi intercepţii, utilizaţi de către echipa română, au înregistrat valoarea de 6,34% din totalul de 820 situaţii defensive, iar echipa spaniolă a obţinut un procent de 8,96% din 825 situaţii de apărare.

Concluzii. Acţiunile defensive efectuate de jucătorii echipei spaniole, sportivi care activează pe posturile de apărători laterali, precum şi numărul redus de sancţiuni disciplinare, demonstrează o tehnică corectă şi foarte bine însuşită a procedeelor şi acţiunilor de apărare, întărită de abilităţi fizice deosebite.

Cuvinte cheie: sport de performanţă, handbal masculin, parametrii defensivi, sisteme de joc în apărare.

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Introduction

Handball is called a transition game, as players often switch between defensive and offensive game and the action of the game is characterized by alternating between running and sprinting. Technical skills, anthropometric characteristics and a high level of strength, muscle power and throwing speed are the most important factors to obtain a clear advantage for a successful participation in elite competitions (Rannou et al., 2001; Gorostiaga et al ., 2005).

During a handball match, players perform different actions such as running, jumping and various defensive actions. Handball players require repeated running actions alternating with short or long periods of recovery, which can be active or passive (Buchheit, 2005).

Malina et al., 2007 believe that the technique is complex in ball games and therefore, evaluation of technical parameters based on individual scores would be useful.

Determining the factors that influence the speed of the ball, such as the distribution of players in different positions, muscle strength and anthropometric characteristics, could be important for the efficiency of the handball game (Zapartidis et al., 2009).

Vila et al., 2012 & Chaouachi et al., 2009 consider that each specific position of the players in the field requires unique physical and physiological attributes, due to technical and tactical requirements of each post, in order to maximize team performance.

The recent literature provides insight into the physiological requirements of modern handball. Contemporary handball game is a combination of aerobic and anaerobic efforts, mainly carried out at ~80% of maximum oxygen requirements. Players cover between 3.5 and 4.5 km/game, depending on their position in the field. Average speed varies around 6.4 km/h, but short sprints occur over very short periods of time, (on an average 50 sprints/player/game) (Michalsik et al., 2013; Michalsik et al ., 2013).

At each annual meeting worldwide, participating teams surprise us by implementing innovations in the competition. If in modern handball, the simplification of actions in the attack compartment becomes a problem, in defense, new approaches and characteristics of male handball teams appear, where the game is based on the high mobility of players, dynamism, high efficiency and activation (Pitney & Cartwright, 2005).

A good attack wins games and defense wins championships, although this section of the game is far from being attractive during the training hours. Defense is the key to winning, and it is known that winning teams must be balanced to provide a strong defense and an effective attack, but if the attack is down, a solid defense will compensate for it (Constantini, 2002b).

Nowadays, the defense compartment has assumed an important role in the progress of a spectacular game; taking initiative and risks incites players and attracts viewers through the significant number of advantages obtained using successful defensive actions. The main objectives of defense have not changed and the priority objective is to prevent the opponent from scoring goals and at the same time, to take possession of the ball or, in a more realistic concept, to recover the ball without receiving a goal (Prisăcaru, 2011).

To defend means to achieve an active opposition in order to prevent effective action of the opponent with the ball, for the purpose of exploiting a surprising tactical situation (Sibille et al., 2011). Defense requires basic objectives and tasks that must be performed surprisingly, in order to gain possession of the ball. Defenders, either individually or collectively, must oppose to attacking movements and ball circulation or cause difficulties in receiving and handling the opponents' actions, thus creating favorable conditions for ball recovery, causing the opponent to make mistakes.

Several studies have shown differences in actions and distances run in the game, depending on the specific position of players in the field (Luigi et al., 2008; Manchado et al., 2007; Sibilia et al., 2004; Ziv & Lidor 2009).

Tasks of the wing player - whose main opponent is the back player: he plays in an advanced position, aggressively, applies marking to interception or surveillance, doubles the intermediate defender, surveying the wing, closes penetration or decreases the angle of shot on goal, anticipates wing penetration behind the intermediate defender, is responsible for recovering balls rejected by the goalkeeper or coming from the goal bar (Balint, 2004).

Tasks of the pivot - whose main opponent is the back center: he is called top defender in the 3 + 2 + 1 system and flyer in the 5 + 1 system; he supervises the actions of the back center player, preventing him from organizing and leading the game, stops his actions of penetration or throwing at the goal; by marking for surveillance and interception, he impedes the movement of players and of the ball in the center zone, covering the field of action of the line player, stopping his assists; he attacks back players who throw in the central zone, closes lanes of penetration occurring between intermediates and central defenders, in case of penetration of the second pivot, he retires to cover him or marks closely the back player (Balint, 2004).

Objectives

The objectives are to learn technical aspects regarding the defensive performance of the HCM Constanta and FC Barcelona teams, in order to eliminate technical and tactical mistakes and improve the game of the Romanian team, knowing that the HCM Constanta team is the only team representing Romania in the Champions League, and FC Barcelona is the winner of seven titles in this competition. In the Champions League competition held in 2011-2012, HCM Constanta failed to qualify in the next stage, and the Spanish team reached the quarterfinals.

Hypothesis

Analyzing and comparing the technical and tactical defensive performance of the Romanian and Spanish teams can bring significant improvements to increase individual and team efficiency depending on the defenders' movements and game situations.

Material and methods

Research Protocol

a) Subjects and groups

The research subjects were the 12 male players, members of the HCM Constanta and FC Barcelona club teams, who play in the wing and pivot positions. The study

was conducted on 10 games played by the two teams in the Champions League competition. The research players were aged between 27-36 years.

The study focused on the defensive behavior of the players in the wing and pivot positions of the HCM Constanta and FC Barcelona teams, who participated in the Champions League 2011-2012.

b) Methods

Documentation by studying the European Handball Federation and the International Handball Federation sites, to collect data on the composition and performance of the HCM Constanta and FC Barcelona teams in the Champions League matches held in the competition. The observation method was applied by studying the videos of the matches and by using the record sheets of the defensive game parameters, in order to obtain data on the individual performance of the players.

c) Statistical processing

Statistical calculation of the collected data was necessary to analyze individual performance using the following techniques: percentage calculation of efficiency in the defense compartment, by comparing defensive situations to the analyzed defense parameters. This calculation was performed using the formula:

Percentage = number of defense parameters x 100/ defense situations.

Statistical analysis was carried out using the Excel program, with the parametric test for the comparison of the means – the Student test.

Results

Throughout the competition, 20 observation sheets of the games, developed after the matches played by the two teams, were recorded, summarized and analyzed. Statistical processing and interpretation of data revealed the importance of technical and tactical actions for the effective performance of the teams in the defense compartment.

The HCM Constanta handball team, which represented Romania in the Champions League competition 2011-2012, played a total of ten games, of which one victory and nine defeats. The players in the wing and pivot positions received from their direct opponents 90 goals out of 820 defense situations. Regarding the players of FC Barcelona in the positions mentioned above, they received from direct opponents 85 goals out of 825 defense situations, obtaining in the qualifying group nine wins and a draw (Table I).

Table I

Efficiency of players in the wing and pivot positions of the HCM Constanta and FC Barcelona teams, in the Champions League competition 2011-2012.

Teams	Defense situations	Goals received from direct opponents	Percentage	p
FC Barcelona	825	85	10.3	t=0.739
HCM Constanta	820	90	10.97	p>0.05

Statistical processing of the defense parameters showed that the Romanian team had worse results in the case of the defensive parameters analyzed (Table II).

Another parameter of the defense compartment responsible for the effectiveness of performance is represented by the sanctions received by players in the wing and pivot positions during the competition. The hesitant and slow action of the defenders, with a high degree of physical and mental fatigue, caused them to deviate from sporting behavior, which resulted in penalties awarded proportionally to the seriousness of the faults. These penalties are listed in Table IV.

Table II

Defensive parameters of players in the wing and pivot positions in the Champions League competition 2011-2012.

Teams	Interceptions	Percentage	p	Technical fouls	Percentage	p	Blocked shots	Percentage	p
HCM Constanta	42//820*	5.12	t=1.190	74//820*	9.02	t=2.826	10//820*	1.21	t=2.5
FC Barcelona	57/825*	6.9	p>0.05	61/825*	7.39	p<0.05	17/825*	2.06	p<0.05

* Defense situations

Table III

Observation sheet model including defensive parameters after 10 matches played by the two teams

Teams	HCM Constanta	FC Barcelona	p	HCM Constanta	FC Barcelona	p	HCM Constanta	FC Barcelona	p
Parameters/Defense	Left wing	Left wing		Right wing	Right wing		Pivot	Pivot	
Received goals	30/820*	28/825*	t=0.526 p>0.05	32/820*	25/825*	t=1.66 p>0.05	28/820*	32/825*	t=1.29 p>0.05
Interceptions	17/820*	23/825*	t=0.5 p>0.05	10/820*	16/825*	t=2.14 p<0.05	15/820*	18/825*	t=1.15 p>0.05
Technical fouls	17/820*	14/825*	t=0.65 p>0.05	18/820*	13/825*	t=1.13 p>0.05	39/820*	34/825*	t=1.31 p>0.05
Blocked shots	3/820*	5/825*	t=1 p>0.05	4/820*	6/825*	t=1 p>0.05	3/820*	6/825*	t=1.5 p>0.05

* Defense situations

Table IV

Disciplinary sanctions received for illegal actions of the players.

Teams	HCM Constanta			FC Barcelona		
Penalties	Left wing	Left wing	Right wing	Right wing	Pivot	Pivot
Yellow card	4	2	6	1	2	7
Red card	1	-	-	-	-	-
2 minute suspension	8	7	3	2	2	5
Total	13	9	9	3	4	12

Discussions

From the results in Table I, it can be seen that FC Barcelona had a better percentage regarding the goals received from direct opponents, 10.3%, primarily due to the tactical and technical knowledge of players in the wing and pivot positions and to the competitive experience of the team, in major competitions. We mention that the players of the HCM Constanta team obtained a percentage of 10.97%, receiving 90 goals out of 820 defense situations.

Table II shows the defense parameters analyzed: interception, technical fouls, goals received from the direct opponent, blocked shots. We analyzed these parameters in order to show the performance of defensive players from both teams, given that defense is considered to be a game phase that offers a number of solutions for increasing the potential of the team by playing a quality game. By analyzing the results, it can be seen that FC Barcelona had 57 interceptions out of 825 defense situations and an efficiency of 6.9%, compared to the HCM Constanta team, which had 42 interceptions out of 820 defensive situations, with an efficiency of 5.12%. Regarding the technical fouls parameter, the players of the HCM Constanta team had a higher value, 9.02%, compared to those of FC Barcelona, who obtained a value of 7.39. By using the Student test, the calculated t is higher than the table t at a significance threshold of $p < 0.05$, which shows that there are differences between the players of the two teams regarding the technical mistakes parameter.

Table III shows the defensive parameters recorded in players in the three analyzed positions. The best results were obtained by players in the left wing position of the FC Barcelona team, who had a total of 23 interceptions compared to the left wing players of the Romanian team, who had 17 actions. Regarding the blocked shots parameter, it can be seen that the pivot players of the Spanish team had a total of six blocked shots compared to the Romanian players, who had 3 blocked shots.

The penalties received for the errors committed in the defense compartment by the teams subjected to the research are listed in Table IV. Disciplinary sanctions are another aspect of the technique and tactics used, which reflect fairness in mastering the techniques and specific physical preparation for a competition. The study of the sport behavior of the players in the game revealed that the pivot players of FC Barcelona received 19 penalties, ten yellow cards and nine 2-minute suspensions compared to the players of HCM Constanta, who had six yellow cards and three 2-minute suspensions. The analysis of the penalties awarded to the FC Barcelona players in the wing positions evidences a fair play behavior of these players, who received a total of 3 and 4 penalties, respectively, in 10 games.

Conclusions

1. The techniques, individual and collective defense actions as well as defensive game systems can become the main weapon of a team and they can compensate for the shortcomings of the offensive compartment. The defense parameters analyzed were used and applied in matches by both teams, from a number of 820 defense situations for the Romanian team and 825 defense situations for the Spanish team.

2. The defense actions initiated by the FC Barcelona players, athletes working on the sides of the field, and the low number of penalties received by them show a proper acquisition of technical defense elements and procedures, supported by the value of individual players and the ability of the entire team to work together, in order to stop the opponents' attack.

3. The efficiency of goals received from direct opponents had a better value for FC Barcelona players, who had a percentage of 10.03%.

4. In terms of the number of disciplinary sanctions received by the two teams, the pivot players of the HCM Constanta team had a total of 18 penalties, which evidences the tough game practiced by them.

5. The Student test shows that the differences in defense performance between the wing and pivot players of the two teams included in the study are insignificant. In the case of two analyzed parameters, technical errors and blocked shots, significant differences are observed, the calculated t value being superior to the threshold value $p < 0.05$.

6. Most of the techniques belong to the game of attack, the defense game is poorer in terms of technique, so that these elements must be properly used in the game. If a flaw in the game of attack can be corrected, in the defense compartment any technical mistake can lead to an opportunity for the opponent to score. A thorough preparation of defense players and their guidance for playing a technical game, without brutality, are requirements of the modern handball game.

Conflicts of interest

Nothing to declare.

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A study on the dietary and physical activity practice behaviours in children aged 12-15 from urban areas
Studiu privind comportamentul alimentar şi cel legat de practicarea activităţilor fizice la copii de 12-15 ani din mediul urban

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Abstract

Background. The rapid pace of everyday activities and the temptations offered by the new technologies (unlimited Internet access, various gadgets, video games etc.) result in improper and disorganized diets, as well as in the reduction of the time dedicated to physical activity practices. Given the adolescents' relatively busy curriculum, we assumed that these are concerned with improving their dietary behaviour and promoting physical activity practices.

Aims. The lifestyle in correlation with the sustained practice of physical exercises, diet hygiene and education influence body growth and development processes. The aim of this study is to identify the lifestyle adopted by children aged 12-15 years, from urban areas.

Methods. In order to collect data on diet hygiene, practice of physical exercises, and sedentary lifestyle, we conducted a questionnaire-based survey (15 items) on 234 schoolchildren, 116 girls and 118 boys, from the General School 30 of the Braşov municipality.

Results. The obtained data show that a significant percentage of the schoolchildren have adopted an inadequate lifestyle through high calorie food consumption associated with the absence of physical activity practice. From the selected group of 234 respondents, around 50% eat 3 meals/day, of which breakfast is the most important. Between 40-47% of the schoolchildren prefer fruit, 23% of the boys prefer meat, and 23% of the girls prefer to consume refined sweets. 40-50% of them watch TV programs, films, etc. and/or sit in front of the computer 1-2 hrs/day, while 25-30%, between 3 and 4 hrs/day.

Conclusions. A multitude of factors, such as demographic, sociocultural, and environmental, influence the nutritional behaviour and the practice of physical activities. TV watching and computer use are considered sedentary behaviours and consequently associated with excess weight.

Key words: lifestyle, physical activity, sedentary behaviour, diet hygiene, excess weight.

Rezumat

Premize. Ritmul alert al activităţilor cotidiene şi tentaţiile oferite de noua tehnologie (accesul nelimitat la internet, gadgeturi, jocuri video etc.) au drept efect o alimentaţie incorectă şi dezorganizată, precum şi diminuarea timpului în vederea practicării activităţilor fizice. Ştiind că programul de studiu al adolescenţilor este destul de încărcat, am presupus că aceştia au preocupări în vederea îmbunătăţirii comportamentului alimentar şi a promovării practicării activităţilor fizice.

Obiective. Stilul de viaţă corelat cu practicarea sistematică a activităţilor fizice, educaţia şi igiena alimentară, influenţează procesele de creştere şi dezvoltare a organismului. Scopul cercetării este de a identifica stilul de viaţă adoptat de copiii de 12-15 ani, din mediul urban.

Metode. Pentru a obţine informaţii referitoare la igiena alimentară, practicarea activităţilor fizice şi sedentarism, am realizat o anchetă pe baza unui chestionar (14 itemi), pe un număr de 234 de elevi, 116 fete şi 118 băieţi.

Rezultate. Datele obţinute relevă faptul că un procent important din elevii chestionaţi au adoptat un stil de viaţă neadecvat, prin consumul de alimente calorice, asociat cu lipsa practicării activităţii fizice. Din lotul ales, de 234 de elevi, aproximativ 50% au 3 mese/zi, iar micul dejun reprezintă cea mai importantă masă, 50% dintre elevi preferă consumul de fructe, 20% dintre băieţi preferă consumul de carne şi 20% dintre fete, consumul de dulciuri rafinate. Între 40-50% dintre ei, vizionează emisiuni TV, filme etc. şi/sau îşi petrec timpul în faţa computerului între 1-2 h/zi, iar 25-30% dintre aceştia, între 3 şi 4 h/zi.

Concluzii. Factori multiplii, precum factorii demografici, socio-culturali şi de mediu, influenţează comportamentul alimentar şi practicarea cu regularitate a activităţilor fizice. Vizionarea TV şi utilizarea computerului sunt considerate comportamente sedentare, fiind asociate cu excesul ponderal.

Cuvinte cheie: stil de viaţă, activitate fizică, sedentarism, igienă alimentară, exces ponderal.

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Introduction

A healthy diet as well as childhood obesity prevention are public health priorities. Children and youth are an important target group because the early development of healthy dietary habits represents the most effective way for the long-term preservation of health. Dietary disorders and overeating can lead to increased energy intake in children and adolescents, favouring the occurrence of obesity (Krebs et al., 2007), while current dietary behaviours are obesogenic due to the high lipid and carbohydrate content. A caloric intake that is unmatched by energy consumption leads to the disorder of the individual's energy balance (Donald, 2002).

A healthy diet associated with physical activities, practiced on a regular basis, is crucial in the prevention of chronic diseases such as cardiovascular disease, cancer, cerebrovascular accidents, which are the main causes of mortality among the adult population (Daniels et al., 2005) (1, 2, 8, 9). Nutrition guides recommend that all population segments, including children and adolescents, engage in attaining and maintaining a normal body mass index (BMI). More precisely, children and adolescents are encouraged to maintain their nutrition balance as required for normal growth and development, without generating excessive weight (7).

Dietary and physical activity practice behaviours are influenced by society, family, educational institutions, health services providers, religious organizations, government agencies, the mass media, and the food industry. Each of these aims at improving dietary behaviours and at promoting physical activity practice.

Most excess weight cases are the result of a caloric intake that exceeds the individual's energy consumption (Beers, 2006). The worldwide increase of excess weight prevalence is caused by excessive caloric intake, especially due to high calorie foods, rich in fats and sugars, as well as by a decrease in physical activity as a consequence of a sedentary lifestyle. Children with excessive weight during the first years of life have an 80% risk of becoming obese adults if both parents are obese, and a 40% risk if only one parent is obese (Arion et al., 1983; Nader et al., 2006). Both childhood and adolescence obesity represents a risk factor for the development of cardiovascular diseases (Ogden, 2002), depression (Hedley et al., 2004) arterial hypertension (Summerbell, 2005), several forms of cancer (Kelishadi, 2006), type 2 diabetes mellitus (Kelishadi, 2007), and sleep apnea syndrome.

Physical activities practiced on a regular basis by children and adolescents relate to demographic, sociocultural and environmental factors (3). Society, family and relatives encourage the youth's involvement in multiple physical activities (Sallis et al., 2000; Van der Horst et al., 2007b; Baker et al., 2003; Frenn, 2005; Motl et al., 2007; Springer et al., 2006; Voorhees, 2005; Vu et al., 2006; Gustafson & Rhodes, 2006). Children and adolescents who wish to attain a good physical condition during the subsequent life periods, and are convinced that practicing physical activities is important for maintaining a healthy lifestyle should engage in various physical activities (Haverly & Davison, 2005). The youth's perception about their capability to perform a physical activity and their physical competencies affects the practice of various physical activities (Sallis et al., 2000; Haverly & Davison, 2005; Van der Horst et al., 2007b). Girls are motivated by pleasant physical activities and by the confidence in their ability to perform the envisaged physical activity. In contrast, boys are motivated by performance attained during physical activities, as well as by the opinions expressed by friends and family (Trost et al., 1999).

Environmental factors could represent either an advantage or a hindrance in the practice of physical activities. These factors could be an impediment to physical activity practice due to the limited availability of dedicated facilities for performing physical activities, inaccessibility of sports equipments, costs related to physical activities, and lack of time (Motl et al., 2007; Gomez et al., 2004; Romero et al, 2001; Ferreira et al., 2006).

Hypothesis

Despite the adolescents' relatively busy curriculum, we assumed that they are concerned with improving their dietary behaviour and interested in promoting physical activity practices.

Material and methods

The research protocol

a) Period and location of the research

The research was conducted between March and June 2014, among schoolchildren of the General School No. 30 of the Braşov municipality. We should mention that this research was formally approved by the Ethics Commission of the School. Also, for studies conducted on human subjects, the informed consent of each of the subjects involved in the research and of their parents was obtained.

Subjects and groups

The research involved a number of 234 middle school students, of which 116 girls and 118 boys, aged between 12 and 15 years.

b) Tests applied

In order to acquire data on dietary hygiene and physical activity practices both during physical education classes and during free time, a questionnaire entitled "Dietary habits and the pleasure of practicing physical activities" containing 14 items was administered. The questionnaire was designed by the author in cooperation with the academic staff from the Faculty of Physical Education and Mountain Sports of Braşov.

c) Statistical processing

Result interpretation, tabulation and graphical representations were achieved using Microsoft Office Excel 2003. The answers to the questionnaire items are presented as percentages.

Results

Subsequently to the questionnaire administration, data centralization and processing, the following results were obtained:

Item 1 – *How many meals a day do you eat* ?

Answer options: a. 3 meals/day, b. 2 meals/day, c. more than 3 meals/day, d. as many as I need.

Of all questioned schoolchildren, around 50% eat 3 meals/day, while >25% of these eat whenever they feel the need. Statistical analysis, considering the two groups, girls and boys, showed no statistically significant differences in the answers provided to item 1, significance threshold p = 0.1541 > 0.05 for Chi-Square = 5.25 and df (degrees of freedom) = 3 (Table I).

Table I
Frequency of student responses to item 1 and statistical significance.

Group	a	b	c	d	P	Pearson Chi-Square	df
Girls	51.72	18.1	4.31	25.9	0.1541	5.25	3
Boys	50.00	12.71	11.86	25.42			

Item 2 – *Which meal is the most important of the day?*

Answer options: a. breakfast, b. lunch, c. dinner.

For 57.76% of the girls and 48.31% of the boys, breakfast is the most important meal of the day, 32% of the girls and 39% of the boys have opted for lunch, while dinner is the most important for 10.3-12.71% of the questioned subjects. Statistical analysis, considering the two groups, girls and boys, showed no statistically significant differences in the answers provided to item 2, significance threshold p = 0.3502 > 0.05 for Chi-Square = 2.10 and df (degrees of freedom) = 2 (Table II).

Table II
Frequency of student responses to item 2 and statistical significance.

Group	a	b	c	P	Pearson Chi-Square	df
Girls	57.76	31.9	10.3	0.3502	2.10	2
Boys	48.31	38.98	12.71			

Item 3 – *How do you usually eat your meals?*

Answer options: a. together with my family, b. at the fast-food restaurant, c. in front of the TV/computer.

Over 80% of the respondents eat at home, together with their family, while around 15% of them eat in front of the TV/computer. Statistical analysis, considering the two groups, showed no statistically significant differences between the two groups, with a significance threshold p = 0.2852 > 0.05 for Chi-Square = 2.51 and df (degrees of freedom) = 2 (Table III).

Table III
Frequency of student responses to item 3 and statistical significance.

Group	a	b	c	P	Pearson Chi-Square	df
Girls	82.8	0.00	17.2	0.2852	2.51	2
Boys	84.75	1.69	13.56			

Item 4. *What do you usually eat at school during lunch break?*

Answer options: a. I eat my packed lunch, b. I eat at the cafeteria (after school), c. I buy my food at the nearby store, d. I do not eat.

At school, around 75% of the boys and 80% of the girls eat home-packed lunches, while a small percentage consume foods bought at the nearby store. Statistical analysis, considering the two groups, showed statistically significant differences between the two groups, with a significance threshold p = 0.0363 < 0.05 for Chi-Square = 3.93 and df (degrees of freedom) = 3 (Table IV).

Table IV
Frequency of student responses to item 4 and statistical significance.

Group	a	b	c	d	P	Pearson Chi-Square	df
Girls	82.76	5.17	1.72	10.35	0.0363	3.93	3
Boys	76.27	0.85	5.93	16.95			

Item 5. *What is your favourite food?*

Answer options: a. fruits, b. vegetables, c. dairy products, d. pasta, e. meat, f. sweets.

About 50% of the respondents consume fruits, 20.34% of the boys eat meat, while 20.70% of the girls consume sweets. Statistical analysis, considering the two groups, showed highly statistically significant differences between the two groups, with a significance threshold p = 0.0010 < 0.001 for Chi-Square = 20.50 and df (degrees of freedom) = 5 (Table V).

Table V
Frequency of student responses to item 5 and statistical significance.

Group	a	b	c	d	e	f	P	Pearson Chi-Square	df
Girls	49.14	5.17	10.30	8.66	6.03	20.70	0.0010	20.50	5
Boys	49.15	5.08	14.41	4.24	20.34	6.78			

Item 6. *Do you usually eat fast food*?

Answer options: a. daily, b. every 2-3 days, c. once a week, d. rarely, e. never.

Among the questioned schoolchildren, around 75% rarely consume fast food, 17% of the boys consume fast food once a week, 6-7% of the schoolchildren never eat fast food, while a very small percentage eat fast food daily. Statistical analysis, considering the two groups, showed statistically significant differences between the two groups, with a significance threshold p = 0.0387 < 0.05 for Chi-Square = 2.51 and df (degrees of freedom) = 2 (Table VI).

Table VI
Frequency of student responses to item 6 and statistical significance.

Group	a	b	c	d	e	P	Pearson Chi-Square	df
Girls	2.59	2.60	4.31	83.60	6.90	0.0387	10.10	4
Boys	3.39	5.08	16.95	68.64	5.93			

Item 7. *What method of preparing the food would you prefer*?

Answer options: a. frying, b. boiling, c. baking/roasting, d. unprepared, raw.

Around 30% of the girls and 45% of the boys prefer fried foods, about 25% of the questioned schoolchildren prefer to eat boiled foods, while 18% of the girls and 11% of the boys prefer raw food. Statistical analysis, considering the two groups, showed no statistically significant differences

between the two groups, with a significance threshold p = 0.2057 > 0.05 for Chi-Square = 4.58 and df (degrees of freedom) = 3 (Table VII).

Table VII
Frequency of student responses to item 7 and statistical significance.

Group	a	b	c	d	P	Pearson Chi-Square	df
Girls	33.60	27.60	20.70	18.10	0.2057	4.58	3
Boys	44.92	24.58	19.49	11.02			

Item 8. *Do you consume 1.5-2 litres of liquids on a normal activity day*?

Answer options: a. yes, b. less than this quantity, c. more than this quantity.

About 70% of the respondents drink 1.5-2 litres of liquids per day, 20% of the girls and 14.41% of the boys consume less than 1.5 litres, while around 10% consume more than 2 litres of liquids per day. Statistical analysis, considering the two groups, showed no statistically significant differences between the two groups, with a significance threshold p = 0.4953 > 0.05 for Chi-Square = 1.41 and df (degrees of freedom) = 2 (Table VIII).

Table VIII
Frequency of student responses to item 8 and statistical significance.

Group	a	b	c	P	Pearson Chi-Square	df
Girls	68.10	19.84	12.06	0.4953	1.41	2
Boys	74.58	14.41	11.01			

Item 9. *Do you believe that eating is a way of life or just one of the basic necessities of life*?

Answer options: a. it is a necessity, b. it can be associated with a way of life, c. both options are correct.

Eating is a way of life for 55.20% of the girls and 70.80% of the boys, while for 11.64% of the girls and 14.66% of the boys, it is a basic life necessity. Statistical analysis, considering the two groups, showed statistically significant differences between the two groups, with a significance threshold p = 0.0085 < 0.05 for Chi-Square = 9.54 and df (degrees of freedom) = 2 (Table IX).

Table IX
Frequency of student responses to item 9 and statistical significance.

Group	a	b	c	P	Pearson Chi-Square	df
Girls	70.80	11.64	17.56	0.0085	9.54	2
Boys	55.20	14.66	30.14			

Item 10. *How do you prefer to spend your free time?*

Answer options: a. I walk, b. I practice sports, c. I navigate the web/watch TV/play computer games, etc., d. I do household work, e. other.

During free time, 45% of the girls prefer walking, 52% of the boys and 27% of the girls prefer to practice sports, 23.73% of the boys prefer to navigate the web/watch TV/play computer games, etc., and 9.48% of the girls and 5.94% of the boys prefer to participate in household work. Statistical analysis, considering the two groups, showed no statistically significant differences between the two groups, with a significance threshold p > 0.05 for Chi-Square = 28.18 and df (degrees of freedom) = 4 (Table X).

Table X
Frequency of student responses to item 10 and statistical significance.

Group	a	b	c	d	e	P	Pearson Chi-Square	df
Girls	44.85	26.70	16.38	2.59	9.48	1.147	28.18	4
Boys	16.95	51.69	23.73	1.69	5.94			

Item 11. *How many hours a day do you watch TV programs, movies, cartoons, etc., and/or sit in front of the computer*?

Answer options: a. less than 1 hour/day, b. 1-2 hours/day, c. 3-4 hours/day, d. more than 4 hours/day.

Around 50% of the girls and 40% of the boys watch TV programs, movies, cartoons, etc., and/or sit in front of the computer 1-2 hours/day, 25% of the girls and 28.81% of the boys, 3-4 hours/day, while 10.34% of the girls and 14.41% of the boys, more than 4 hours/day.

Statistical analysis, considering the two groups, showed no statistically significant differences between the two groups, with a significance threshold p = 0.4036 > 0.05 for Chi-Square = 2.92 and df (degrees of freedom) = 3 (Table XI).

Table XI
Frequency of student responses to item 11 and statistical significance.

Group	a	b	c	d	P	Pearson Chi-Square	df
Girls	15.50	49.10	25.06	10.34	0.4036	2.92	3
Boys	16.95	39.83	28.81	14.41			

Item 12. *What kind of transport do you most frequently use to go to school*?

Answer options: a. public transport, b. family car, c. bicycle, d. I walk.

About 70% of the questioned schoolchildren walk to school, 13-15% use public transport means, and 8% of the girls and 12% of the boys use the family car to get to school. Statistical analysis, considering the two groups, showed no statistically significant differences between the two groups, with a significance threshold p = 0.6892 > 0.05 for Chi-Square = 1.47 and df (degrees of freedom) = 3 (Table XII).

Tabel XII
Frequency of student responses to item 12 and statistical significance.

Group	a	b	c	d	P	Pearson Chi-Square	df
Girls	12.90	7.76	3.48	75.86	0.6892	1.47	3
Boys	15.25	12.71	3.39	68.65			

Item 13. *Do you attend physical education and sports classes?*

Answer options: a. yes, b. no, c. I am medically exempt.

More than 95% of the questioned schoolchildren attend

physical education and sports classes in school, while only 2% are medically exempt. Statistical analysis, considering the two groups, showed no statistically significant differences between the two groups, with a significance threshold p = 0.0667 > 0.05 for Chi-Square = 10.02 and df (degrees of freedom) = 2 (Table XIII).

Table XIII
Frequency of student responses to item 13 and statistical significance.

Group	a	b	c	P	Pearson Chi-Square	df
Girls	96.61	0.85	2.54	0.0667	10.02	2
Boys	98.3	0.00	1.70			

Item 14. *How many hours a day do you sleep* ?

Answer options: a. less than 6 hours, b. 6-8 hours, c. 8-10 hours, d. more than 10 hours.

Of the questioned girls, 51.72% sleep between 6 and 8 hours daily, 35.34% sleep between 8 and 10 hours daily, around 11% sleep less than 6 hours, and 6%, more than 10 hours daily. Among the boys, 46% of the respondents sleep between 8 and 10 hours daily, 40% sleep between 6 and 8 hours daily, 7.63%, more than 10 hours daily, while about 7% sleep less than 6 hours daily. Statistical analysis, considering both groups, showed no statistically significant differences between the two groups, with a significance threshold p = 0.3091> 0.05 for Chi-Square = 3.59 and df (degrees of freedom) = 3 (Table XIV).

Table XIV
Frequency of student responses to item 14 and statistical significance.

Group	a	b	c	d	P	Pearson Chi-Square	df
Girls	6.04	51.72	35.34	6.90	0.3091	3.59	3
Boys	6.78	39.83	45.76	7.63			

Discussions

When asked *"What is your favourite food?"*, around 50% of the questioned schoolchildren declare their preference for fruits, 5% prefer to consume vegetables, between 10.30 and 14.41% consume dairy products, 8.66% of the girls prefer to consume pasta, 20.34% of the boys prefer meat, while 20.70% of the girls prefer to consume sweets. Although nutrition guides do not specifically indicate the daily dose of sugar that can be consumed, these recommend, however, a reduction of sugar intake (7). Children and adolescents tend to eat diets high in carbohydrates, with a sugar intake of about 18% of the total amount of daily calories. Acidulated beverages contain a high percentage of sugar and contribute around 8% to the daily caloric intake among children and youth aged between 2 and 18 (Reedy & Krebs-Smith, 2010). Certain behaviours and attitudes observed among children and adolescents are related to a healthy diet. For example, establishing objectives regarding the consumption of fruits and vegetables or the rewards for consuming fruits and vegetables, as well as the pleasure offered by their taste, are important predictors for the consumption of fruits and vegetables (Zabinski et al., 2006). The family environment strongly influences the dietary behaviour of the youth. The readiness of the family to consume healthy foods is one of the most important hypotheses for consuming fruits, vegetables, and dairy products (Larson et al., 2006; Neumark-Sztainer et al., 2003). The menus specific to each family, the rules of a healthy diet imposed and observed in every family, as well as the healthy lifestyle of the parents influence the consumption of fruits, vegetables, dairy products, and fats among the youth (Neumark-Sztainer et al., 2003; Zabinski et al., 2006; Larson et al., 2007; Van der Horst et al., 2007a).

When asked *"What do you usually eat at school during lunch break?",* 82.76% of the girls and 76.27% of the boys declare their preference for eating home-packed lunches, 5.17% of the questioned girls eat during the after-school program, 5.93% of the boys consume foods from the nearby store, while 10.35% of the girls and 16.95% of the boys report that they never eat during lunch break. It is worth mentioning that the dietary behaviour of children and adolescents is influenced by multiple factors, such as demographic, environmental, social, whereas the preferences of children and adolescents play an important role in nutritional intake (Neumark-Sztainer et al., 2003; Zabinski et al., 2006). The academic and educational environment also influences the dietary behaviour of the youth, providing opportunities to consume various food products and beverages throughout the day (O'Toole et al., 2006; Fox et al., 2009).

To the question *"Do you usually eat fast food?"*, 2.59% of the girls and 3.39% of the boys answer that they eat fast food every day, 2.60% of the girls and 5.08% of the boys consume fast food meals 2-3 times/week, 83.60% of the girls and 68.64% of the boys rarely consume fast food, 4.31% of the girls and 16.95% of the boys consume fast food once a week, while 6-7% of the schoolchildren never eat fast food meals. Youths that are reporting frequent fast food consumption (at least three times a week) are more inclined to declare that healthy foods do not taste good, or to blame the lack of time to eat healthy food, showing disinterest in healthy diets (Neumark- Sztainer et al., 2003; Zabinski et al., 2006).

When asked *"How do you prefer to spend your free time?"*, 23.73% of the boys and 16.38% of the girls prefer to navigate the web/watch TV/ play computer games, etc. Moreover, when asked *"How many hours a day do you watch TV programs, movies, cartoons, etc., and/or sit in front of the computer?"*, 25% of the girls and 28.81% of the boys report spending in front of the TV/computer 3-4 hours/day, 49.10% of the girls and 39.83% of the boys watch TV programs, movies, cartoons, etc., and/or spend in front of the computer between 1-2 hours/day, 15.50% of the girls and 16.95% of the boys spend in front of the TV/ computer less than 1 hour/day, and 10.34% of the girls and 14.41% of the boys, more than 4 hours/day. By analyzing the answers provided by the questioned schoolchildren, it can be concluded that spending time in front of the TV as well as the rapid progress of technology influence the preferences of the youth through food product advertising for sale promotion, as well as the daily consumption of the advertised products (6). Children and adolescents are exposed to many forms of advertising for food products, through TV or web advertisements, various prize contests,

etc. A recent report issued by the Federal Trade Commission estimated that, in 2006, around 1.6 billion USD were spent for advertising fast food meals, beverages, and restaurants to children (5).

Also, there is substantial evidence correlating the number of TV hours with weight excess in the childhood population. In a study conducted on a representative sample of 7216 children aged between 7 and 11, TV watching and video game playing were risk factors for overweight (between 17% and 44%) or obesity (between 10% and 61%) (Tremblay & Willms, 2003). According to another study, the association between TV watching time and weight excess in children is unlikely to be clinically relevant (Marshall et al., 2004). The authors emphasize that it would be necessary to examine more than one single sedentary behaviour (e.g., watching TV), especially because not all sedentary behaviours can be associated with obesity (Shields & Tremblay 2008; Tremblay et. al., 2010).

When asked *"How do you prefer to spend your free time?"*, 44.85% of the girls indicate walking, while 51.69% prefer to practice sports. Around 9.48% of the girls and 5.94% of the boys participate in household work. It can be observed that the level of physical fitness is correlated with gender, as boys, in contrast to girls, are interested in practicing more physical activity (Sallis et al., 2000; Robbins et al., 2004; Gordon-Larsen et al., 2000). The national YRBS (Youth Risk Behavior Surveillance) survey, conducted in 2009, indicated that 25% of the boys and 11% of the girls participated in a type of physical activity, for at least 60 minutes daily, during the last week (3). This trend is maintained until adulthood, with the mention that, compared to men, women are less active (4). Also, during adolescence, boys tend to be more active than girls of the same age group (Robbins et al., 2003).

Conclusions

1. A significant percentage of the questioned schoolchildren have a balanced nutritional diet.

2. Both questioned groups prefer to consume fast food at least once a week.

3. Among the questioned schoolchildren, both girls and boys prefer to watch various TV programs, movies, cartoons, etc., and/or sit in front of their computer 1-2 hours/day.

4. Both questioned groups participate on a regular basis in physical education and sports classes at school.

Conflicts of interest

Nothing to declare.

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A study on attention optimization in high performance female volleyball players through attentional training

Studiu privind optimizarea atenţiei la jucătoarele de volei de performanţă prin training atenţional

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Abstract

Background. The present study refers to optimizing the concentration of attention in female volleyball players through a specially designed attentional training program. The research is based on the reasoning that voluntary attention is the product of education and training, which supports the work of the individual in the most important moments in power consumption proportional to the task.

Aims. The objectives of the study consist of implementing a preparatory stage attention intervention in female volleyball players, which will optimize attentional focus by increasing the effectiveness of the game in attack and defense.

Methods. This experiment comprised the players of two woman volleyball teams, who participated in the National Championship, in division A2, series West (CSU LPS University of Oradea, established as the experimental group, and CSS CNE Baia Mare, as the control group). The attention evaluation was made by a computer assisted software, PSITEST Cabinet (which is the computerized version of J.M Lahy Test), which provided data on the evolution of focused attention by calculating indices on correct answers, errors, omissions and an accuracy index. Statistical analysis of data was performed using the SPSS 17.0 program for Windows.

Results. Intragroup comparisons between the pretest and posttest results of the two groups included in this experiment, Student test for paired samples for the four indicators evaluated: correct, where: (p = .024 experimental group, control group p = .225), errors: (p = .001 exp. group and p = .635 control group), omissions: (p = .006 exp. group, p = .930 control group) and accuracy index: (p = .000 exp. group and p = .121 control group). The data confirms our hypothesis regarding the improvement of the number of correct answers and the reduction of the number of wrong answers in the experimental group, while the control group achieved positive but insignificant results.

Conclusions. The results of the concentrated attention test for the studied indicators confirmed the significant value of our intervention compared to the results obtained in the control group, who followed a traditional training program.

Key words: focused attention, education, performance, volleyball.

Rezumat

Premize. Studiul prezentat se referă la optimizarea concentrării atenţiei la jucătoarele de volei de performanţă printr-un training atenţional special conceput. Cercetarea se bazează pe raţionamentul că atenţia voluntară este produsul intrinsec al educaţiei şi antrenamentului, care susţine activitatea individului în momentele cele mai importante printr-un consum energetic proporţional cu sarcina respectivă.

Obiective. S-a urmărit implementarea unui program atenţional de intervenţie în etapa pregătitoare a jucătoarelor de volei, pentru optimizarea concentrării atenţiei, prin creşterea eficienţei acţiunilor de joc din atac şi apărare.

Metode. La acest experiment au participat componentele a două echipe feminine de volei, care participă la Campionatul Naţional, în divizia A2, seria Vest (CSU LPS Universitatea Oradea, constituită în lotul experimental şi CNE CSS Baia Mare, în lotul de control). Evaluarea nivelului de atenţie a fost făcută printr-un program asistat pe calculator, PSITEST Cabinet (care reprezintă varianta informatizată a Testului lui Lahy), care oferă date cu privire la evoluţia atenţiei concentrate prin calcularea indicilor privind răspunsurile corecte, erorile, omisiunile şi indicelui de exactitate. Analiza statistică a datelor a fost efectuată cu ajutorul programului SPSS 17.0 pentru Windows.

Rezultate. Comparaţiile intragrup rezultate între momentul pretest şi posttest ale celor două loturi incluse în acest experiment, testul student pentru eşantioane pereche la nivelul celor patru indicatori evaluaţi: corecte, unde: (p =0,024 lot experimental respectiv p=0,225 lot control), erori: (p =0,001 lot exp. şi p=0,635 lot control), omisiuni: (p=0,006 lot exp. respectiv p=0,930 lot control) şi indice de exactitate, unde: (p=0,000 lot exp. respectiv p=0,121 lot de control), date care confirmă ipoteza noastră cu privire la ameliorarea numărului de răspunsuri corecte şi a scăderii numărului de răspunsuri eronate pentru lotul experimental, în

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timp ce lotul de control a obţinut rezultate pozitive dar nesemnificative.

Concluzii. Prin valorile rezultatelor obţinute la testul de atenţie concentrată cu ritm impus şi câmp de observaţie dinamic, la indicatorii apreciaţi s-au confirmat diferenţe semnificative între rezultatele iniţiale şi finale, la lotul experimental unde s-a aplicat un program de 31 de exerciţii pentru optimizarea capacităţii atenţionale, comparativ cu lotul de control care a urmat un program de pregătire tradiţional.

Cuvinte cheie: Atenţie concentrată, învăţare, performanţă, volei.

Introduction

For high performance athletes, obtaining a good result only once is not enough; constant high performance results are expected from them. Mental stability is a subcomponent and condition of performance stability in general, also indicating effort efficiency. Two American psychologists, Hosek and Mann (cited by Cezar, 2008), consider that psychic stability is the result of psychological training and is characterized by reduced variation of the athletes' results in improper circumstances.

Success in special activities, such as competitions, is based on the ability to self-regulate emotions, thoughts and actions, the ability to focus and rapidly shift attention, to carry out a difficult action for a long time, to manage effort under circumstances of tiredness and disturbing external factors (Bull, 2011).

Voluntary control implies "executive attention efficiency, including the ability to inhibit a dominant answer and/or to trigger a subdominant answer, to plan and detect errors" (Rothbart & Bates, 2006).

Considering the potential overlapping of attention, work memory and executive control in the cognitive psychology and cognitive neuroscience literature, theoreticians seem to encounter difficulties in defining the attention control concept in a way that can fully satisfy any one of them (Cocs, 2005, Astle & Scerif, 2009; Abrams, 2010).

Attention stability consists of maintaining for a while the orientation and concentration on the same object or on the same activity. Stability does not consist of freezing attention in a state of fascination; it manifests itself with certain fluctuations which, however, do not interrupt the basic orientation of activity. Due to attention fluctuations, in performing an activity for a longer period of time, variations related to efficiency may occur; the decreases are more significant when the activity concerned requires higher concentration (Cioară, 2006).

Attention fluctuations occur as an effect of protective inhibition. If, as mentioned before, they do not change the basic activity orientation, they represent adaptive phenomena, providing the rest moments required for a lasting activity. The presence of disturbing agents does not necessarily lead to a decrease of activity efficiency (Crăciun, 2012). In the same author's opinion, there are two types of disturbing stimuli: irrelevant and interference stimuli. Even though irrelevant elements slow down concentration, they do not completely damage performance, but decrease its level. The interference elements are of internal or external nature, such as: opponents, negative thoughts, over- or under-motivation, anxiety, stress, monotony, noise, fatigue.

Concentration implies avoiding the disturbing stimuli and focusing on the target stimulus. As the number of analyzers involved in the detection of the identification stimulus increases, the risk of elaborating a wrong answer will decrease through efficient feed-back, even if negative (experienced athletes can use it with a positive effect to eliminate errors, which is not true for beginners because of the lower level of specialized perception development) (Cox, 2005, Dilignieres, 2008).

We should emphasize the fact that the efforts to which athletes are subjected are targeted towards their entire personality system, and mental recovery, particularly in the field of high performance sports, where training and competition activity is carried out with great physical and mental efforts, becomes a major and complex problem that falls under the competence of a specially trained team responsible for the athlete's performance. The use of a well-chosen and well-managed attentional program in order to ameliorate attention parameters can be learned, becoming a possible practical endeavor with proper scientific support, and even though it is less understood exactly because of the complexity of the elements involved in its development, it becomes necessary in high performance.

Therefore, to blame in case of failure only one person, the trainer in our case (because in case of victory the glory goes entirely to the team), means to regard the high performance sport phenomenon in a superficial, journalistic manner.

Objectives

The purpose of this research is to establish proper and efficient training means in order to improve attention in high performance female volleyball players during the play, especially during decisive moments, which should lead to success.

Hypothesis

We consider that applying to an experimental group an attentional program of physical exercises specific to the volleyball game, conceived to improve attention, as part of training, can improve attention parameters compared to a group of players who attend a traditional training program.

Material and methods

Research protocol

We mention that according to the Helsinki Declaration, the Amsterdam Protocol and Directive 86/609/EEC, the approval of the Ethical Committee of the University of Oradea for research on human subjects was obtained, and the subjects participating in the research gave their informed consent.

a) Period and place of the research

The study was conducted during the 2008-2009 National Championship and comprised two evaluation moments, the initial testing of concentrated attention with manual response (ACRM), computer-assisted, and the final testing, which took place after a 12-week period, during which our intervention occurred, consisting of a 31 exercise program, of which we present 8 exercises. During this time interval, the groups attended a training

program, according to the high standards required by the participation in the championship matches.

b) Subjects and groups

The research was carried out with the participation of two female volleyball teams with similar performance levels, participating in the National Championship in the A2 North series.

- Group 1 – experimental group, formed by the members of the CSU – LPS Oradea team (n = 12);
- Group 2 – control group, formed by the members of the CNE CSS Baia-Mare team (n = 12).

c) *Tests applied*

The tests were applied using the PSITEST Cabinet program, under specialized psychological guidance, and they provided data referring to the response indicators: correct, errors, omissions and accuracy index.

Test description: rows of 7 letters pass through a drawn slot. The subjects must push the button of a handle every time they notice in the row one of the two letters indicated to them (p1 = C,O; p2 = M,N; p3 = P,R; p4 = S,Z).

For individual administration, it is recommended to use the first post (p1 = C,0). The examination program is made up of two sequences: adjustment and basic test. The adjustment program consists of running 50 rows of letters, out of which only ½ contain a stimulus letter. The feedback information for the examiner is displayed in the form of a table that provides real-time information referring to the subjects' efficiency.

The basic test consists of running 300 rows of letters in two speeds of 150 rows. Like in the adjustment program, only ½ of the rows contain "stimulus-letters".

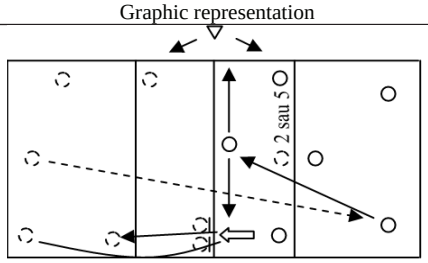
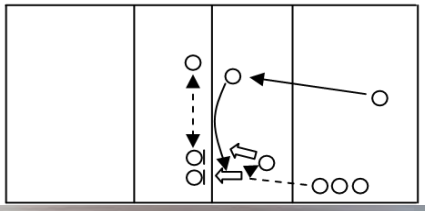
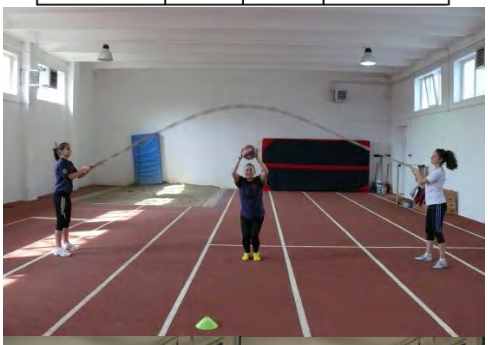
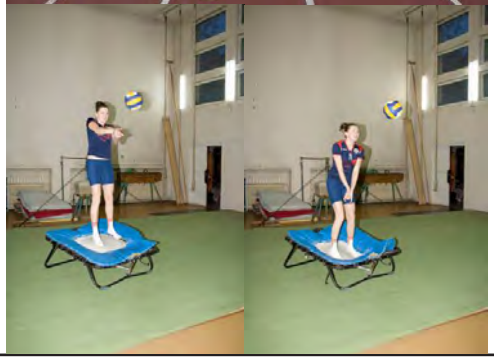
d) Statistical processing

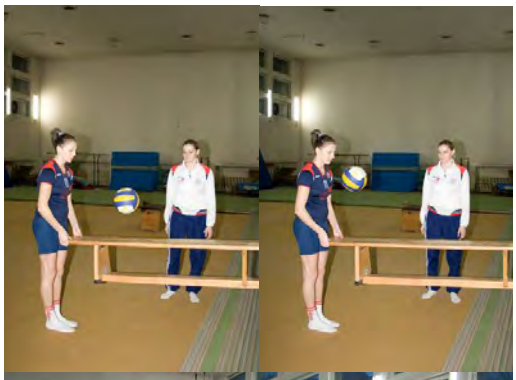
The interpretation of the results obtained in the two groups was made using the statistical SPSS 17.0 program, mixed Anova, variance analysis (F) and the Student test for individual and paired samples.

The study was carried out during the training period between the 5th and the 12th stages of the championship, by the application of certain means selected and included in the training plan, for the optimization of attentional capacity and for the development of specialized perceptions required by the volleyball game, of which we present the following 8 exercise structures (Table I).

Table I

Exercise structures conceived for attention optimization in female volleyball players – content and description.

Technical description	Graphic representation	Dosage
Bilateral school play, with the execution of an attack hit placed on the lane when figure 2 is indicated (for example) and behind the blockage when another figure is indicated by the trainer, 5 (for example). The figure is announced while the ball goes towards the coordinating player (R).		Executed for 8 minutes, in two series.
Two consecutive attack hits from area 4 with blockage. At the first hit, one player at blockage, at the second, two players. The attack hit is placed towards the starting spot of the second player. After the second hit the player goes to the blockage in the other side of the court and so on in turns.		Executed in two series of 3 minutes, as a playing structure
With three players, using the long skipping rope, jumping face front or laterally, simultaneously with the execution of ball juggling exercises for one minute for each executor.		Executed in two series
Successive jumps on the trampoline, with the rejection of balls thrown towards the executor in various stages of the jump.		4 series of 30 seconds each

In standing position, facing the fixed ladder, holding the end of the light bench, the other end being hooked on a step (at a certain level), by repeated movements downwards-upwards, successive hits of the ball while maintaining it jumping on the bench.		Executed for 30 seconds alternatively, in the form of competition, twice.
Repeated individual passes, upwards or downwards, with two hands, while passing over various obstacles: bench, gymnastics box.		Executed in two series of one minute each
Consecutive individual (control) passes performed by successive jumps in gymnastics hoops, in a pre-established order.		Executed in two series of one minute each
In pairs, passes upwards and downwards, or alternatively, with two balls, one ball by kicking.	 	Executed in two series of one minute each.

Results

The visual inspection of average values obtained by the two groups for the ACRM indicator – correct – indicates a higher level of maximum values for the control group compared to the experimental group at the pretest moment (max. 147.0 vs. max. 146.0); however, at the posttest moment, the experimental group had a 5 units increase in average values compared to the control group (from 137.0 to 142.25 units vs. from 129.6 to 130.3 units), which was mainly due to the evolution of minimum values (Table II).

Table II
Correct ACRM.

Indicator	Mean value		Standard deviation		Minimum value		Maximum value	
Study phase	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
Group I	137.0000	142.2500	8.32302	3.64629	121.00	134.00	146.00	147.00
Group II	129.6667	130.3333	10.20992	9.53780	117.00	116.00	147.00	144.00

The magnitude of these differences from a statistical point of view was determined by the analysis of the variance index (F), which indicates a significant value only for the experimental group (intervention F = 8.066, p = .010) (Table III).

Table III
Variance analysis.

Source	Sum of squares	df	Average squares	F	p
Intervention	105.021	1	105.021	8.066	.010
Group	1111.687	1	1111.687	8.832	.007
Intervention * group	63.021	1	63.021	4.840	.039
Error (intervention)	286.458	22	13.021	–	–
Error (group)	2769.125	22	125.869	–	–

The intergroup comparisons for independent samples, made between the two evaluation moments using the Student test, do not differ significantly (t = 1929, p = .067 in pretest and t = 4043, p = .001 in posttest), but the comparison made for paired samples shows significant differences in the performance of the two groups between the two evaluation moments (t = - 2614, p = .024 experimental group, t = - 1201, p = .225 control group) (Table IV).

Table IV
Intergroup comparisons (between the pretest and posttest moments, for the two groups included in the study) – t test for paired groups.

Source	t	df	p
Experimental group	-2.614	11	.024
Control group	-1.201	11	.255

Regarding the evolution of the two groups for the ACRM indicator – errors – the mean values obtained by the experimental group are 6 units lower between the two evaluation moments (m = 25.750 units, m = 19.750 units, respectively), mainly due to the decrease of the maximum number of errors (from 39.000 units to 29.000 units). In the control group, the difference in the mean values between the two evaluation moments is small (m = 11.609 pretest, 9.398 posttest) (Table V).

The analysis of the variance index shows a significant difference only for the experimental group regarding attentional performance (intervention F = 9.666, p = .005), which is mainly due to our intervention (Table VI).

Table VI
Variance analysis

Source	Sum of squares	df	Average squares	F	p
Intervention	140.083	1	140.083	9.666	.005
Group	363.000	1	363.000	1.954	.176
Intervention * group	80.083	1	80.083	5.526	.028
Error (intervention)	318.833	22	14.492		
Error (group)	4088.000	22	185.818		

The intragroup comparisons made for independent samples between the two evaluation moments indicate insignificant values for the pretest moment between the two groups included in the research (t = .641, p = .528), and significant values in posttest (t = - 2269, p = .033). On the Student test for paired samples, the evolution between the two moments of the research is significant only for the experimental group (t = 4.325, p = .001 experimental group vs. t = .489, p = .635 control group), Table VII.

Table VII
Intragroup comparison (between the pretest and posttest moments, for the two groups included in the study) - t test for paired samples.

Source	t	df	p
Experimental group	4.325	11	.001
Control group	.489	11	.635

For the ACRM indicator – omissions – the results obtained place the experimental group scores under the level of the control group by four units, for the pre-intervention moment (m = 18.750 control group, m = 14.250 experimental group), but in posttest, an ample evolution of the results of the experimental group is noted

Table V
ACRM errors.

Indicator	Mean value		Standard deviation		Minimum value		Maximum value	
Study phase	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
Group I	25.7500	19.7500	10.65257	8.00142	10.00	9.00	38.00	29.00
Group II	28.6667	27.8333	11.60982	9.39858	12.00	14.00	50.00	42.00

Table VIII
ACRM omissions

Indicator	Mean value		Standard deviation		Minimum value		Maximum value	
Study phase	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
Group I	14.2500	7.7500	7.47268	3.64629	6.00	3.00	29.00	16.00
Group II	18.7500	18.6667	8.45442	8.46741	3.00	6.00	30.00	32.00

compared to those recorded in the control group (m = 7.750 experimental group and m = 18.666 control group). This is due to the decrease of minimum values to half (from 6.00 units pretest to 3.00 units posttest) and of the maximum values from 29.00 units pretest to 16.00 units posttest, while in the control group, there is a slight increase of minimum and maximum values (max. = from 30.0 units to 32.0 units) (Table VIII).

The value recorded for intervention F (intervention F = 9.442, p = .006) indicates a significant effect of our program on the dependent variable, which is also supported by the value of the effect produced on attentional performance between the two moments of evaluation of the groups (intervention*group F = 8.970, p = .007) (Table IX).

Table IX
Variance analysis.

Source	Sum of squares	df	Average squares	F	p
Intervention	130.021	1	130.021	9.442	.006
Group	713.021	1	713.021	7.718	.011
Intervention * group	123.521	1	123.521	8.970	.007
Error (intervention)	302.958	22	13.771		
Error (group)	2032.458	22	92.384		

The comparisons made on the number of omissions, for the ACRM test – omissions – using the t test for independent samples, show that in pretest the performances achieved by the two groups do not differ significantly (t = -1.382, p = .181); however, in posttest the values of these differences are highly significant (t = 3.370, p = .006 experimental group vs. t = .098, p = .930 control group), (Table X).

Table X
Intragroup comparisons (between the pretest and posttest moments, for the two groups included in the study) – t test for paired samples.

Source	t	df	p
Experimental group	3.370	11	.006
Control group	.089	11	.930

The last indicator studied for the concentrated attention test with manual response in this research is that of the accuracy index, for which the data obtained in the two groups show a higher mean value in the control group at the initial testing moment, but in posttest, the experimental group manages not only to reduce the existing difference, but also to overcome it (m = .7850 vs. m = .7408). This appreciation is due to the increase of minimum and maximum values by 13 units and 24 units, respectively (from .53 to .66 for minimum values and from .72 to .96 for maximum values) (Table XI).

The variance analysis for the ACRM indicator – accuracy index – shows that the independent variable does not significantly change the dependent variable because (group F = .312, p = .582); however, there are significant differences between the two groups due to our intervention, between the two evaluation moments, because (intervention*group F = 26.027, p = .000) (Table XII).

Table XII
Variance analysis.

Source	Sum of squares	df	Average squares	F	p
Intervention	.104	1	.104	58.299	.000
Group	.004	1	.004	.312	.582
Intervention * group	.046	1	.046	26.027	.000
Error (intervention)	.039	22	.002		
Error (group)	.272	22	.012		

The intergroup comparisons for independent samples, performed with the Student test, reveal the fact that between the experimental group and the control group, for the ACRM test – accuracy index, there are significant differences only at the pretest evaluation moment and not at the post-intervention moment, as (t = 1.089, p > .05), which is why we shall suspend the decision referring to the hypothesis suggested by us at the beginning of this test, according to which the achievement of different results for the two groups is due solely to the program proposed by us.

On the other hand, the t test for paired samples shows that the performances obtained by the control group do not differ significantly between the two evaluation moments, but for the experimental group, we must accept the specific hypothesis because the performances achieved between the two evaluation moments support this (t = .9.781, p = .000) (Table XIII).

Table XIII
Intragroup comparisons (between the pretest and posttest moments, for the two groups included in the study) – t test for paired samples.

Source	t	df	p
Experimental group	-9.701	11	.000
Control group	-1.679	11	.121

Discussions

In Romania, there are currently very few studies on aspects regarding the improvement of attention in high performance athletes, or if such studies exist, they are not published in specialized journals for more or less justified reasons.

Understanding the attention "phenomenon" clarifies the way in which human capacities are mobilized and demobilized in order to accomplish minimum or maximum tasks, as well as the way of "marginalizing" disturbing

Table XI
ACRM accuracy index.

Indicator	Mean value		Standard deviation		Minimum value		Maximum value	
Study phase	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
Group I	.6300	.7850	.05326	.09259	.53	.66	.72	.96
Group II	.7100	.7408	.07544	.10561	.58	.58	.82	.96

information by educating attention. Thus, the psyche will be prepared and will limit the level of superfluous efforts, orienting performance towards the top (Jarvis, 2010).

The education of attention must take into account, on the one hand, the formation and reinforcement of voluntary attention and, on the other hand, the cultivation of attention qualities (concentration, volume, distribution, stability, adaptability etc.), as well as the development of the skill and habit of paying attention every time the circumstances call for it (post-voluntary attention) (Moran, 2006), also see the awareness theory (Collatz, 2003).

The responses to stressful situations, which will mobilize the entire body, are an adjustment requirement of the human being (and not only). In sport, stress occurs as a continuous oscillation between homeostasis and heterostasis. Competition, having a huge emotional load, can place the psycho-behavioral system in a limit state, with which the athlete has to cope. The effects of stress can be diminished using a series of techniques with good scientific support: autogenic training, progressive relaxation, bio-feed-back, mental training, suggestion and self-suggestion, movement repetition by presentation, etc.

Noise is one of the most encountered factors in sport, with a direct impact on performance, and if it also has an unpredictable and uncontrollable character, it will have even worse effects. These aspects affect the individual's homeostasis even when the adjustment state has been achieved, generating cognitive fatigue. The degradation of attention concentration will follow a descending curve, which will be more marked and rapid as the stressor action is more powerful (Altherton et al., 2008).

In the case of the noise-attention relationship, which appears as an inverted "U", absolute silence has negative effects on concentrated attention, while a sound stimulation, with certain intensity and frequency characteristics, can trigger a series of stimulating effects. Therefore, the double role played by noise is confirmed: as a distraction, incapacitation factor or as an activation factor, depending on the circumstances in which it manifests. From a practical point of view, the problem of determining the understress (monotony) and overstress limits that can be allowed is posed (Karageorghis & Terry, 2011).

The education of attention stability by creating states of inattention to stimuli with a disturbing role is of great practical interest for the field of high performance, and can be achieved by the use of well-modulated and carefully conducted strategies, using a series of alternative methods. At the same time, the use of training programs related to attention in volleyball players will improve the level of specific technical-tactical execution, especially during the important moments of the play or at its end, by developing efficient specialized perceptions (Asta, 2007).

The purpose of this research was to approach the methodology of complex technical-tactical training in high performance sport using other methods than conventional ones, which can have a deep impact on the attention phenomenon, aspects that have been little studied in Romania.

Conclusions

1. The attentional program used in this experiment had a favorable effect on the optimization of concentrated attention in high performance female volleyball players, for all studied indicators.

2. The optimization of attention parameters contributes to making more efficient the finalizations of attack and defense actions in the volleyball play, especially during its important moments.

3. Attentional concentration can be educated by using specially selected means, which contributes to constant achievement of high performances.

4. The conclusions drawn following this scientific endeavor can represent guidelines for the training strategy of the teams involved in high performance sport.

Conflicts of interests

Nothing to declare.

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CASE STUDIES
STUDII DE CAZ

Rehabilitation after total shoulder arthroplasty for a giant-cell tumor of bone - a case report

Reabilitarea după artroplastia totală de umăr pentru tumoră cu celule gigante a osului - prezentare de caz

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Abstract

Background. Total shoulder arthroplasty is a standard operative treatment for a variety of disorders of the glenohumeral joint. Successful outcome of total shoulder arthroplasty depends on a well-designed and a well-executed physical therapy program. The rehabilitation program needs to respect a logical sequence: tissue healing, joint mobility and muscle strength.

Aims. The purpose of this study was to emphasize the best therapeutic options to functionally rehabilitate a shoulder that was surgically replaced after a giant-cell tumor excision.

Methods. The case report describes a 24-year-old female patient who presented in September 2013 to the Clinical Rehabilitation Hospital in Cluj-Napoca for rehabilitation after undergoing total shoulder arthroplasty for a giant-cell bone tumor located in the proximal region of the right humerus. Although they are considered benign in 90% of the cases, giant-cell tumors show a tendency for significant bone destruction, local recurrence, and occasional metastasis in the lung or lymph nodes.

The objective examination of the patient at her first hospital admission: normal weight (BMI=19 kg/m^2), two postoperative scars in the anterior region of the right arm with minimal sensitivity when palpated, hypotonia and hypotrophy of the right upper limb, spontaneous pain at the mobilization of the right shoulder and limited active and passive range of motion (especially for flexion, abduction and external rotation), pain on the VAS = 30 mm, Constant Shoulder Score = 42, DASH score = 35, SPADI score = 53%. In our hospital, she underwent the current Neer protocol for postoperative total shoulder arthroplasty rehabilitation, which is widely used and is based on the basic science of soft tissue and bone healing.

Results. The functional outcome was good, as the range of motion and strength of the upper right limb improved after attending our physical therapy program.

Conclusions. When a well-performed surgical procedure is supplemented with a well-designed and frequently monitored therapy program, an excellent outcome of shoulder replacement should be expected.

Key words: rehabilitation, shoulder arthroplasty, giant-cell tumor.

Rezumat

Premize. Artroplastia totală de umăr reprezintă o intervenţie chirurgicală standard pentru diverse afecţiuni ale articulaţiei gleno-humerale. Succesul endoprotezării de umăr depinde de calitatea programului de reabilitare instituit cât mai precoce. Programul de reabilitare trebuie să respecte o secvenţă logică: vindecarea ţesuturilor, mobilitatea articulaţiei şi forţa musculară.

Obiective. Obiectivul acestui studiu este de a pune în evidenţă cea mai bună conduită terapeutică pentru reabilitarea funcţională a unui umăr endoprotezat, după excizia unei tumori cu celule gigante.

Metode. Prezentarea de caz aduce în discuţie cazul unei paciente în vârstă de 24 ani, care s-a prezentat în septembrie 2013 în Spitalul Clinic de Recuperare Cluj Napoca pentru recuperarea mobilităţii umărului drept după implantarea unei endoproteze totale la acest nivel pentru o tumoră cu celule gigante a osului, localizată în regiunea proximală a humerusului drept. Chiar dacă sunt considerate benigne în 90% din cazuri, tumorile cu celule gigante tind să evolueze spre distrucţie osoasă, recidivă locală şi, ocazional, metastaze în plămân şi ganglionii limfatici.

La examenul obiectiv la prima internare se evidenţiază: pacientă normoponderală (IMC=19 kg/m^2), două cicatrici postoperatorii în curs de vindecare la nivelul feţei anterioare a braţului drept, cu minimă sensibilitate dureroasă la palpare, hipotonie şi

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hipotrofie a membrului superior drept, limitarea mobilităţii umărului operat (mai ales pentru flexie, abducţie şi rotaţie externă), durerea pe scala VAS = 30mm, Scorul Constant = 42, scorul DASH = 35, scorul SPADI = 53%. În spitalul nostru, pacienta a urmat protocolul curent Neer pentru reabilitarea umărului după artroplastie, care se bazează pe vindecarea ţesuturilor moi şi a osului.

Rezultate. Evoluţia după programul de reabilitare a fost favorabilă, cu creşterea amplitudinii de mişcare şi a forţei musculare la nivelul membrului superior drept.

Concluzie. Când o intervenţie chirurgicală de implantare a unei endoproteze este continuată de un program de reabilitare instituit precoce, bine controlat şi individualizat, prognosticul funcţional este favorabil.

Cuvinte cheie: reabilitare, artroplastie de umăr, tumoră cu celule gigante.

Introduction

Total shoulder arthroplasty (TSA) is a standard operative treatment for a variety of disorders of the glenohumeral joint (Boudreau et al., 2007). Complications after TSA may include infection, instability, neurovascular injury, stiffness, cuff tear, periprosthetic fractures, glenoid erosion and component loosening (Sanchez-Sotelo et al., 2011).

The success of TSA depends on surgery, i.e. on the correct placement of the prosthesis, as well as on the quality of the rehabilitation program initiated as early as possible, which needs to respect a logical sequence: tissue healing, joint mobility and periarticular muscle strength (Brems, 2007).

It is also critical for the surgical team to communicate to the rehabilitation team important and relevant information about the surgical procedure, to ensure proper progression, so that the specific exercises are not advanced too rapidly in efforts to quickly provide functional rehabilitation (Cahill et al., 2014).

Rehabilitation after TSA is more challenging when the integrity of the rotator cuff is poor and the functional outcome is generally not as good as it is for patients with an intact rotator cuff (Frankle et al., 2005). Hawkins et al. (1989) concluded based on a series of 65 patients, followed up over an average of 40 months, that the underlying etiology of the disease process and the status of the rotator cuff are the best predictors of outcome for individuals treated with TSA.

Giant-cell tumors (GCT) are osteolytic primitive tumors with a rich vascularization, consisting of two predominant cell types: many multinuclear osteoclastic giant cells and mononuclear stromal cells, whose cytological appearance reflects the degree of aggressiveness, establishing in this way histological prognosis (Formasier et al., 1996). GCT represent 20% of all benign tumors and about 5% of primary bone tumors (Niu et al., 2012). The tumor commonly occurs during the second to fourth decades of life, with a female-to-male ratio of 1.3-1.5:1 (Schajowicz et al., 2001), and it usually originates from the epiphysis of long bones (Szendröi, 2004).

The radiographic appearance of the GCT is that of a lytic lesion with a well-defined non-sclerotic margin, eccentric in location, which extends near the articular surface. However, GCT may present aggressive features, such as cortical expansion or destruction of the soft-tissue components (Chakarun et al., 2013) and has a potential risk of local recurrence (0-65%) depending on the type of treatment (Klenke et al., 2011). Magnetic resonance imaging (MRI) is often performed to evaluate the extent of the tumor. In typical GCT, the signal intensity is homogeneous, and the lesion is well circumscribed, with low signal intensity on T1-weighted images and intermediate signal intensity on T2-weighted images.

Being aggressive and potentially malignant lesions, GCT pose a challenging problem in accurately predicting their tendency to recur or metastasize. It is considered that 80% of GCT have a benign course, with a local recurrence rate of 10-50%, and about 10% undergo malignant transformation through their recurrences. The principal aim of the management of GCT is to eliminate the tumor and still save the joint function (Rahim et al., 2015). It is advised that each patient with GCT should be treated individually. Regardless of non-malignant features, the local behavior of tumors determines the treatment approach according to treatment principles for malignant tumors of bone (Maric et al., 2012).

Surgical and oncological treatment takes into account tumor location, previous treatments (in case of recurrence), histological aggressiveness and the presence or not of lung metastases, which are a cause of death in 16-25% of the cases (Kay et al., 1994). Surgical treatment consists of curettage and filling with cancellous bone or acrylic cement or mixed filling, in inactive forms (Kivioja et al., 2008). In case of recurrence, if histological examination evidences an inactive appearance, curettage is repeated, and if an active or aggressive appearance is evidenced, tumor resection will be performed (Becker et al., 2008). In case of an aggressive tumor, oncologic resection with or without reconstruction, depending on the tumor site (bone reconstruction or modular prosthesis), is carried out. Amputations or disarticulations are indicated in untreatable cases (Klenke et al., 2011).

The postoperative rehabilitation program for patients with TSA has a long duration (12-18 months), is intense, sustained and regular in nature, and includes the following main objectives: increase of the quality-of-life index, maximization of mobility in the replaced shoulder, as well as restoration of motor control in the entire upper limb. It is based on the protocol initiated by Neer, structured in three phases.

Phase I of the Neer protocol has the following main objectives: wound healing, maintenance of the integrity of the replaced joint, gradual increase in the passive range of motion of the shoulder, initiation of active elbow and wrist movements, reduction of pain and inflammation, reduction of muscle inhibition. The methods used are continuous orthosis use for up to 4 weeks, avoidance of shoulder overextension in clinostatism, avoidance of active shoulder

movements, weight lifting and rotations, cryotherapy, passive and self-passive shoulder mobilization, passive, self-passive, isometric and balancing exercises (Coodman type).

The objectives of phase II of the Neer protocol are to obtain a maximum passive range of motion, to gradually initiate active mobilizations, using active resistance-free, stretching exercises, and to restore the rotator cuff muscle strength.

Phase III of the Neer protocol is aimed at the gradual restoration of the strength and resistance of the shoulder, using stretching and active resistance exercises.

The full achievement of the objectives of a specific phase is mandatory before passing to the next phase, which particularizes the functional rehabilitation treatment.

Although individuals undergoing TSA have less difficulty regaining range of motion initially than those undergoing arthroscopic or open rotator cuff repair, it is still imperative to restore and maintain as much shoulder joint range of motion as possible. It is important to note that although the literature consistently shows significant improvements in strength, range of motion, and functional outcomes after TSA, full range of motion and restoration of full strength are generally not obtained and in some cases not expected (Kasten et al., 2010; Sperling et al., 2008).

Hypothesis

We assessed a young female patient with total shoulder arthroplasty after the excision of a giant-cell tumor of the right proximal humerus as an example for clinical management.

Material and methods

The study was performed in accordance with all current deontological rules. The patient's informed consent was obtained.

Research protocol

Period and place of the research

We report the case of a 24-year-old female patient from a rural area, who presented to the Rehabilitation Hospital in Cluj-Napoca in September 2013, for the restoration of right shoulder mobility after the placement of a total shoulder endoprosthesis.

Subjects and groups

The current disease started insidiously in January 2012, by mixed pain in the right shoulder, of low/moderate intensity, persistent and deep, which was not improved by the administration of analgesics or rest. About 3 months later, in March 2012, the patient observed a progressive limitation of mobility at this level, which is why she presented to the service of Orthopedics of the Baia Mare County Hospital. On radiological examination, a tumor of the right proximal humerus was described. Contrast MRI of the right shoulder was indicated, which evidenced a 4.6/3.6/3.7 cm tumor formation occupying the entire neck of the humerus, with an inhomogeneous structure, with intense contrast uptake, located 7 mm from the scapulohumeral joint in the lower half, which invaded the bone cortex, the subdeltoid bursa, the bicipital sulcus, the insertions of the infraspinatus and supraspinatus muscles, as well as the inner side of the deltoid muscle, with fascial invasion and mass effect (Fig. 1). The suspicion of a malignant giant-cell tumor was raised. For the confirmation of diagnosis, bone puncture biopsy was indicated, which was performed in June 2012. Anatomo-pathological examination evidenced tissue fragments containing bone tissue, periosteum and reactive bone, as well as images of cell proliferation including a component of mononuclear cells with abundant cytoplasm and a histiocytic appearance with numerous mitoses without atypias, and a component of multinuclear cells, osteogenesis foci apparently located towards the periphery of the tumor proliferations, aneurysmal spaces present inside the proliferation; tumor cells were CD68 positive, CD56 staining was focally positive on cells with osteoblastic appearance, the proliferation index assessed with Ki67 was expressed almost exclusively in the mononuclear component and had a mean value of 30%. The morphological picture, correlated with radiological data, corresponded to a giant-cell tumor of bone.

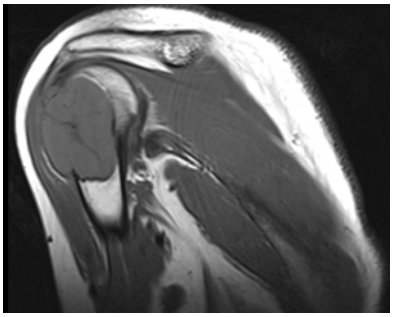

Fig. 1a – T1 sequence

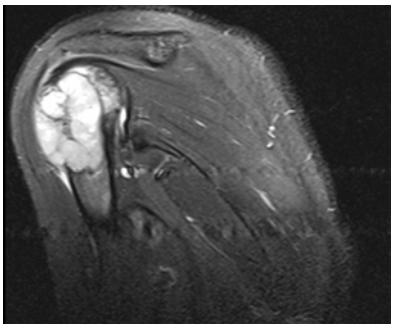

Fig. 1b – T1 sequence, TIRM

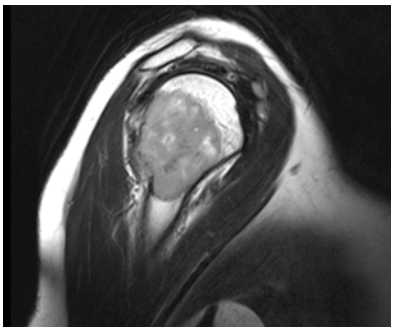

Fig. 1c – T2 sequence

Fig. 1 – Right shoulder MRI, March 2012

In August 2012, surgery was carried out in the Orthopedic Clinic in Munich. The tumor was removed, and metal osteosynthesis with a plate and screws was performed. Postoperative evolution was favorable (Fig. 2). Approximately 6 months after surgery, in January 2013, pain in the right shoulder recurred, and imaging

investigations supported local recurrence. In August 2013, another surgery was performed for the excision of the recurrent tumor, and a titanium total right shoulder endoprosthesis was placed in the same clinic in Munich (Fig. 3).

Fig. 2 – Right shoulder X-Ray (AP), August 2012

Fig. 3 – Right shoulder X-Ray (AP), August 2013

At the first presentation of the patient (September 2013) to the medical rehabilitation service of the Clinical Rehabilitation Hospital Cluj-Napoca, general objective and locomotor system examination was performed, which evidenced: a patient with normal weight (BMI=19 kg/m^2), general good status, postoperative scar in the process of healing on the anterior side of the right arm, with minimum painful sensitivity on palpation, hypotonia and hypotrophy of the right upper limb, and limitation of the mobility of the operated shoulder in all movement planes.

Tests applied

The right shoulder joint was evaluated using goniometry, which showed low range of motion values in all planes, particularly for flexion (5°), abduction (15°) and external rotation (0°). The range of motion values on the first evaluation in September 2013 can be seen in Table I. The patient was also assessed using specific scales: *Constant Shoulder Score*, *Disabilities of the Arm, Shoulder and Hand Score (DASH)*, *Shoulder Pain and Disability Index (SPADI)*. The values obtained on the first evaluation in September 2013 are presented in Table II.

Results and discussion

By correlating clinical and paraclinical data, the objectives of the rehabilitation treatment were formulated: functional rehabilitation of the right shoulder and upper limb, oncologic follow-up, family and socio-professional reintegration, and improvement of the quality of life. Rehabilitation was important because a young adult woman, in full process of developing her personal evolution potential, had lost the optimal function of her dominant upper limb. To the specific rehabilitation objectives, oncologic objectives were added, i.e. monitoring locoregional recurrence and the development of metastases by imaging methods (MRI, CT). Hence, the importance of multidisciplinary collaboration, between the medical rehabilitation specialist, the oncologist, the imaging radiologist, and the family doctor.

The rehabilitation methods used were: kinetotherapy according to phase I of the Neer protocol, associated with water gymnastics in the pool, psychotherapy, occupational therapy, massage and administration of systemic or topical analgesics when needed. It was decided not to use any other form of physiokinetotherapy (e.g. high-frequency short waves), because of the increased recurrence potential of the malignant tumor. The parameters of the rehabilitation program were as follows: 14 days continuous hospitalization, 10 days kinetotherapy (30 minutes twice a day), 10 days water gymnastics in the pool (60 minutes), 10 days sedative massage (20 minutes). At the end of the first rehabilitation program, the range of motion in the right shoulder was significantly improved (Table I), and the

Table I

Range of motion (ROM) of the right shoulder.

Range of motion	September 2013 Admission	September 2013 Discharge	January 2014 Admission	January 2014 Discharge	August 2014 Admission	August 2014 Discharge
Flexion	5°	25°	40°	50°	60°	65°
Extension	30°	30°	30°	35°	40°	40°
Abduction	15°	20°	25°	35°	40°	50°
Internal rotation	10°	15°	20°	20°	20°	20°
External rotation	0°	5°	10°	10°	10°	15°

Table II

Shoulder scores.

Score	September 2013 Admission	September 2013 Discharge	January 2014 Admission	January 2014 Discharge	August 2014 Admission	August 2014 Discharge
Constant Shoulder Score	42	38	35	30	24	22
DASH score	35	33	31.7	30	29.7	29
SPADI score	54%	50%	43%	35%	30%	28%

assessed scores had decreasing values (Table II). The patient was discharged with the following recommendations: continuation of the kinetic program at home, low protein diet, homeopathic treatment, psychotherapy, cognitive-behavioral therapy, and maintenance of contact with the rehabilitation team (consultant doctor, resident doctor, kinetotherapist) by phone or Internet.

The patient returned for follow-up after 6 months, in January 2014, with improved range of motion values in the shoulder (the patient reported the daily program of exercises performed at home), and thus, phase II of the Neer protocol could be initiated, following which results were satisfactory (Tables I, II). In August 2014, the patient returned to continue inpatient rehabilitation treatment, and phase III of the Neer protocol was started, with favorable results (Tables I, II). The patient was discharged with the recommendation to continue the kinetotherapeutic program at home, in order to maintain the obtained values.

Prognosis

Prognosis *ad functionem* is favorable, as there was an increase in the passive and active range of motion, an improvement of muscle strength in the right upper limb, with the amelioration of activities of daily living, as well as family and socio-professional reintegration.

Prognosis *ad vitam* is reserved because of the high risk of local and/or distant recurrence. Also, there are some difficulties in interpreting CT or MRI images due to artefacts generated by the metal endoprosthesis. Long-term monitoring can be done using musculoskeletal ultrasound, which can provide important information on local status.

Particularities of the case

The particularities of the case are the location of the tumor with a starting point in bone that invaded periarticular soft tissues, tumor recurrence requiring surgical reintervention with the placement of a total shoulder endoprosthesis, and the need to adapt kinetotherapy to the residual anatomic function. The limitations of functional recovery are due to the surgical protocol, which required the resection of the insertions of the rotator cuff muscles in order to remove the head of the humerus, and their subsequent block reinsertion.

Conclusions

1. Physical therapy is an essential determinant of clinical outcome after total shoulder arthroplasty.

2. A graduated rehabilitation program allows patients to obtain a satisfactory overall function of the upper limb.

3. When surgery for the placement of an endoprosthesis is complemented by an early, well-controlled and individualized rehabilitation program, functional prognosis is favorable, and an optimal autonomy of the upper limb, depending on the new anatomical situation, can be obtained.

Conflicts of interests

There are no conflicts of interest.

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Methods of training and development of motor behaviors in children with autism and visual impairment – a case report
Metode ale formării şi dezvoltării conduitelor motrice la copilul cu autism şi deficienţă de vedere - studiu de caz

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Abstract

Background. In visually impaired children cases, the physical and psychomotor gaps arising from this deficit are frequently reported. Visual impairment, and even more, the lack of vision in childhood, is therefore a restricted sensory experience. Children with sight loss must make an extra effort of concentration. We consider it important to mention here autistic characteristics such as gaze avoidance, stereotypes, echolalia, motor agitation, bizarre behavior, obsessions, aggression and self-harm, sensory integration disorder, lack of intentional socialization, etc.

Aims. This case report discusses a 7-year-old pupil who is blind, who has autism and is institutionalized. The pupil entered our institution at the age of four, not knowing how to walk or to speak. This case needed a personalized intervention plan. Our goals were training and development of correct postural control, training and exercise of basic motor behaviors, formation of the body scheme and self-image, training and development of orientation and mobility skills.

Methods. To achieve recovery and rehabilitation of motor skills, exercises to stimulate head and neck control, exercises to stimulate rising in a bipedal position, exercises to stimulate walking with support and independently, exercises to identify the main parts of one's own and the partner's body, etc. were performed.

Results. The personalized intervention plan that was designed for a period of two years and was especially created for this case led to the acquisition of walking by the child, and to the development of his orientation and mobility in an efficient way.

Conclusions. This personalized rehabilitation plan for a child with autism, with specific needs also of visual impairment, can succeed in restoring the ability to walk and to orientate for children with associated and severe disabilities.

Key words: autism, visual impairment associated motor behavior, motor abilities, psychomotricity.

Rezumat

Premize. În cazul copiilor cu deficienţă de vedere adesea se amintesc lipsurile în plan fizic şi psihomotric ce derivă din acest deficit. Deficienţa de vedere, şi cu atât mai mult absenţa vederii la vârsta copilăriei, are ca urmare o experienţă senzorială restrânsă, interacţiunea cu semenii este mult mai limitată, contacte interpersonale confuze. Considerăm important de amintit aici manifestări autistice precum evitarea privirii, stereotipii, ecolalia, agitaţie motorie, comportamente bizare, obsesii, agresivitate şi autoagresivitate, tulburări de integrare senzorială, lipsa intenţionalităţii socializării etc.

Obiective. Acest studiu de caz are în vedere un elev nevăzător de 7 ani cu autism, instituţionalizat. Elevul a intrat în instituţia noastră la vârsta de 4 ani, neştiind să meargă sau să vorbească. Acest caz presupune realizarea unui plan de intervenţie personalizat al acţiunilor. Aşadar finalitatea trebuie să vizeze următoarele obiective: formarea şi dezvoltarea controlului postural corect, formarea şi dezvoltarea conduitelor motrice de bază, formarea schemei corporale şi a imaginii de sine, formarea şi dezvoltarea unor deprinderi de orientare şi mobilitate.

Metode. Pentru realizarea recuperării şi reabilitării conduitelor motrice se vor viza exerciţii precum stimularea controlului capului şi gâtului, exerciţii de stimulare a ridicării în poziţie bipedă, a mersului cu sprijin şi independent, de identificare a principalelor segmente ale corpului pe sine şi pe partener, etc.

Rezultate. Planul de intervenţie personalizat pe o perioadă de doi ani, realizat pe specificul elevului nevăzător cu sindrom autist, a dus la însuşirea mersului de către acesta şi la dezvoltarea orientării şi mobilităţii în spaţiul larg.

Concluzii. Aceste metode de lucru se pliază atât pe nevoile copilului ce suferă de autism, cât mai ales pe specificul autismului în cazul deficienţilor de vedere, reuşind performanţa însuşirii mersului şi a orientării copiilor cu deficienţe severe şi asociate.

Cuvinte cheie: autism, deficienţe de vedere, deficienţe asociate, conduite motrice, psihomotricitate.

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Introduction

Psychologists and ophthalmologists mainly define amblyopia and blindness by reference to the functional indicators of vision (visual acuity, field of vision or peripheral vision, light sensitivity, color sensitivity, or stereoscopic binocular vision), involving the parameters that indicate the physiological characteristics of the visual apparatus.

In terms of educational definitions, visual impairments are interpreted according to the type of education that can be achieved by the visually impaired person. So, in educational terms, amblyopic children are those who due to vision deficiencies cannot attend regular school without prejudice to their eye sight or their educational development, but can be trained by special methods involving sight. A blind person is one that has no eye sight or whose eye sight is so diminished that it requires educational methods that do not involve sight (Miller cited by Stănică et al., 1997).

It is crucial for children to properly acquire and practice exploratory perceptive schemes consisting of specialized movements of the hands and eyes (Ştefan, 1981), such as:

- searching and training movements that contribute to the location of the object in a wide or narrow space;
- object tracking movements that achieve integrative comparison and synthesis;
- control movements that contribute to verifying the accuracy of the information collected about the object.

When we talk about sensory integration disorders, we wish to emphasize excessive sensitivity to certain stimuli or conversely, the lack of natural reactions to them. It is possible for children with autism to perceive the touch of the special education teacher as painful, but not to react to falls that can cause severe blows or even accidents.

It is essential to carefully assess motor disorders and tardive dyskinesia, and to distinguish those that are treatment-emergent from those that may be behavioral characteristics of some pediatric disorders (Pandina et al., 2007).

The level of motor ability plays an important role in the avoidance of an accident. There is no research on the relationship of the seriousness of an accident with the level of motor ability and the tendency of a child to have accidents (Ioannidou et al., 2008).

Many of these children are non-verbal, trying to transmit messages through the manifestation of aggression towards people or themselves. In order to develop successful strategies for motor behaviors, this minimum information should be taken into account.

Child motor and mental stimulation should start from birth by the influence of family stimuli (Albu et al., 2008).

In the case of institutionalized children, this stimulation does not occur in the normal stages, all the more so if the child is blind and autistic. Measures for motor stimulation are taken with the inclusion of the child in an educational institution, namely in a special kindergarten. Only now the child can benefit from personalized intervention plans regarding the education of motor, cognitive and emotional-affective skills.

Visual sensations are considered most important for human life and activity because they provide orientation in the environment (Dumitrescu, 2008).

Psychomotor education is overlooked or ignored in the complex educational act at the very height of the educational plasticity period, specific to the age of 4-12 years (Neagu, 2012).

Psychomotricity is considered a very complex act that combines mental and motor skills in performing an action (Popovici & Matei, 2005). Such quantitative accumulation of sensory information may lead to qualitative leaps of motor and intellectual manifestations.

Therefore, many experts address physical, mental and motor development in all its complexity, as these processes can occur simultaneously (Albu et al., 2008).

This is a complex process dependent on a harmonious combination of physical, mental, social and emotional development (Cucerea & Simon, 2009). Psychomotricity as a science deals with the study of motor functions integrated and coordinated by mental functions (Albu et al., 2006).

This requires recovery and compensation. The manner of compensation is determined by the nature, extent, severity, etiology and age at which the primary visual impairment has developed, by possible associated deficiencies, by the extension of negative secondary consequences on physical, intellectual, psychomotor and affective-attitudinal development, requiring specific forms of compensation (Rozorea, 2011)

Attention is continuously focused on different directions or concentrated in one direction or another according to the intensity and significance of the perceived stimuli, which requires the continuous education of attention qualities (distribution, mobility and focus) depending on the degree of deficiency and the minimum amount of stimuli that maintain a state of optimal excitability, which is the basis of attention (Gherguţ, 2007).

Parents, schools, and local authorities must now deal with school-aged children who spend increasingly less time in unsupervised free play with peers. These kids may lack the social skills they need to engage in rule-governed play and to sustain game play successfully (Lancy & Grove, 2011).

Preschoolers and primary school children are in constant search of interaction that they want increasingly more (Hetherington et al., 2006). This however is not true for blind children, who need encouragement and constant support in their efforts. Furthermore, children with autism do not want interaction with objects or people and if this happens, the whole situation becomes bizarre, they do not interact effectively, because they do not want to communicate, they just desire to cause stimuli that are pleasant to them.

Sensory education activities that require direct contact with objects (which make some noise, have certain smells, tastes, etc.) can be considered as tactile-kinesthetic stimulation activities (the child touches the object, identifies the shape, size, texture, etc.) (Marinache, 2009).

Such working programs for children with autism should be aimed at changing inappropriate behaviors through techniques that allow the emergence or development of behaviors such as: „modeling" (reinforcement of responses, which brings them closer to the final behavior), chaining of

behavioral sequences, verbal incitation, manual guidance, imitation, reinforcement and generalization (Preda, 2006).

Children with autism have a double deficiency, autism and mental retardation.

Counseling clients with Asperger's syndrome and high functional autism may seem a daunting prospect at the beginning; however, therapy with these individuals can be very rewarding (Woods et al., 2013).

The mental life of a congenitally blind person improves under the conditions of an active participation, in which movement, hearing and touch are dominant. In the direct relationships with the world, with the objects, touch gains a determinant role and subordinates the impressions from other analyzers (Popa, 2006). The entire space for educating children with autism should be well defined by its functional boundaries and by choosing specific stimuli depending on the space where we work with the child.

We consider that psychomotor counseling is important. Its main objectives are the study of individual motor capabilities compared to standard motor skills adequate for age, gender and social status; the study of transfer possibilities in order to improve the quality of life; establishing the most effective means of prevention and intervention (Dumitrescu et al., 2013).

Issues related to the development of perceptual-motor structures are essential for professionals working with children who display mental retardation. In these, the evolution of perceptual-motor structures is slow, late and incomplete. Sometimes they become adults and still have problems with body perception and spatial-temporal orientation (Albu et al., 2006).

Hypothesis

Motor behavior in preschoolers with autism and visual impairment can be acquired and developed through a personalized intervention program that takes into account the specificity of these deficiencies associated with positive outcomes on child development.

Material and methods

The research protocol

The reference objectives of this strategy are consistent with the curriculum for the 1st-6th grades, as part of the curriculum for severe, profound and/or associated mental impairments, approved by Ministerial Order no. 5235/01.09.2008. We mention that, in agreement with the Helsinki Declaration, the Amsterdam Protocol and Directive 86/609/EEC, the case study procedure was approved by the Ethics Commission of the Special School for the Visually Impaired, Buzău, Romania, and that we obtained the written consent of the legal guardian of the subject.

a) Period and place of the research

This case study was conducted at the Special School for the Visually Impaired in Buzău, over a period of 2 years, from September 2012 to September 2014.

b) Subjects and groups

Subject CH was 7 years old and had entered the above mentioned institution at the age of 4 years, the child being institutionalized, having no parents. He presented congenital visual impairment, blindness and autism, serious intellectual deficiencies. The child did not walk on his own initiative and did not speak effectively, showing echolalia and preferring withdrawn areas.

c) Tests applied

We applied the Portage psychomotor development test (Gherguț, 2011); although the chronological age of the child CH was 7 years, due to intellectual deficiency, his mental age corresponded to the age of 6 years. This test compares the child's mental and chronological age; in addition, it identifies areas where the child has not progressed, helping professionals in their attempt to identify the deficiencies of the child. First, we conducted the initial testing (I.T.) of the child. Depending on the results, a personalized intervention plan was required to develop motor behavior in particular. After applying this plan that was materialized in a methodical strategy, we performed the final testing (F.T.) of the subject.

Presentation of the personalized intervention plan

The intervention plan was aimed at the training and development of correct postural control, the training and development of basic motor behaviors, the formation of the body scheme and self-image through specific exercises chosen and targeted to support the autistic child with visual impairments. This program was carried out once a week for approx. 30 minutes, as part of the morning school program. There were also special situations in which the subject was excused from the program, such as flu and cold episodes, quite common during the cold season, due to the low immunity of the child. We will detail the intervention plan by explaining the exercises used. This strategy aimed to achieve the following objectives:

1. Training and development of correct postural control

a. Exercises that stimulate head and neck control:

- The first step is choosing those toys or objects with noise (for the blind) or light features (for amblyopic subjects) that are pleasant to the child.

- Children should be encouraged to look at the toys, or at the objects, the adult moving them up and down, then left-right, verbalizing the action, so the baby will move his head in different directions, with effect on neck control. It is important not to manipulate the toys out of the sight of children; this may result in the child losing interest in them. Such items should be placed in the visual field of the child, encouraging the child to search with his eyes. The same is maintained for blind children, who will be stimulated by an audible sound source, moving in the four directions while the adult is maintaining the verbalization of the action „top-down", „left-right".

- Using the above exercise can be improved once the child is familiar with it and accepts it, by indicating the direction of the preferred object, which will be used as a stimulus only after the child turns his head towards the direction indicated by the adult, signifying that he has understood the motion directions of the object. So, the adult will verbalize the direction of the object, while moving it towards the indicated direction, waiting for the child to turn his head towards the right direction, after which the visual or auditory stimulus of the object will be triggered.

- Toys with light or sound features can be hanged within the playground of the child, at a distance allowing

the child only to touch them, to facilitate lifting the head towards the source, and reaching out for them.

b. Exercises to stimulate rising in a bipedal position:

- The same exercise can be used for hanging favorite toys, this time at the level of the child's head, helping the child in the attempt to rise, with the support of the adult's hand or with any object big enough for the child to grab while gaining the position. It is important to change after a while the place where the toys are hanged, as well as the place where the child will rise to touch the toys, which will ensure the diversification of the ways in which he manages to reach them.

c. Exercises to stimulate walking with support and independently:

- Gradually, once in bipedal position, the child can be encouraged to walk with the support of the adult, who will keep him with one or both hands. The same favorite toys can be used, which will be placed this time right in the child's visual or hearing field, but they will be located at some distance from the child, so that he will have to walk to reach them. It is recommended to repeat this exercise gradually, from easy to difficult, both in terms of number of repetitions and the distance between the object and the child. During each exercise, the child should be encouraged by the adult with few words, always the same. After each successful activity, the child should be praised, every time in the same way, with an enthusiastic tone. As a reward, the child will be given the desired toys, but not before he has performed the exercise at least three times, or sweet rewards, consisting of small pieces of favorite foods.

- Gradually, adult physical help in supporting the child while walking should be reduced, so the child will no longer be supported by the arm of the adult, but will only be touched on the forearm, then the adult's support will be moved down towards the child's hand, with the role of reassuring and guiding him.

2. Training and development of basic motor behaviors

a. Exercises to learn basic feet motor skills: independent walking, climbing, descending:

- If the proper acquisition of walking without support has been achieved, exercises can be performed in order to boost the rhythm of walking through verbal and visual stimulation, depending on the stimuli that the child accepts. Adults may clap, blow a whistle in a specific rhythm, use a flashlight, a tambourine or a toy that will light intermittently or tubes with liquid soap, so the child will be motivated to walk toward the source of the bubbles in order to touch them.

- Also, in this section of exercising and encouraging walking, we can include walking with the hand resting on the railing. For an accurate learning of this method, a sound bracelet will be put on the right hand of the child in order to guide him about the hand he will be using for support, while repeating the name of the hand which the child is using for support. This technique is welcomed in schools for the blind that have railings on both sides of the hallways. If the child with autism does not accept the bracelet, this work will be done by placing the child's hand on the railing and by covering it with the hand of the adult, who will be positioned in front of the child. The support given by the adult must decrease up to its complete suppression, using only verbal support, which will also diminish in time. If the child does not accept to touch the railing due to the unpleasant sensation that this may cause to him, a piece of fabric that the child accepts can be used, which will have his hand size. The fabric will be put between the railing and the child's hand. In time, the size of the fabric will be reduced by cutting, allowing the child's hand to gradually come into contact with the railing.

- As a first step, climbing and subsequently, descending the stairs will be learned. The adult must choose for this activity less circulated stairs, without metal protection edges and no level differences between them. The child will be positioned facing the stairs, with the right hand on the railing and the left hand supported by the adult. If the child does not want to carry out this action, the adult must verbalize the action while guiding the child, with a firm voice and few words. After each step climbed, the child will be praised with an enthusiastic tone; moreover, the adult may allow the child to use specific stereotypes, but no more than 3-5 seconds, as a reward.

b. Exercises to learn the basic hand movements: arms, forearms, wrists, fingers:

- Stringing beads with decreasing sizes, from large to small, on pipes of different sizes.

- Using Montessori games that are designed to develop fine motor skills, involving the handling of various parts that are made of laces, tubes, pipes, ditches, mazes, on which various geometric figures, objects of different sizes and textures are placed.

3. Body scheme and self-image formation:

a. Exercises to identify the main parts of one's own and the partner's body

- The teacher will touch each segment of the subject and will verbalize its name. In time, the child will be asked to verbalize with the teacher.

- During dressing-undressing, the teacher will name the body part to be undressed or dressed, will touch the previously named segment and will guide the child in action. It is important that the sequences are always the same; the teacher starts every time by undressing the right hand, the left hand, slipping the blouse over the head, and continues with the lower body. Children with autism need routine, which gives them security and a better understanding of reality.

- Physical guidance of the child in identifying the partner's, especially the teacher's body parts. The dominant hand of the child will be guided to touch the teacher's body segments, with the teacher positioned in front of the child, asking the child to name each segment. At this stage, prompting or help from another adult can be used; this will be positioned behind the child, guiding him in performing the task. After completing each task, the child will be praised with an enthusiastic tone, to support his efforts.

d) Statistical processing

For data processing, we used Microsoft Office Excel 2007.

Results

Following initial testing (IT), we found that the development of the subject was not equal at all levels, having the following scores: socialization-1.2 years;

language-1 year; self-service-1.5 years; cognitive-1 year; motor-1.3 years. With these scores, we calculated the mental age of the subject.

The arithmetic mean of the scores divided by 5 (1.2+1+1.5+1+1.3):5=1.2 years. Thus, mental age (MA)=1.2 years. The development coefficient DQ=(MA:CA)X100; (1.2:7)X100=17.14 pts. According to the test interpretation, all scores below 30 points show profound retardation.

Final testing (FT) revealed the following scores: socialization=2.5 years; language=2.5 years; self-service=3.2 years; cognitive =3.5 years; motor=4 years.

Thus, (2.5 + 2.5 + 3.2 + 3.5 + 4): 5 = 3.14. So, mental age (M.A.) = 3.14 years.

Motor development had the highest score, increasing by a difference of 3 years. The development coefficient DQ following (F.T.) is DQ = (3.14: 10) X100 = 31.4 pts. According to the interpretation of the test, the category ranging between 30-39 points shows severe retardation (Table I).

Table I

Evolution of developmental stages.

Development stages	IT	FT
Socialization	1.2	2.5
Language	1	2.5
Self-service	1.5	3.2
Cognitive	1	3.5
Motor	1.3	4

Discussions

After the application of the intervention plan, the scores increased significantly for each parameter indicated in the test. So, following the application of the personalized intervention plan aimed at the training and development of motor behaviors, high scores were obtained in the final testing for all development areas.

We consider important to remind that the subject is trained in the Special Class of the Special High School for the Visually Impaired in Buzău, based on the curriculum for severe, profound and/or associated mental deficiencies, approved by Ministerial Order (OM nr. 5235/ 01.09.2008) (1).

National Education Law no. 1/2011 gives children with deaf-blindness/multiple sensory deficiencies the right to appropriate educational services in classes with an average number of 5 students, who benefit from educational support from special education teachers (2).

The activities to be performed during school hours must not exceed 30 minutes, given that fatigue in children with associated disabilities occurs rapidly, and the avoidance of effort specific for intellectual deficiency is another factor that should be taken into account.

Over the past decades, the main attention in the area of education has been focused on the improvement of the school system: raising educational standards, improving the students' achievements, improving the quality of work of teachers and schools (Miovska-Spaseva, 2013).

This requires knowledge by teachers of the particularities of each child, their understanding of the characteristics of deficiencies, and finding of the best working methods and techniques. Thus, the quality of the teaching-learning system will increase significantly with the students' achievements.

It seems obvious that the severity of a student's disability influences their engagement in a curriculum that involves the development of self-determined behavior in relation to health (Carrington et al, 2013).

This is why teachers who work with children with deficiencies must estimate their current and future needs, guiding them towards activities that can support the development process, and the efforts of specialists should be focused on meeting the needs of children with associated deficiencies.

Conclusions

1. The implementation of this personalized intervention plan that includes specially designed exercises to assist children with associated severe disabilities (blindness and autism) is very effective, resulting in the development of the child's autonomy and independence.

2. The effectiveness of this intervention plan was demonstrated by the evolution of the subject, highlighted by the final test results.

3. Research on the motor skills of visually impaired students should be extended because of the psychomotor flaws characteristic of this type of subjects.

Conflicts of interests

There is no conflict of interests.

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REVIEWS
ARTICOLE DE SINTEZĂ

The venous system and exercise
Sistemul venos şi exerciţiul fizic

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Abstract
The veins form a collecting system for blood returning from the periphery to the heart. The veins have many special functions: transport, blood reservoir, circulatory homeostasis. The factors controlling venous return are the central heart pump, the pressure at the end of the capillaries, the right atrial pressure, the peripheral venous tone, the peripheral muscle pump of the leg, the respiratory pump, the gravity, the competent venous valves. Venous return from the lower extremity is achieved by expulsion of the blood by the lower extremity muscle pump and valve function that divides the hydrostatic column of blood into segments and prevents retrograde venous flow. During exercise, the central venous pressure may rise slightly due to this effect. Once exercise ends, venous pressure begins to rise once more. When the muscle pump is less active, as in a bedridden subject or during long periods of standing (orthostatic posture), blood tends to accumulate in the veins, causing an increase in the peripheral venous pressure and a fall in the central venous pressure, with a reduced venous return to the heart and diminished cardiac output. The muscular pump is a true pump that results from the mechanical action produced by rhythmical muscular contractions. In exercise, an efficient calf muscle pump may compensate for some degree of reflux and obstruction and prevent the chronic venous insufficiency.
Key words: venous system, chronic venous insufficiency, muscular pump, lower extremity, exercise.

Rezumat
Venele formează un sistem de colectare pentru sângele care se reîntoarce de la periferie spre inimă. Venele au multe funcţii speciale: de transport, rezervor de sânge, homeostazie a circulaţiei. Factorii care controlează reîntoarcerea venoasă sunt pompa centrală cardiacă, presiunea terminală capilară, presiunea atrială dreaptă, tonusul venos periferic, pompa musculară periferică a piciorului, pompa respiratorie, gravitatea, valvele venoase competente. Întoarcerea venoasă din extremitatea inferioară este realizată prin expulzarea de sânge de către pompa musculară din extremitatea inferioară şi funcţia valvulară, care împarte coloana hidrostatică de sânge în segmente şi previne fluxul venos retrograd. Exerciţiul fizic are ca şi efect creşterea presiunii în sistemul venos central. După terminarea exerciţiului fizic presiunea venoasă creşte din nou. Când pompa musculară este mai puţin activă (clinostatism sau ortostatism prelungit), sângele se acumulează în vene, cauzând creşterea presiunii venoase periferice şi scăderea presiunii în sistemul venos central, cu scăderea întoarcerii venoase şi scăderea debitului cardiac. În efort, o pompă musculară eficientă gambieră poate compensa pentru un anumit grad de reflux şi obstrucţie şi preveni insuficienţa venoasă cronică.
Cuvinte cheie: sistemul venos, insuficienţa venoasă cronică, pompa musculară, extremitatea inferioară, efort.

Introduction

The veins form a collecting system for blood returning from the periphery to the heart. The final destination of venous blood from the systemic circulation is the right atrium of the heart and that of venous blood from the pulmonary circuit is the left atrium.

Veins have three coats or tunics in their walls: tunica intima is the inner endothelial lining, in contact with the blood stream. One structure, which is present in veins, is that of venous valves, particularly in lower limbs. The valves allow unidirectional flow only towards the heart; the tunica media is a middle layer composed of smooth muscle and elastic fibres; the tunica adventitia is the outer layer, of fibrous collagenous tissue.

From the microcirculatory bed, the blood enters the venous system. Veins from the head and neck, the jugular veins, join on each side the subclavian veins from the upper limbs to form the brachiocefalic veins, which unite into the superior vena cava. This main vein from the upper half of

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the body is joined by the vena azygos and vena hemiazygos from the chest wall, and ends in the right atrium.

The inferior vena cava, which drains the lower half of the body (leg and pelvic veins) and ends in the right atrium, is formed by the junction of the two common iliac veins, is joined by gonadal, renal and hepatic veins, and ends in the right atrium.

The pulmonary veins drain the lungs and pass directly into the left atrium.

The veins have three properties: distensibility (extensibility), elasticity, contractility.

The veins provide low resistance conduits for afferent transport of the blood to the heart, having many special functions:

a) Transport: the primary function of the venous circulation is to return blood to the heart.

b) Blood reservoir: the veins perform a storage and reservoir function for the circulating blood volume. The bulk of the blood volume is contained in veins and venules, which thus represent the capacity vessels of the circulation.

c) Circulatory homeostasis: the compliance of the venous system plays a part in circulatory homeostasis. The capacity of the venous reservoir facilitates cardiovascular homeostasis through volume shifts.

Venous circulation

The factors controlling venous return are:

- the central heart pump (the inotropic state of the he art);
- the pressure at the end of the capillaries, right atrial pressure (pressure gradient);
- peripheral venous tone;
- the peripheral muscle pump of the leg;
- the respiratory pump;
- gravity;
- the competent venous valves (Rhodes & Tanner, 1995; Pocock & Richards, 1999; Guyton & Hall, 1996; Fox, 2011)

The total blood volume of a normal adult is about 5 liters. The bulk of the blood (about 3-3.5 liters) is found in the veins: 20% in large systemic veins, 42% in small veins and venules.

The veins thus act as a reservoir for blood and are called capacitance vessels.

Under normal conditions, the pressure is 1.6-2.4 kPa (12-18 mmHg) at the venous end of the capillary and falls steadily toward atrial pressures, up to 0.5-0.9 kPa (4-7 mmHg).

The average venous pressure in the heart is around 0.3 kPa (2 mmHg), 1.3 kPa (10 mmHg) in the venules and falls to around zero in the right atrium (Barrett et al., 2010).

Veins are capacitance vessels, which contain around two thirds of the total blood volume.

The effect of the skeletal muscle pump on veins

The muscular pump of the lower limb includes the pumps of the foot, calf and thigh. The calf muscle pump is the most important, has the largest capacitance and generates the highest pressure (26.6 kPa=200 mmHg) during muscular contraction (Burnand, 2001).

Alternate muscular contractions and relaxations are important for the blood flow. When muscle contracts, thick-walled veins are compressed and the blood flows toward the heart. Relaxation of the skeletal muscles moves the blood from the arterial system into the veins. This action of the muscles is known as the muscle pump. It assists the action of the main pump, the heart.

During contraction of the calf muscle pump (gastrocnemius and soleus muscles), blood is driven into the large capacity popliteal and femoral veins. The valves prevent retrograde flow during relaxation of the muscles, generating negative pressure and draining blood from the superficial to the deep venous system through perforating vessels. When exercise ceases, the veins slowly fill from the capillary bed, and blood returns to resting venous pressure.

The venous blood flow is facilitated during walking, when the muscle pump of the lower limbs is rhythmically activated. The muscle pump increases venous return and decreases venous volume.

The venous system and venous disease

Venous return from the lower extremity is achieved by expulsion of blood by the lower extremity muscle pumps and valves that divide the hydrostatic column of blood into segments and prevent retrograde venous flow (Goldman & Fronek, 1989).

Chronic venous insufficiency consists of manifestations of venous hypertension, defined as a failure to reduce venous pressure with exercise.

In normal conditions, the venous valves and the calf muscle pump limit the accumulation of blood in veins. Failure of the lower extremity muscle pump due to outflow obstruction, muscular weakness, loss of joint motion or valvular failure is associated with peripheral venous insufficiency (Araki et al., 1994).

In acute situations, stasis within these valved conduits and failure of peripheral muscle pumps to return blood against gravity are a factor in the formation of deep venous thrombosis.

Chronically, venous insufficiency may result from superficial or perforating deep venous obstruction or valvular incompetence (Meissner et al., 2007).

Valvular incompetence is associated with a rapid recovery time after muscular contraction. If the deep vein valves are incompetent, blood oscillates within the deep veins and there is no reduction in pressure. Deep venous obstruction is associated with little reduction in resting pressure, which is elevated during calf contraction. The result is venous hypertension, edema, pigmentation, fibrosis and ulceration in the skin.

Chronic venous insufficiency, mainly due to venous reflux or venous outflow obstruction, produces a microcirculatory overload.

Physical exercise and chronic venous disease

It is clear that muscle pump causes an increase in venous outflow, but there are other phenomena related to its function which remain controversial (Lurie, 2011). Locomotion in an upright position ensures the highest possible perfusion by a muscle pump, which became the basis for the theoretical model that explains exercise-induced

muscle hyperaemia by the combination of vasodilation and an increased cardiac output caused by mobilization of peripheral blood volume (Laughlin, 1987). Some authors report that in patients with venous insufficiency, who should be lacking an optimally functioning muscle pump, the muscle pump effect in exercise hyperaemia seems to be reduced or lacking (Nådland et al., 2011a). The reflux in the great saphenous vein negatively impacts the contribution of muscle pump to exercise-induced hyperaemia, and surgical elimination of reflux reverses this impairment (Nådland et al., 2011b). Another author sustains that no decrease in arterial flow was actually observed in both the tilted and supine positions, regardless of the presence of reflux, and that arterial flow significantly increased during exercise. However, in the absence of reflux, this increase in arterial flow was higher in the tilted than in the supine position, but the difference was not statistically significant in the presence of reflux (Lurie, 2011). Other authors also sustain that the increase in arterial blood flow during muscle exercise does not correlate with changes in venous pressure, or venous outflow (Valic et al., 2005), partially due to a vascular waterfall effect (Naamani et al., 1995).

During exercise, an efficient calf muscle pump function may compensate for some degree of reflux and obstruction and prevent chronic venous insufficiency (Padberg et al., 2004). However, there are observations supporting that after a certain level, the decrease in venous pressure no longer affects arterial flow, also because the rapid filling of the deep veins after muscle contraction is predominantly from the superficial veins, even in the absence of reflux (Almen & Nylander, 1962). Therefore, the pressure-based model of muscle pump seems to be a major simplification. Simultaneous measurements of compartment and venous pressures in healthy volunteers demonstrated that dramatic increases in intracompartment pressures translated into a negligible change in venous pressures (Alimi et al., 1994).

The influence of physical exercise on venous circulation has been relatively little studied (Klyscz et al., 1995; Yang et al.,1999; Padberg et al., 2004; Eiffel et al., 2006; Kahn et al., 2008). The decrease in venous pressure during exercise represents the functional reserve of the venous system of the lower limbs and closely correlates with the clinical class of chronic venous insufficiency (Eklof et al., 2004; Eiffel et al., 2006). However, there are studies of patients with venous disease who showed a prolonged increase in deep vein pressure caused by exercise in 20% of the limbs; none of the limbs with an exercise-induced increase in deep venous pressure had great saphenous vein reflux, and all limbs with great saphenous vein reflux showed a decrease in deep venous pressure with exercise (Neglen & Raju, 2000). Superficial vein pressure does not reflect pressure changes in the deep system during exercise, and the great saphenous vein reflux does not necessarily affect venous pressure in deep veins (Lurie, 2011).

The musculoskeletal dysfunction of the leg is associated with poor function of the calf muscle pump. Poor calf muscle pump function in patients with chronic venous insufficiency can be improved by a physical exercise program: a 6 months daily walking program reduces acute symptoms; 6 months of exercise training prevent or improve the postthrombotic syndrome (Kahn et al., 2008); 6 months of physical therapy strengthen the calf musculature (Padberg et al., 2004).

Another therapeutical value of exercise consists in the fact that exercise is improving outcomes in venous leg ulcers, due to its capacity to promote venous return and reduce the risk of secondary conditions in this population (O'Brien et al., 2014). Despite motivation and interest in being exercise active, people with venous leg ulcers report many obstacles. Further exploration of mechanisms that assist this patient population and promote understanding about the management of barriers, coupled with the promotion of enabling factors, is vital for improving their exercise participation.

Conclusions

1. Deterioration of calf muscle pump function is associated with chronic venous insufficiency.
2. Calf muscle pump function in patients with chronic venous insufficiency can be improved by physical exercise.

Conflicts of interest

Nothing to declare.

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Metabolic diseases: the latest findings in sports
Actualităţi ale bolilor metabolice în sport

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Abstract

Intense exercise determines body and metabolic adaptations considered beneficial to health. Practicing an intense training program and ongoing performance or participation in competitions can induce changes in serum laboratory parameters and cause effects on the body, health and social life. So, when they reach the end of their careers, most athletes can have weight problems. The cause is the inadequacy of the number of calories required for daily and physical effort. Staying on the same diet during the cessation of exercise training camps will eventually lead to the appearance of weight imbalances. Obesity is a problem not only after the age of retirement. Recent studies show an increasing prevalence of obesity among active athletes. In this category of patients, the calculation of abdominal circumference and body fat percentage, not of BMI, should be considered. The presence of obesity is also associated with metabolic syndrome or insulin resistance. Diabetes is another chronic condition that can affect athletes. If blood glucose levels are monitored incorrectly during periods of exercise, athletes with diabetes can suffer various endocrine emergencies (hypoglycemia, hyperglycemia and diabetic ketoacidosis). The greatest risk occurs in patients with type 1 diabetes by developing hypoglycemia or ketoacidosis. In type 2 diabetes, it is less pronounced, especially in those treated only with diet. To achieve performance levels, these patients should coordinate their carbohydrate intake and insulin administration to avoid complications. Glycemic control can be achieved by reducing insulin dosage by 50-80% depending on the type, duration, intensity and familiarity of exercise. Sport activity induces a lipid profile superior to that of sedentary patients, especially on HDL. Unfortunately, there are few studies that clarify the differentiation of the benefit of certain sports.

Key words: sports medicine, intense exercise, obesity, diabetes, hypoglycemia.

Rezumat

Exerciţiul fizic intens determină adaptări ale organismului şi ale metabolismului considerate benefice pentru sănătate. Practicarea unui program de formare intens şi continuu sau participarea la competiţii de performanţă poate induce modificări ale concentraţiilor serice ale unor parametri de laborator şi poate determina efecte asupra organismului, stării de sănătate şi vieţii sociale. Astfel, atunci când ajung la capătul carierei, majoritatea sportivilor pot avea probleme de greutate. Cauza acesteia este neadaptarea numărului de calorii necesare zilnic cu efortul fizic depus. Rămânerea la acelaşi regim alimentar din timpul cantonamentelor şi sistarea exerciţiului fizic poate duce la apariţia dezechilibrelor de greutate. Obezitatea nu este o problemă doar după vârsta retragerii. Studii recente arată o prevalenţă în creştere a obezităţii şi printre sportivii activi. De menţionat faptul că la această categorie de pacienţi nu trebuie luată în considerare calcularea IMC, ci a circumferinţei abdominale sau a procentului de grăsime din corp. Prezenţa obezităţii a fost, de asemenea, asociată cu cea a sindromului metabolic sau a insulinorezistenţei. Diabetul zaharat este o altă afecţiune cronică ce poate afecta sportivii. În cazul în care nivelurile de glucoză din sânge sunt monitorizate incorect în timpul perioadelor de exerciţiu, atleţii cu diabet zaharat pot suferi diverse urgenţe endocrine (hipoglicemie, hiperglicemie, cetoacidoză diabetică). Riscul cel mai mare apare la pacienţii cu diabet zaharat de tip 1 prin dezvoltarea hipoglicemiei sau a cetoacidozei. La diabeticii de tip 2 acesta este mai puţin pronunţat, în special la cei trataţi doar prin dietă. Pentru a atinge nivele de performanţă, aceştia trebuie să îşi coordoneze ingestia de carbohidraţi şi doza de insulină pentru a evita apariţia complicaţiilor. Un control bun al glicemiei se poate obţine prin reducerea cu 50-80% a dozei de insulină în funcţie de tipul, durata, intensitatea şi familiaritatea exerciţiului. Activitatea sportivă induce un profil lipidic superior faţă de cel a pacienţilor sedentari, în special cu privire la nivelurile de HDL. Există însă puţine studii care să diferenţieze clar beneficiul unei anumite discipline sportive.

Cuvinte cheie: medicina sportivă, exerciţiu fizic, obezitate, diabet zaharat, sindrom metabolic.

Introduction

Metabolism is an ongoing process through which the body gets energy from food. A metabolic disorder occurs whenever there are abnormal chemical reactions in the body.

It is now common knowledge that sport activity, practiced either as a professional or as a leisure activity, is a factor of harmonization and optimization of health. Practicing an intensive training program and participating in competitions causes changes in serum laboratory parameters and has effects on the body, health status and social life.

The benefits of regular exercise for healthy individuals are well established, and such benefits also exist in the case

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of athletes suffering from metabolic diseases. Nevertheless, there are few studies that challenge this relationship. One explanation may be that athletes constantly and carefully monitor their physical and chemical parameters, and depending on their values, they know when they can safely practice physical activities. The psychological impact of chronic diseases on life can also be improved. Practicing physical exercise reduces anxiety and increases self-confidence, which leads to an easier acceptance of the disease (Farrell, 2003).

Ending sports career and weight problems

As a physically active population group, athletes are usually perceived by the public as healthy and strong. Thus, they are not considered to be a category of individuals at risk for developing eating disorders. However, this misconception is why food behavior problems may be overlooked in athletes.

The end of a sports career, which is an important part of an athlete's identity and life, may be a difficult transition. When athletes retire from their professional career due to injury, retirement is even more difficult and has a serious impact on career, may cause income loss and negatively affect physical recovery. Research on the impact of athletes' retirement is limited. The results show that most often this is a stressful, challenging and demanding process (Hurley, 2014).

Athletes often face the problem of maintaining body weight after retirement from the sport. In addition to the aging factor, there are several reasons that cause weight gain after retirement. The lack of support from the National Sport Authorities may also contribute to mental and physical degradation (Suptu, 2012).

The first reason is the inadequacy between food behavior and the new lifestyle. The first year after withdrawal usually mostly affects the athlete's health. Weight gain occurs either through ingestion of previously prohibited food or the disappearance of the need to stay fit. Over time, muscles diminish and fat begins to grow.

The second major problem faced by athletes after retirement is the psychological need to relax mentally and physically, as they are no longer living by a strict schedule (both diet and exercise). Training camp fatigue and the rigor of a daily program leave a gap in the life of former athletes after retirement. Fortunately, such athletic breaks are not very long, as athletes become aware of the health problems which may arise. After a while, they try to adopt an exercise program and a diet according to their new lifestyle. Still, for athletes, returning to the gym is substantially more difficult than it is for untrained persons. Apparently, marital status plays an important role, as research shows that retired single athletes are more motivated to stay in shape than married people.

Cardiovascular risk in athletes

Cardiovascular disease is the first cause of mortality and morbidity in developed countries. The main cause of this disease is atherosclerosis, which is accelerated by exposure to certain risk factors.

Risk factors associated with cardiovascular disease include age, heredity, male sex, smoking, increased serum cholesterol, physical inactivity, metabolic syndrome, or just the presence of obesity and diabetes.

Those who practice high performance sports are perceived as healthy individuals due to their young age and intense daily physical activity. However, there are few studies that evaluate the correlation between the type of physical activity and the presence of cardiovascular risk in athletes. It has been noted that regular physical exercise does not necessarily prevent the development of obesity in athletes. The sports in which obese athletes are most frequently found are American football, golf, baseball, sumo and boxing (Borchers et al., 2009). Like in the case of the general public, for this particular category, the following factors should be examined: blood pressure (BP), body mass index (BMI), waist circumference, hip circumference, blood lipids, blood glucose (Muñoz et al., 2009). A more specific method than calculating the BMI is measuring abdominal circumference or the percentage of body fat (Borchers et al., 2009).

Trying to assess cardiovascular risk in young college athletes, Muñoz L. et al. noted in 2009 that of 135 athletes, more than a quarter were overweight, a fifth were prehypertensive, and a quarter had lower HDL levels than the recommended limit. This research shows that athletes are also prone to a high cardiac risk after retirement, when they cease daily physical activity.

Depending on the sport, Helzberg et al. (2010) noted that former American football players in the National Football League had an increased risk of cardiovascular disease and premature death compared to baseball players. These complications arose because of a higher prevalence of obesity, high serum cholesterol, left ventricular and atrial hypertrophy and metabolic syndrome in linemen compared to other types of players.

Further research is needed to assess cardiovascular risk in active athletes, in relation to physical activity corresponding to each sport, especially since there are many questions regarding cardiovascular risks in athletes (Borchers et al., 2009).

Endocrine changes in athletes

Practicing sports is recommended to anyone, especially if they suffer from diabetes (either type 1 or 2). Normal insulin production and action are essential for proper metabolic response to exercise and so, in this special category of athletes, complications can occur either because of the total lack of insulin secretion (type 1 diabetes) or because of deficient glucose absorption (type 2 diabetes).

In healthy persons, metabolic response to exercise consists of decreased insulin secretion by the pancreas. It is known that skeletal muscle has an important role in glucose uptake (especially during exercise) and that insulin is the main stimulator of glucose uptake by cells. Muscle contraction during exercise stimulates glucose uptake in muscle, even when insulin secretion is low. Thus, this decrease in insulin release during exercise has the role to prevent hypoglycemia (Farrell, 2003).

However, some sports pose greater challenges to diabetic athletes than to those without this disease:

- Unforeseen events during competitions may disrupt the plan of athletes regarding insulin dosage or carbohydrate

intake, which lowers performance.

- In winter sports, diabetics should consider the fact that insulin in the pump or that carried for injections may freeze.

- The insulin pump may be damaged in many contact sports (football, rugby, hockey, wrestling, etc.)

- To prevent potential damage to the retina, diabetic athletes practicing boxing, judo or karate should be closely monitored.

To avoid unpleasant situations, there are several steps to be taken before training:

a) Measurement of serum glucose concentration

- If glycemia is <5 mmol/l (90 mg/dl), it will be necessary to supplement carbohydrate intake.

- If glycemia is 5-15 mmol/l (90-270 mg/dl), carbohydrate supplementation is not mandatory.

- If glycemia is >15 mmol/l (270 mg/dl), it is recommended to postpone exercise and measure ketonuria.

- If ketone bodies are negative, exercise can be performed, and carbohydrate supplementation is not necessary.

- If ketone bodies are positive, it is recommended to administer insulin and delay exercise until they become negative.

b) Adequate determination of carbohydrate intake

- Before exercise, the intensity, duration and energy needs for sport can be estimated by consulting standard tables.

- Carbohydrate requirements can be assessed based on the fact that each gram of carbohydrate is equivalent to four calories.

- Diabetics should eat a meal 1-3 hours before training. This snack should contain about 15 grams of carbohydrates for 30 minutes of moderate intensity exercise.

- Drinks that contain simple carbohydrates and electrolytes are excellent to prevent hypoglycemia and plasma volume depletion during exercise.

c) Proper administration of insulin doses

- Insulin must be injected or the insulin pump must be adjusted approximately 1 hour before training.

- The dose should be reduced so that the largest increase in circulating insulin does not occur during training.

- It is recommended to avoid administration in the arm or leg to be involved in exercise (Farrell, 2003).

Daily or competition requirements may predispose athletes with diabetes mellitus to dangerous complications. A correct understanding of glucose metabolism during exercise, adequate nutrition, blood glucose control, medication and proper treatment of complications are the main aspects to be considered in the case of an athlete with diabetes. These patients must be followed up and treated by an expert team consisting of a physician, a trainer and a nutritionist (Macknight et al., 2009).

For example, hyperglycemia is an endocrine emergency that may occur in diabetic athletes. Drinking water in excess during intense exercise and sodium loss through sweating can dilute the blood sodium content. Thus, exertional hyponatremia may cause hyperglycemia (Chansky et al., 2009).

In healthy athletes and in athletes with type 2 diabetes, a decrease in normal serum insulin occurs during exercise, which allows carbohydrates and fats to be mobilized and used by muscles. In those with type 1 diabetes, this phenomenon does not occur because they cannot produce and therefore cannot reduce insulin levels. Athletes with type 1 diabetes mellitus have an increased risk of developing ketoacidosis or hypoglycemia (including that induced by the increased use of glucose during intense training). In type 2 diabetics, risk is less pronounced, especially in those treated only by diet (Kirk, 2009; Prager et al., 1993).

Glycosylated hemoglobin (HbA1c) is an indicator that determines long-term glycemic control. Its value is decreased in type 2 diabetics who practice sports regularly, also reducing the development of complications. Unfortunately, even if other metabolic markers can be improved by exercise, in patients with type 1 diabetes, the correlation of glycemic control with the HbA1c value is not possible (Farrell, 2003).

Lipid profile in athletes

Physical exercise is associated with a decreased risk of cardiovascular disease; this effect is due to a reduction of body fat and to an alteration of its distribution, as well as to changes in the lipids and enzymes involved. These changes are visible in both athletes and sedentary people (Cambri et al., 2006).

Lipoproteins are hydrophilic associations of proteins and lipids. Their main role is to transport lipids in tissues and blood. The outer envelope of lipoproteins is composed of a layer of phospholipids, containing free cholesterol and apolipoproteins. Inside, these contain triglycerides, cholesterol esters or fat-soluble vitamins.

The lipoprotein classes are the following (Table I):

Table I

Lipoprotein classes (1).

Indicator	CM	VLDL	LDL	HDL
Density (g/ml)	< 0.94	0.94-1.006	1.006-1.063	1.063-1.210
Diameter	6000-2000	600	250	70-120
Total lipids (wt %)	99	91	80	44
Triglycerides	85	55	10	6
Cholesterol esters	3	18	50	40
Cholesterol	2	7	11	7
Phospholipids	8	20	29	46

The apoprotein AI system comprises the class of HDL lipoproteins that plays a role in reverse cholesterol transport (RCT) and is the main class of lipoproteins with an antiatherogenic effect. Cholesterol released from peripheral tissues returns to the liver using HDL. Particles of phospholipids and apoAI take this cholesterol, and HDL3 particles result. These are converted to HDL2 under the action of LCAT (lecithin-cholesterol acyltransferase, activated by apoAI), which catalyzes the esterification of free cholesterol.

After this transformation, HDL2 can follow three pathways: it can be captured by the liver using SR-B1 (scavenger receptor B1), it may transfer cholesterol esters to LP containing apoprotein B100 (LDL, VLDL, IDL), a transfer catalyzed by CETP (cholesteryl ester transfer protein), or it may be captured by steroid hormone-producing endocrine cells, which present HDL receptors (Rader, 2006).

Dyslipidemia is characterized by an alteration of plasma lipoprotein concentrations, a strong predictor of chronic degenerative diseases. Numerous studies have explored the relationship between blood cholesterol and the occurrence of atherosclerotic disease. There is also evidence that treatment with HMG-CoA reductase inhibitors (statins) for the reduction of serum lipids helps both in the primary and secondary prevention of atherosclerotic disease. Changes in serum lipids related to the primary prevention of atherosclerotic disease are even more important in athletes, especially in those without obvious clinical manifestations.

It is known that the plasma level of high density lipoproteins (HDL) is inversely correlated with the development of cardiovascular risk. HDL has effects on antioxidant, antiinflammatory and antithrombotic activity, and the increase of serum HDL levels reduces the risk of atherosclerosis. The main protein component of HDL is apolipoprotein AI (apoA-I). Its serum level is also higher in trained athletes than in sedentary people. These data confirm the fact that lipid profile can be improved. Furthermore, the serum levels of different fractions can be modified depending on the sport (Lee et al., 2009). The prevalence of hypercholesterolemia (total cholesterol >200 mg/dl), hypertriglyceridemia (triglycerides >150 mg/dl) and low HDL (<45 mg/dl) is lower in athletes than in sedentary subjects. Athletes who practice endurance activities have 40-50% higher serum high density lipoproteins (HDL), 20-30% lower serum triglycerides (TG) and 5-10% lower low molecular weight lipoproteins (LDL) than people who do not practice sport (Reamy et al., 2004).

Exercise has effects not only on circulating HDL and LDL levels, but also on reverse cholesterol transport (RTC). This is a dynamic process that includes several steps, among which the removal of excess cholesterol from peripheral tissues, arterial walls or macrophages, and its delivery to the liver for excretion. Although epidemiological studies consistently show that HDL is inversely correlated with cardiovascular risk, serum HDL level is not an indicator for RTC. Olchawa et al. (2004) studied RCT in endurance-trained athletes compared to a group of physically active people. They found that a higher level of physical fitness was associated with increased HDL formation, indicating an increase in the efficiency of RCT. The reason for the higher HDL concentration in the trained individuals was the enhanced formation of HDL from apoA-I and cellular lipids (Olchawa et al., 2004) (Table II).

Table II

Parameters of lipid metabolism in athletes and normally active subjects (controls).

Parameter	Controls	Athletes	P
VO2 max (mL/min per kg)	38.8± 1.0	53.4 ±1.2	<0.001
BMI (kg/m2)	23.2 ±0.4	23.9 ±0.5	NS
Waist/hip ratio	1.00 ± 0.01	0.98± 0.01	NS
TC (mmol/L)	4.9± 0.1	5.2 ±0.2	NS
LDL (mmol/L)	2.9 ±0.2	3.2 ±0.2	NS
ApoB (mg/dl)	73.4 ±3.0	75.9 ±3.5	NS
TG (mmol/L)	1.1 ± 0.1	0.9 ±0.1	NS
HDL (mmol/L)	1.4 ±0.1	1.7 ±0.1	<0.001
ApoA1(mg/dL)	128 ± 3	145 ±2	<0.001
Prebeta1-HDL	37 ± 3	54 ± 4	<0.001
LCAT mass (µg/ml)	7.0 ±0.3	6.6 ±0.4	NS
LCAT activity (nmol/ml per h)	24.2 ± 1.4	29.8 ±1.2	< 0.005
CETP mass (µg/ml)	1.7± 0.1	2.0± 0.1	NS
CETP activity (nmol/ml per h)	73 ± 2	67± 3	NS
Cholesterol efflux (%)	16.2± 0.3	18.8 ±0.8	< 0.02
Cholesterol efflux per ApoA1 unit	0.13 ± 0.01	0.13± 0.01	NS

Mean ± SEM is shown
N = 25 athletes and 33 controls, except for cholesterol efflux studies when N = 9 athletes and 24 controls.

Various studies have compared serum HDL levels depending on the sport. Lee et al. (2009) studied the serum lipoprotein differences between runners, throwers, wrestlers, weightlifters, and a control group. Of these, runners had the highest antioxidant activity correlated with increased serum HDL levels. Using immunodetection, it was shown that wrestlers and runners had the highest apoA-I level and the lowest apoA-II level in the HDL fraction. In these athletes, electron microscopy also evidenced the largest HDL2 particles.

These results suggest that endurance-trained athletes, namely runners, have the most effective lipid profile, the best lecithin-cholesterol acyltransferase (LCAT) and paraoxonase 1 (PON1) activity, low cholesteryl ester transfer protein (CETP) activity, increased serum apoA-I levels, and the largest HDL2 particles. The results show that the decrease of oxygen reserve during exercise may improve the function and quality of HDL (Lee et al., 2009) (Table III).

As with sedentary patients, in athletes it is preferable to treat dyslipidemia with statins. There are some concerns about the use of this class of drugs in athletes. For instance, the side effects that may occur with this therapeutic class are muscle cramps and pain. Increased levels of creatine

Table III

Serum parameters in athletes and references.

	Age (yr)	BMI (kg-m^2)	TC (mg/dl)	HDL-C (mg/dl)	HDL-C/TC (%)	TG (mg/dl)	LDL (mg/dl)	GOT (U/L)	GPT (U/L)
Running (1) (n = 10)	24 ± 3.9	19.7 ± 1.2a, (3)	149 ± 21a	52 ± 5a	36 ± 6a	56 ± 17a	88 ± 16a	22 ± 4a,b	13 ± 4a
Throwing (2) (n = 10)	20 ± 0.0	27.6 ± 2.5b	142 ± 18a	44 ± 7b	31 ± 6b	79 ± 37a,b	82 ± 17a	25 ± 5a	15 ± 5a
Wrestling (n = 10)	20 ± 0.4	22.9 ± 1.8a	155 ± 23a	58 ± 6a	38 ± 3a	67 ± 18a	84 ± 16a	19 ± 3b	9 ± 2b
Lifting (n = 8)	21 ± 0.5	29.3 ± 3.8b	141 ± 10a	44 ± 13b	31 ± 8b	54 ± 19a	79 ± 6a	29 ± 10a	19 ± 10a
Reference (n = 14)	22 ± 3.5	21.5 ± 2.7a	172 ± 22b	42 ± 5b	24 ± 2c	84 ± 20b	98 ± 22b	26 ± 10a	20 ± 8a

TC=total cholesterol; GOT=glutamic oxaloacetic transaminase; GPT=gamma-glutamic pyruvic transaminase; HDL=high density lipoproteins; LDL=low density lipoproteins; TG=triglycerides
(1) Middle distance (1500 m), (2) Hammer throwing; (3) Means are not labeled by a common letter (a, b and c) and are significantly different between groups (P<0.05)

kinase (CK) can normally be observed during therapy. This is a worrying fact for athletes because, independently of statin therapy, they may have a high serum level of this enzyme after strenuous exercise, which can lead to muscle breakdown. Dehydration also occurs frequently in athletes, and can increase CK and induce rhabdomyolysis. This phenomenon has been frequently observed among athletes and is commonly associated with statin treatment. There are no clear studies that quantify the effect of statins during intense exercise. However, it is recommended to stop hypolipidemic therapy a week before endurance events (e.g. marathon), because dehydration in competitions increases the risk of rhabdomyolysis (Reamy, 2008).

When evaluating cardiovascular risk in an athlete, it is important to expect a better lipid profile compared to that of the baseline population and to take into account any supplements ingested to increase performance. Even though risks may arise, possible increases in serum lipids should be treated, while following the recommendations of statin therapy (Reamy, 2008).

A particular subject is that of women who practice high performance sport, as these female athletes often suffer from menstrual cycle disorders. Due to the small amount of calories ingested daily, in relation to energy expenditure, these women have a higher risk of developing eating disorders, osteoporosis and stress fractures. In studies comparing amenorrheic athletes to athletes with normal and regular menstrual cycles, it was found that those who had an abnormal menstrual cycle had higher TG and LDL levels. Unfortunately, there are no studies evaluating cardiovascular risk in this population (Reamy, 2008).

Conclusions

1. Former athletes gain weight and lose muscle mass especially because they do not adapt their diet to their new lifestyle.

2. Regular exercise does not provide protection against cardiovascular risk in high performance athletes. The sports in which obesity, metabolic syndrome and insulin resistance occur more frequently are American football, golf, baseball, boxing and sumo.

3. People with diabetes can achieve high levels of performance in sport. To compete without suffering severe changes in blood glucose concentrations, athletes must learn to coordinate carbohydrate intake and insulin administration.

4. A better glycemic control is achieved by reducing the pre-exercise insulin dose by 50-80% depending on the type, duration, intensity and familiarity of exercise.

5. The benefits of regular exercise in patients with diabetes are similar to those in people without this pathology (only when there is good glycemic control). The benefits of sports overcome potential problems caused by metabolic changes during exercise, as long as there is an adequate screening.

6. An intensive training program or participation in high-performance sport competitions may induce changes in the levels of serum laboratory parameters.

7. Sports activities induce a higher lipid profile compared to sedentary lifestyle.

8. Athletes who practice aerobics or short-distance running have higher HDLC levels. Swimmers, hammer throwers and wrestlers have lower triglycerides and total cholesterol levels.

9. It is recommended to stop hypolipidemic treatment a week before endurance events (e.g. marathon), because dehydration in competitions can increase the risk of rhabdomyolysis.

Conflicts of interest

Nothing to declare.

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Exercise in perimenopausal women
Exercițiul fizic la femeile în perimenopauză

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Abstract

Perimenopause is a normal period, representing the women's transition years from the reproductive period to menopause. The main physiological changes are the irregularity of the menstrual periods and the increase of FSH serum levels. Pathomorphologically, the perimenopausal endometrium can present non-proliferative lesions (endometritis, endometrial metaplasia) or proliferative benign or malignant lesions.

The clinical manifestations of perimenopause include various less severe physical and psychological symptoms (hot flashes, mood swings) or severe symptoms, known as premenstrual syndrome.

Perimenopause treatment with nonsteroidal anti-inflammatory drugs or hormonal therapy can cause complications; the search for various alternative therapies to improve the quality of life is continuous.

Exercise is one alternative therapy for perimenopausal symptoms: physical activity may be an effective method of preventing or attenuating specific perimenopausal symptoms.

Key words: perimenopause, therapy, exercise.

Rezumat

Perimenopauza este o perioadă normală a anilor de tranziţie la femei, de la perioada de reproducere la menopauză. Principalele modificări fiziologice sunt neregularitatea perioadelor menstruale şi creşterea nivelurilor serice de FSH. Morfopatologic, endometrul din perimenopauză poate prezenta leziuni nonproliferative (endometrită, metaplazie endometrială) sau leziuni proliferative benigne sau maligne.

Manifestările clinice ale perimenopauzei includ diferite simptome, mai puţin severe, fizice şi psihice (bufeuri, schimbări bruşte de dispoziţie) sau simptome severe (sindromul premenstrual).

Tratamentul în perimenopauză cu medicamente antiinflamatoare nesteroidiene sau terapia hormonală pot provoca complicaţii; are loc astfel o căutare continuă de diverse terapii alternative, pentru a îmbunătăţi calitatea vieţii.

Exerciţiul reprezintă o terapie alternativă pentru simptomele din perimenopauză: activitatea fizică poate fi o metodă eficientă de prevenire sau atenuare a simptomelor specifice perimenopauzei.

Cuvinte cheie: perimenopauză, terapie, exerciţiu.

Introduction

Perimenopause, also called menopausal transition, is the term used to describe the women's transition years from the reproductive period to menopause. This period covers the years before and after the last menstrual period (this latter period can only be established in retrospect).

In this interval the woman's body makes a natural shift from more or less regular cycles of ovulation and menstruation toward permanent infertility, or menopause (Jetley et al., 2013). The period lasts 4-7 years and the average onset age is 47 years (McKinlay et al., 1992). In clinical practice and in the literature, the term menopausal transition is preferred (Soules et al., 2001).

In 1990, there were an estimated 467 million women in this state and this number is expected to increase to 1,200 million by the year 2030 (***, 1996).

Pathophysiology, pathomorphogy and clinical manifestations of perimenopause

From a medical standpoint, perimenopause defines the period of time when menstrual periods start to become irregular and serum FSH levels increase, until 12 months have passed since the last menstruation. It is worth noting that hormonal changes underlying the period of perimenopause occur gradually and therefore, the possible effects of perimenopause can occur before and continue after the time defined above.

Endometrial changes are most commonly encountered in perimenopause, due to the increased receptivity of the endometrium toward changes in endocrine balance, compared to other genital structures.

Histological changes in perimenopausal endometrium

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can be classified as non-proliferative lesions (endometritis, endometrial metaplasia) or proliferative lesions: benign, non-invasive (endometrial polyps, endometrial and stromal hyperplasia) or malignant, invasive (endometrial cancer) (Huston & Lanka, 2001).

Dysfunctional uterine bleeding is a clinical term meaning that bleeding is not due to pathological organic lesions; endometrial curettage plays an important role in excluding organic uterine disorders (Albers et al., 2004; Johnson, 1991). In perimenopausal women, atypical uterine bleeding is most commonly dysfunctional in origin (Jetley et al., 2013). Also, there is a high prevalence, incidence, and spontaneous rate of resolution of intermenstrual and postcoital bleeding in naturally menstruating women during the perimenopausal years (Shapley et al., 2013).

Women are vulnerable to various physical and psychological symptoms affecting their quality of life (Nayak et al., 2014). Frequently reported symptoms fall into several categories, including physical disturbances such as hot flushes, psychological complaints such as mood swings, and other changes that may impair personal or social interactions and diminish the overall quality of life (Speroff, 1999).

The early menopausal symptoms are hot flashes, night sweating, anxiety, and irritability (Assadi, 2014). Vasomotor symptoms (VMS) (hot flashes, night sweats) are experienced by most women during the menopause transition (Gold et al., 2006). Several other symptoms, including vaginal dryness, depression, headache, and sleep disturbance, can occur more frequently in this period (Li et al., 1999). Also, social changes can be present that may affect the quality of life (Kumari et al., 2005). Sleep disturbance is an important change in menopause because it affects the quality of life and can lead to other conditions such as depression (Moreno-Frías et al., 2014).

Severe symptoms, known as premenstrual syndrome, include physical symptoms (breast tenderness, abdominal bloating, nausea, and headache), as well as a variety of emotional symptoms, including depression, anxiety, poor concentration, and irritability (Chung, 2014). During perimenopause, premenstrual syndrome symptoms increase in severity and duration (Huston & Lanka, 2001).

Perimenopausal women can experience rapid bone loss at skeletal sites with both cortical and cancellous bone, increasing the prevalence of osteoporosis following menopause (Khan et al., 2014).

The incidence rate of cardiovascular diseases (CVD), the leading cause of death in women, increases after the age of 50 (Lloyd-Jones et al., 2010), when most women are transitioning to menopause. This suggests a possible link between the menopausal transition and the development of CVD. Whether it is menopause or age related-changes that are associated with the increase in the incidence rate of CVD remains an active research area. Studies show that earlier age at menopause (Hu et al., 1999), premature menopause, and surgically induced menopause (Rivera et al., 2009; Lokkegaard et al., 2006) are significant risk factors for CVD, suggesting an effect of menopause on CVD risk that is independent of age.

Cardiovascular risk starts to increase during the menopausal transition. For example, the carotid artery undergoes adaptation that is reflected in adverse changes in intima-media thickness and adventitial diameter. These changes may have an impact on the vulnerability of the vessel to disease in older women (El Khoudary et al., 2013).

The occurrence of low to severe problems during perimenopause or postmenopause is positively associated with overweight/obesity (Sayón-Orea et al., 2014). Obesity and overweight are associated with many comorbid conditions and are major contributing factors to cardiovascular disease. The increased proportion of overweight and obese people in Western societies has been largely attributed to behaviors that include sedentary lifestyle and dietary excess. Women are at particular risk during perimenopause, when hormones change and metabolism slows (Zargarian et al., 2014).

Findings from large cohort studies have shown higher adiposity linked to more VMS (Gold et al., 2006). It has been suggested that associations between adiposity and VMS may be menopause stage-dependent (Hyde Riley et al., 2004), with body fat possibly acting as a risk factor for VMS early in the menopause transition (Thurston et al., 2008), and as a protective factor later (Thurston et al., 2011). Notably, findings also indicate stage-dependent associations between body fat and estradiol (E2), with a higher body mass index (BMI) associated with lower endogenous E2 early in the transition, but higher E2 later in the transition (Randolph et al., 2011; Wildman et al., 2012; Freeman et al., 2010). An adverse adipokine profile is associated with more VMS, particularly early in the menopause transition (Thurston et al., 2013).

Work may be a risk factor for early symptoms of menopause; a stressful job, such as clinical work compared to office work, can cause disorders (Assadi, 2014).

Treatment of perimenopause

It is best to start with nonsteroidal anti-inflammatory drugs (NSAIDs), which effectively reduce heavy menstrual bleeding. Perimenopausal women with heavy bleeding uncontrolled by NSAIDs, or other forms of dysfunctional uterine bleeding, can benefit from continuous, combined hormonal therapy with estrogen and progestin; hormonal therapy with estrogen and a cyclical progestin; or a cyclical progestin alone. Intrauterine devices (IUDs) containing levonorgestrel also effectively reduce bleeding and may avoid surgical intervention. If medical management fails, endometrial ablation offers an effective, minimally invasive alternative to hysterectomy (Chen et al., 2009).

Menstrual bleeding problems were the major determinant of elective hysterectomy (Gibson et al., 2011), but hysterectomy should be considered only when medical management or endometrial ablation fails (Chen et al., 2009).

Considering that hormonal therapy can cause complications including malignancy (risk of neoplasia of the endometrium and possibly the breast) (Hulley et al., 1998; Rossouw et al., 2002; Beral, 2003), the search for various alternative therapies to improve the quality of life is continuous. There are studies that have proved the effectiveness of yoga therapy in managing the distressing perimenopausal symptoms (Nayak et al., 2014).

Some women use self-care strategies, including life-style modifications, over-the-counter preparations and comple-

mentary and alternative therapies, such as herbal preparations, exercise programs and relaxation techniques. Relaxation techniques consist of a group of behavioral interventions. They are considered relatively harmless, but their effectiveness in treating vasomotor symptoms and sleep disturbances remains debatable (Saensak et al., 2014).

Diet in perimenopausal women

Dietary patterns rich in whole grains, fruit, vegetables, nuts, and omega-3 fatty acids and low in refined grains and saturated and *trans* fats have been suggested to offer a significant protection against heart disease (Hu et al., 2002). One such dietary pattern - the Mediterranean diet - was first shown to benefit heart health; a Mediterranean-style dietary pattern was inversely associated with insulin resistance and metabolic syndrome (Rumawas et al., 2009). Also, this healthy dietary pattern is inversely associated with overweight/obesity in perimenopausal and postmenopausal women (Sayón-Orea et al., 2014).

Phytoestrogens ("plant estrogens") are heterocyclic phenols found in many plant foods. There are three major categories: isoflavones, coumestans, and lignans. Lower rates of VMS have been reported in most studies, including randomized trials, in postmenopausal women using soy isoflavone supplements (Ishiwata et al., 2009; Jenks et al., 2010). However, the effect has not shown a clear-dose response relation, has largely not been reported for perimenopausal women (as noted in the position statement), even though perimenopausal women have rates of VMS at least as high as those of postmenopausal women (Gold et al., 2006), has only involved supplements and not dietary isoflavones, and has largely only been related to reducing VMS in women who have them, rather than preventing newly developing incident VMS. Some studies suggest that a clinically significant or large effect is improbable.

Positive effects of exercise in perimenopausal women

One alternative therapy is exercise, which is one of the most commonly used alternatives for perimenopausal symptoms (Daley et al., 2006). Physical activity is associated with many health benefits, including a decreased risk of cardiovascular disease, metabolic syndrome, obesity, cancer, osteoporosis, and depression (***, 2008).

Physical activity may be an effective way of preventing or attenuating perimenopause-related symptoms, and it has been shown to improve the quality of life in menopausal women (Kim et al., 2014). Several previous studies have shown that physical activity significantly reduces perimenopausal symptoms (Villaverde-Gutiérrez et al., 2006; Gold et al., 2000), but other studies have found that physical activity improves general symptoms such as physical and psychosocial symptoms, although it does not influence specific symptoms such as vasomotor and sexual symptoms (McAndrew et al., 2009; Haimov-Kochman et al., 2013; Slaven & Lee, 2007; Mirzaiinjmabadi et al., 2006). A meta-analysis reported inconsistent results regarding the effect of physical activity on perimenopausal symptoms, with mixed results being observed for different types of symptoms (Sternfeld & Dugan, 2011). In addition, engaging in habitual physical activity at least 60 minutes/day showed favorable effects on the prevention of perimenopausal symptoms, and a high total physical activity level was also associated with less climacteric symptoms (de Azevedo Guimarães & Baptista, 2011; Skrzypulec et al., 2010). A previous study in multiethnic groups of midlife women showed that the specific types of women's physical activity influenced the prevalence and severity of menopausal symptoms, which differed by ethnicity (Chang et al., 2013).

A moderate level of physical activity is associated with reduced psychosocial and physical symptoms in perimenopausal women (Kim et al., 2014).

Physical activity and VMS

In recent years, a number of intervention studies have tested the effect of physical activity (generally aerobic exercise and most often walking) on VMS. In several studies, physical activity is associated with fewer VMS (Gold et al., 2006; Gold et al., 2004), but there are also studies which report increased VMS with higher levels of activity (Romani et al., 2009; Whitcomb et al., 2007; Aiello et al., 2004).

Another study showed that 12 weeks of moderate-intensity aerobic exercise do not alleviate vasomotor symptoms, but may result in small improvements in sleep quality, insomnia, and depression in midlife sedentary women (Sternfeld et al., 2014).

Several mechanisms can contribute to the effects of exercise on VMS:

1) Stress seems to be a precipitating factor in hot flashes, which may result from an imbalance in the autonomic nervous system (Berntson et al., 1997; Watkins et al., 1998). The shift in that balance as a result of exercise training is a potential mechanism by which exercise could reduce the occurrence of VMS.

2) A single sustained bout of vigorous exercise releases endogenous opioids, particularly β-endorphins (Boecker et al., 2008; Harber et al., 1997; Heitkamp et al., 1996). Endogenous opioids are biochemically similar to exogenous opiates and have diverse physiological effects, including temperature regulation (hypothermia), decreased sensitivity to pain, and decreased heart and respiratory rate, all of which could be responsible for a decrease in either frequency or bother of VMS (Sternfeld & Dugan, 2011). Exercise helps hot flashes by increasing endorphins in the brain. A decrease in brain opioids is associated with inactivity and more hot flashes, so more exercise and increased endorphins means less hot flashes. Women who exercise aerobically 3 h/week have far fewer flashes than women who are sedentary (Huston & Lanka, 2001).

3) Physical activity could "distract" women from attention on their hot flashes by habituating them to the feelings of increased heat and heat dissipation through sweating that accompany increases in physical effort and associating those feelings with behaviors that may make them feel good in other ways. This is similar to the "distraction" theory of how physical activity improves mental health and the sense of well-being (Leith, 1994).

Physical activity and premenstrual syndrome

Several studies suggest an inverse relation between higher levels of physical activity and lower rates of somatic complaints and fewer difficulties with sleep (Collins & Landgren, 1995; Wilbur et al., 2005). There is

also considerable evidence that physical activity reduces feelings of bodily pain in general.

Proper diet and exercise can diminish physical and emotional symptoms of premenstrual syndrome (Huston & Lanka, 2001).

Aerobic exercise increases hemoglobin, hematocrit, red cell count and platelet count, and decreases the levels of prolactin, estradiol and progesterone, resulting in an improvement of fatigue, impaired concentration, confusion and most premenstrual symptoms (El-Lithy et al., 2014).

Physical activity and mood/stress control and sleep quality

Another significant benefit of regular physical activity is enhanced mental health, including protection against the onset of depressive and anxiety symptoms and disorders, reductions in existing symptoms of depression, anxiety and distress, and enhanced feelings of well-being (***, 2008).

Stepping up circulation and increasing oxygen to every cell improve the capacity to handle stress. Beta-endorphins are released during vigorous exercise, producing a relaxed and ease state afterward (Huston & Lanka, 2001).

Regular exercise reduces depression and is a practical means of handling the emotional stress of everyday living (Benson & Stuart, 1993).

Also, exercise helps to sleep soundly, because the body is more tired. However, exercise must be avoided just before bed time, because the stimulation may actually prevent getting to sleep (Huston & Lanka, 2001).

Physical activity and changes in body size and composition/weight control

Changes in body composition (increased fat mass and decreased lean mass) and in fat distribution (from a more gynoid pattern to a more android pattern) do seem to be influenced by the menopausal transition, as well as by chronological aging (Ley et al., 1992; Zamboni et al., 1992).

Physical activity seems to minimize weight gain and changes in body composition and fat distribution experienced at midlife, and might attenuate the rapid bone density loss that occurs. Given these benefits, clinicians treating perimenopausal women should encourage their patients to follow guidelines for physical activity (≥150 minutes a week of moderate-intensity activity) (Sternfeld & Dugan, 2011).

The mechanisms through which physical activity may attenuate the impact of both age and menopause on the change of weight, body composition, and fat distribution include:

1) More active individuals tend to be leaner than sedentary individuals at any given point in time (DiPietro, 1995), which means that active midlife women have an advantage as they enter the menopausal transition in terms of starting out with a lower BMI, lower fat mass, greater lean mass, and less central adiposity.

2) Physical activity may slow the rate of change of weight, both with menopause and over time. Although not entirely preventing weight gain with age, it may protect against the development of obesity (Sutton-Tyrrell et al., 2010). Compared with those women engaging in a level of physical activity approximating the current recommendations for general health (150 minutes a week of moderate-intensity activity) (***, 2008), less active women had significantly greater amounts of intraabdominal fat, regardless of menopausal status, but did not differ in terms of the level of subcutaneous abdominal fat.

Exercise speeds the metabolic rate and burns calories. Exercise builds muscle, the most biologically active tissue; a larger lean body mass will increase the resting metabolic expenditure (RME). RME means 60-75% of the calories burned every day (Leibel et al., 1995).

If exercise is combined with diet, it becomes unnecessary to severely limit or restrict the diet. Nutritious food and adequate calories must be included, only eating them with both hands should be avoided (Huston & Lanka, 2001).

Physical activity and cardiovascular diseases

Exercise improves several cardiovascular risk factors:

- It lowers blood pressure
- Lowers total cholesterol, bad LDL, and triglyceride levels (independent risk factor for women) and increases good HDL levels
- Reduces the risk of blood clots by decreasing platelet adherence and increasing fibrinolysis factors
- Lowers insulin levels, by burning glucose (an increased insulin level for a long time promotes arterial plaque formation and high blood pressure)
- Improves the strength and the pumping efficiency of the myocardium. A fit heart can have up to 36000 beats/day fewer than an unfit heart (Reichman, 1996).

Physical activity and intestinal function

Less constipation results from regular exercise, because the intestinal tract is stimulated, along with the rest of the body. Physical activity stimulates digestion and a more complete absorption of nutrients (Huston & Lanka, 2001).

Physical activity and bone density

Regular physical activity is among the primary determinants of bone mineral density (BMD) and is a key contributor to overall musculoskeletal health, because of the responsiveness of bone to the mechanical forces that physical activities place on it (***, 1995). Both weight-bearing endurance activities, such as walking and running, and resistance exercises elicit this response, especially at the lumbar spine and femoral neck (Kelley, 1998; Palombaro, 2005; Martyn-St James & Carroll, 2006). Although the increase in BMD observed in exercise intervention studies in response to physical activity is modest (about 1%-2%), animal studies have shown that this is accompanied by a large increase in the resistance of bone to fracture (***, 2008).

Some studies also suggest that maintenance of regular physical activity over time results in attenuated bone loss, compared with reduced physical activity or consistently sedentary behavior (Morseth et al., 2010; Rikkonen et al., 2010).

Exercise has a more beneficial effect in perimenopausal women in building bone, than after they reach menopause; after menopause, exercise mainly works to keep the bone that they already have (Huston & Lanka, 2001).

Physical activity and brain changing and longevity

Physically fit people are protected from several central nervous system changes that have traditionally been thought to be due to aging. Exercise increases neurotrophin levels, the ability to process and retain new information, the physical reaction time. These abilities are best protected

with complex physical activities such as aerobic dancing, racquet sports, and swimming; the ideal activity for brain improvement is one that also involves some decision making during exercise (Huston & Lanka, 2001).

Regular exercise can prolong life: death rates from all causes are reduced by 44% in women and men who exercise regularly; this includes heart diseases, cancer and even accidents. The reduction in heart attack is 50%.

Physical activity and cancer risk

Cancer, particularly breast cancer, whose incidence rate increases after menopause, relative to premenopause, is another adverse outcome relevant to perimenopausal women that may be positively influenced by regular physical activity. A large body of observational studies suggests that women who are regularly active have a 25% to 30% lower risk of developing postmenopausal breast cancer than women who are inactive (Sternfeld & Lee, 2009). There is also a reduction in risk for premenopausal breast cancer, although the magnitude is less (about 20%-25%) (Sternfeld & Lee, 2009). In addition, a growing body of literature suggests that physical activity after a breast cancer diagnosis and treatment is associated with lower rates of recurrence (Holmes et al., 2005) and a lower risk of all-cause mortality (Sternfeld et al., 2009; Irwin et al., 2011).

Potential mechanisms that may account for these observations include lower levels of circulating endogenous hormones, such as estrogen, sex hormone-binding globulin, and insulin-like growth factors, better maintenance of energy balance, and enhanced immune function (McTiernan et al., 1998; Lee, 1995).

Former women athletes who continue to exercise have a 50% decreased incidence of breast cancer, and a 60% decrease in cancers of the cervix, ovaries, uterus, and vagina (Frisch et al., 1987).

Finally, there is increasing evidence that physical activity enhances the overall quality of life in the population as a whole, as well as in patient populations, such as breast cancer survivors (Mandelblatt et al., 2011).

Fitness plan for perimenopausal women

The selected type of plan must be an exercise plan that will realistically fit into the person's life, based on the goals set, age, and the current level of fitness. The goals that can be considered are:

- Cardiovascular fitness
- Weight control
- Muscular strength
- Improved flexibility
- Coordination and balance
- Osteoporosis prevention
- Better brain functioning
- All of the above.

The exercise plan must be enjoyed and regarded as a new part of life, not as a temporary inconvenience (Huston & Lanka, 2001).

The exercise plan

Since the 1980s, the recommendations of most fitness experts have been to exercise 3-4 times/week, at a level that keeps the heart within a specified target zone continuously for 30 to 60 minutes at a time. The formula calls for aerobic conditioning, muscle strengthening, and flexibility exercises (Pollack & Froelicher, 1990), but takes a lot of planning to incorporate it into a busy life.

According to a slightly different approach, acceptable physical fitness could be accomplished by moderate-intensity physical activity carried out for 30 minutes/day; in addition, the activity does not need to be continuous. With 30 minutes of exercise accumulated in 8-10 minute segments every day, a person can become moderately fit. It is necessary to incorporate activities that burn 200 calories/hour, for a total of 30 minutes.

Brisk walking on level ground, cycling under ten miles an hour, using a power lawn mower, general house cleaning, playing golf, all burn 4-7 calories/minute. More strenuous activities, such as walking uphill, moving furniture, cycling over ten miles an hour, using a hand mower, burn over 7 calories/minute. Everything counts, cycling to work, walking briskly to lunch, using the stairs instead of the elevator, 3-10 minute events performed at about the same pace as brisk walking (Huston & Lanka, 2001).

Exercises for perimenopausal women

a) Aerobic conditioning

Aerobic exercise means systematic physical activity designed to increase oxygen consumption. The increase of aerobic capacity (the amount of oxygen processed in a given amount of time) improves the functioning of the respiratory and cardiovascular systems, and increases muscle tone. Aerobic activity involves the body's large muscles, speeds up the metabolic rate, increases the heart rate, delivers more oxygen to every cell in the body, burns calories. Aerobic capacity is the best measure of the body's physical fitness.

Aerobic activity can be anything from running to dancing to climbing stairs to raking leaves. The choice of activity should be based on the current level of fitness, on how it fits into the lifestyle, and the fitness goals established.

A convenient way to track individual progress is to notice that it takes more aerobic activity to keep the heart rate in the 60 to 80% target range. Beginners should start in the lower part of the target heart range and work up gradually to the 80% level, but not exceed the upper limit (Huston & Lanka, 2001).

b) Muscle strengthening

Stronger muscles in perimenopausal women protect from joint and tendon injuries, increase the ability to burn calories, control weight, and improve bone density. Stronger muscle leads to being more agile and graceful, to having a better posture and a confident gait, and to fewer clumsy accidents.

A muscle is strengthened by contraction against resistance, some form of weight-bearing activity. The majority of aerobic exercises (walking, jogging, dancing, step climbing, and so on) require using lower body muscles; to acquire upper-body muscle strengthening, hand-held weights must be used during these activities.

Isometric exercise (active muscle contraction against steady resistance), elastic resistance, and body-weight resistance (push-ups, pull-ups) are also effective for muscle strengthening. Swimming is great for upper body training, and is fantastic aerobic work.

c) Stretching exercises

Stretching exercises promote flexibility, improve the

posture and help relieve back pain. A stretch should be sustained for about 20 seconds to be effective. The muscles must also be "warmed up" before stretching, to avoid injury. Stretching the muscles at the conclusion of the exercise routine, while they are still warm, will contribute to being supple and prevent post-exercise soreness.

Yoga is an excellent method for improving and maintaining flexibility, especially hatha yoga meaning physical yoga (Huston & Lanka, 2001).

Components of an ideal workout

There are four components:

1) Warm-up and stretching – is an important part of exercise routine, especially for midlife, and if a person has been sedentary, it helps avoiding injuries. Once the heart rate has increased or a slight sweat has been induced, the stretching exercises must be done, to get the muscles ready for increased range of motion and stepped-up activity.

2) Aerobic workout – can be any type of activity that gets the heart rate into the desirable range for age and the physical fitness level.

3) Muscle strengthening – includes good exercises to add after aerobic workout, when muscles are warm and supple. Ideally, they should include all major muscle groups. Alternating these exercises with days without aerobic work can add some variety and prevent the boredom of the exercise program.

4) Cool-down and stretching – has an equal importance to the warm-up. A gradual slowdown of the heart rate allows the increased blood flow to the muscles and skin to subside. This is an ideal time to do some more stretching exercises to prevent muscle stiffness.

Caution: avoid cold shower after exercising (this puts a huge strain on the heart by constricting the skin blood vessels), and also wait to cool before using a sauna (heat draws more blood into the skin and this may result in fainting) (Huston & Lanka, 2001).

Conclusions

1. Wellness involves conducting one's life in a fashion that decreases the chance of diseases and enhances the verve for living.

2. Good nutrition, a healthful diet and exercise have a profound influence on the second half of a person's life.

Conflicts of interest

Nothing to declare.

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Melatonin and exercise
Melatonina şi efortul fizic

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Abstract

Melatonin is the major hormone of the pineal gland which can influence the sleep-wake cycle. It is a highly lipophilic molecule able to prevent oxidative stress.

Exercise has been shown to affect plasma melatonin levels in humans and rodents. Plasma melatonin is increased during acute exercise sessions and can increase also after prolonged exercise. Melatonin concentration is an established marker of human circadian rhythmicity and physical activity is capable of inducing phase shifts in human circadian rhythms. Exercise-enhanced melatonin levels have a beneficial effect in several clinical conditions.

The melatonin administration confers protection against the oxidative damage caused by the severe oxidative stress imposed by exercise and may improve lipid profiles and exercise ability.

Key words: exercise effect, melatonin level, melatonin supplementation, exercise capacity.

Rezumat

Melatonina este hormonul major al glandei pineale, care poate influenţa ciclul somn-veghe. Este o moleculă foarte lipofilă, capabilă să prevină stresul oxidativ.

S-a demonstrat că efortul fizic afectează concentraţiile melatoninei plasmatice la om şi rozătoare. Nivelul melatoninei plasmatice a crescut în timpul sesiunilor de antrenament acut şi poate creşte, de asemenea, după un exerciţiu prelungit. Concentraţia melatoninei este un marker cunoscut pentru ritmul circadian uman, iar activitatea fizică este capabilă să inducă schimbări de fază în ritmul circadian uman. Concentraţiile crescute de melatonină induse de exerciţii au un efect benefic în mai multe condiţii clinice.

Administrarea melatoninei conferă protecţie împotriva leziunilor oxidative cauzate de stresul oxidativ sever indus de efortul fizic şi poate îmbunătăţi profilul lipidic şi capacitatea de efort.

Cuvinte cheie: efectul efortului, nivelul de melatonină, suplimentarea cu melatonină, capacitatea de efort.

Melatonin synthesis and properties

Melatonin, N-acetyl-5-methoxytryptamine, is the major hormone of the pineal gland, although it has also been detected in other tissues.

Melatonin transmits information regarding the light-dark cycle, and retinal light exposure results in a suppression of melatonin (Van Cauter & Tasali, 2011). Melatonin can influence the sleep-wake cycle, by a sleep-promoting effect.

The factors influencing the secretion of melatonin are: the temporal variations of hormone secretion from the hypothalamic-pituitary axis in particular (Yun et al., 2005); environmental stressor agents (Yun et al., 2005); thermal gradients (Yun et al., 2005; McLellan et al., 2000); age (Vingradova et al., 2007); non-ionizing radiation (Reiter & Richardson, 1992); factors that alter sympathetic tone (Tannenbaum et al., 1989); exercise.

Melatonin and the oxidant/antioxidant balance

Melatonin is a highly lipophilic molecule that crosses cell membranes easily to reach subcellular compartments, including mitochondria, where it seems to accumulate in high concentrations and is able to prevent oxidative stress (Barbosa dos Santos et al., 2013).

Melatonin plays a direct primary protective role in oxidative stress, as a direct scavenger of hydroxyl radical ($^{\bullet}HO$) and superoxide anion radical ($O_2^{\bullet-}$), and also a secondary, indirect role, through the stimulation of glutathione peroxidase (GSH-Px) and superoxide dismutase (SOD), and through the inhibition of lipid

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peroxidation (Tache, 2001) and nitric oxide synthase (NOS) (Dejica, 2001).

Melatonin can maintain blood pressure and cardiac catalase activity (Barbosa dos Santos et al., 2013).

Studies have demonstrated its protective role against oxidative damage induced by drugs, toxins, and different diseases (Molpeceres et al., 2007).

Melatonin can also be pro-oxidant in concentrations below 0.25 mM in vitro (Ianas et al., 1991, cited by Dejica, 2001).

Effects of exercise on melatonin levels

Researches on animals

Swimming depresses nighttime melatonin content without changing N-acetyltransferase activity in the rat pineal gland. The lack of change in the activities of the enzymes involved in melatonin synthesis and the contents of two melatonin precursors suggests that swimming depresses pineal melatonin content by enhancing melatonin efflux from the gland (Troiani et al., 1988).

Researches in humans

a) Plasma melatonin levels

- Short-term exercise

Short-term exercise has been shown to acutely affect plasma melatonin levels in healthy humans (Ronkainen et al., 1986; Carr et al., 1981): after a long-distance race, the concentration of melatonin was significantly increased after the competition (Ronkainen et al., 1986); in the study, after serial acute submaximal exercise tests performed during the course of a two-month progressive endurance training program, plasma melatonin increased during all exercise sessions and declined towards baseline values when re-measured thirty minutes after completion of each exercise (Carr et al., 1981). Also, in another study, melatonin levels were higher during exercise (aerobic exercise) than they were during the corresponding time in the control condition (Baehr et al., 2003).

In a study combining acute and regular exercise, initially untrained young women were subjected to periodic acute exercise testing during the course of an 8 week progressive aerobic exercise training program (training comprised cycle ergometry 2 days/week and running 4 days/week for increasingly prolonged periods of intense exercise eliciting 85% of maximum heart rate; acute exercise tests consisted of one-hour graded submaximal endurance rides on a bicycle ergometer). It was observed that during the rides, the plasma concentrations of melatonin rose significantly above baseline control values (Bullen et al., 1982).

The findings have been inconsistent due to differences in study designs, i.e. lighting during exercise, time of day, exercise intensity, as well as subject characteristics (Baehr et al., 2003).

- Regular exercise

Generally, a regular training program has low effects on melatonin level. In a study for the determination of the effect of regular exercise on melatonin secretion and excretion in young women, it was shown that sixteen weeks of exercise (150 min/week aerobic exercise for 4 months) had minimal effects on melatonin secretion in young women (Arikawa et al., 2013), but it is also possible that the duration and intensity of exercise training in this study was not sufficient to alter SNS activity and thus change melatonin levels.

Also, in another study, training did not cause any chronic changes in melatonin secretion, and the serum melatonin increases following physical exercise remained clearly below the nocturnal level (Ronkainen et al., 1986).

However, other studies have reported that prolonged exercise (a 28.5-mile high altitude race) in trained athletes can increase plasma melatonin and that this rise is not due to the concomitant opioid release (Strassman et al., 1989).

The effect of an exercise program on circadian rhythms is clearer. It is known that exercise at the time of high melatonin production rapidly depresses pineal concentrations of indole, without influencing its synthesis (Reiter & Richardson, 1992). Several studies have examined the effects of exercise on circadian rhythms. In mammals, the pineal gland transduces photoperiodic information to the neuroendocrine axis through nocturnal melatonin secretion (Poirel et al., 2003). The circadian rhythm of pineal melatonin is the best marker of internal time under low ambient light levels. Exogenous melatonin can act as a soporific, chronohypnotic, and/or chronobiotic agent (Cajochen et al., 2003).

Daytime sheltering, optical shading, and nighttime use of artificial light may reduce circadian luminal variation. The resulting melatonin alterations may contribute to systemic dysfunctions (Yun et al., 2005). Timing of exercise is important. Exercise at night has been shown to significantly blunt normal melatonin responses to dark cycles (Monteleone, 1990).

Exercise elicits phase shifts and acute alterations of melatonin that vary with circadian phase (Buxton et al., 2003). Even a single episode of physical activity is capable of inducing rapid phase shifts in human circadian rhythms; nighttime exercise is associated with 1- to 2-h phase delays of both melatonin and TSH rhythms (Van Reeth et al., 1994). In the exercise condition, all of the young subjects experienced delays in the circadian rhythm of melatonin, whereas in the older subjects there was slightly more variability in the response (Baehr et al., 2003). Subjects who completed three 45-min bouts of cycle ergometry each night showed a significantly greater shift in the dim light melatonin onset, dim light melatonin offset, and midpoint of the melatonin profile compared with non-exercising controls (Barger et al., 2004). The phase-shifting effects of exercise on the circadian system are preserved in older adults (Baehr et al., 2003). A longer duration of exercise exposure and/or repeated daily exposure to exercise may be necessary for reliable phase-shifting of the human circadian system; an early evening exercise of high intensity may induce phase advances relevant for the non-photic entrainment of the human circadian system (Buxton et al., 2003; Van Reeth et al., 1994).

The results of these studies indicated that exercise accelerated entrainment to the new sleep/dark schedule; exercise at night accelerated phase delays (Eastman et al., 1995; Schmidt et al., 1992), and daytime exercise accelerated phase advances (Miyazaki et al., 2001). Two studies used exercise in combination with bright light to phase delay circadian rhythms of young, healthy humans (Baehr et al., 1999; Youngstedt et al., 2002). Both studies found that

exercise neither facilitated nor inhibited the phase shifts produced by bright light. Therefore, exercise may potentially be a useful treatment to help adjust circadian rhythms in older and young adults (Baehr et al., 2003), and the use of exercise can facilitate adaptation to shift work schedules and non-24-h schedules (Barger et al., 2004). However, in practical terms, the substantial levels of activity needed to obtain phase shifts may not be attainable by the majority of people. In mechanistic terms, the lack of agreement with the phase-shifting effects of bright light suggests that exercise is not exerting its effects via photic entrainment pathways. An alternative explanation may involve exercise-induced hyperthermia (Atkinson et al., 2007).

b) Melatonin levels in saliva

Salivary melatonin concentration is an established marker of human circadian rhythmicity. Melatonin is known to increase long-duration exercise, in which the body continuously works through the normal period of nighttime sleep, leading to altered circadian rhythms (Burgess, 2013).

In a study during a 36-hour endurance event, at the examination of saliva samples (melatonin determined via immunoassay), salivary melatonin concentrations followed typical light/dark oscillations throughout the race, but the melatonin levels were negatively correlated with the day of the race and positively associated with nighttime. Despite the prolonged sleep deprivation, the continuous stimulus of exercise was enough to attenuate an expected rise in melatonin during the second dark cycle of the 36-hour race (Davis et al., 2014).

In a study in male cyclists completing two evening cycling trials, it was found that the usual evening increase in melatonin was unaffected by exercise or post-exercise water immersion (Robey et al., 2013). The masking effect of moderate-intensity exercise on melatonin is approximately twice as high in the morning than the afternoon. The much steeper relationship between heart rate and melatonin changes in the morning raises the possibility that the time of day alters the relationships between exercise-mediated sympathetic nervous activity and melatonin secretion (Marrin et al., 2011).

Effects of melatonin supplementation on exercise capacity

Researches on animals

There are several studies showing the beneficial effect of melatonin administration in exercise. It is well known that exercise (swimming) imposes a severe oxidative stress and enhances lipid peroxidation in the liver, muscle and brain. Pretreatment with melatonin and, to a lesser degree, other indolamines (5-methoxytryptamine, 5MT, and 6-hydroxymelatonin, 6HM) confers protection against oxidative damage associated with swimming for 60 min (Hara et al., 1997).

Antioxidant supplementation may improve lipid profiles and exercise ability in exercise-trained rats (Kim et al., 2004). In acute exercise, the increase in free radical production and the inhibition of antioxidant activity are both prevented by melatonin administration (Bicer et al., 2012).

However, there are also studies showing that melatonin applied from the age of 4 months did not influence exercise capacity in young rats. In mature and senescent animals, melatonin had stimulating effects on age-related physical activity, such as the reduction of exercise capacity depression and the normalization of antioxidant protection (Vingradova et al., 2007).

Researches in humans

Several studies in humans show the favorable antioxidant effect of melatonin during exercise. In a study in adult human males, which involved strenuous exercise, a physical test consisted of a constant run that combined several degrees of high effort (mountain run and ultra-endurance, with a total distance of the run of 50 km, with almost 2800 m of ramp in permanent climbing and very changeable climatic conditions); it was shown that melatonin supplementation lowered the levels of lipid peroxidation, with a significant increase in antioxidative enzyme activities, led to the maintenance of cellular integrity and reduced secondary tissue damage, had potent protective effects by preventing the over-expression of pro-inflammatory mediators and inhibiting the effects of several pro-inflammatory cytokines (Ochoa et al., 2011).

A study in football players showed that supplementation with 6 mg of melatonin administered 30 min prior to exercise significantly decreased lipid peroxidation products, lowered total antioxidant activity and triglyceride levels, and increased IgA levels 60 min after exercise. Therefore, the study concluded that melatonin administered immediately before intense exercise (acute sports exercise) reverses oxidative stress and improves immunological defense and lipid metabolism, which would result in an improvement in fitness (Maldonado et al., 2012).

Regarding the influence of melatonin on circadian rhythms, it was observed that the immediate effects of ingesting melatonin in the daytime include decreased alertness and body temperature (Atkinson et al., 2005). In a study that tried to improve sleep quality or alleviate symptoms of jet lag after transmeridian travel, athletes ingested 5 mg melatonin before sleep; the results showed that melatonin at this dose was unlikely to have any meaningful effects on physical performance in the morning after the subjects ingested the hormone (Atkinson et al., 2001).

Another study in physically active participants, aimed at examining whether daytime ingestion of melatonin led to impairments in variables relevant to short-term (<10 min) athletic performance, reported that the effects of 5 mg melatonin seemed more pronounced for the mental rather than physical components of short-term athletic performance, although cardiovascular response to exercise was affected. Some effects of melatonin were apparent 5 h after ingestion, when the hypothermic effects of melatonin had dissipated (Atkinson et al., 2005).

Clinical applications of exercise effects on melatonin levels

In very serious diseases, such as cancer cachexia, there is a disruption in the rhythmic secretion of melatonin, an important time-conditioning effector. Studies have shown a tumor-dependent depression of serum melatonin in patients with prostate or breast cancer (Bartsch et al., 1994).

Exercise can be used as a complementary treatment strategy in chronic disease, due to its time-conditioning effect. Because exercise modulates the immune response through at least two different mechanisms - metabolic and neuroendocrine - the adoption of a regular exercise program as a complementary strategy in the treatment of cancer patients, with exercise bouts regularly performed at the same time of the day, will ameliorate cachexia symptoms and increase survival and the quality of life (Costa Rosa, 2004).

Exercise-enhanced melatonin levels may also contribute to impaired reproductive function in women engaging in endurance sports (Bullen et al., 1982).

Melatonin plus exercise had a synergistic effect on functional recovery after spinal cord injury; together they might create a microenvironment to facilitate proliferation of endogenous neural stem/progenitor cells (Lee et al., 2014).

The approaches aimed at strengthening circadian function, such as timed bright light and exercise, might potentially serve as complementary therapies for the non-motor manifestations of Parkinson's disease (Videnovic et al., 2014).

In athletic populations, melatonin and other nutritional interventions can be used as possible sleep inducers and represent promising potential interventions. The hormone melatonin and foods that have a high melatonin concentration may decrease the sleep onset time (Halson, 2014).

Conclusions

1. Exercise affects plasma melatonin levels and is capable of inducing phase shifts in human circadian rhythms. Exercise-enhanced melatonin levels have a beneficial effect in several clinical conditions.

2. Melatonin supplementation confers protection against oxidative damage caused by exercise and may improve lipid profiles and exercise ability.

Conflicts of interests

Nothing to declare

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Contribuţii privind prezenţa echipei de polo a României la primul campionat european de natatie

Contributions to Romanian polo team presence at the first European swimming championship

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Rezumat

Pe baza studierii unor articole din presa orădeană din perioada interbelică şi a altor documente, ne-am propus să identificăm noi informaţii care să ne ajute să cunoaştem mai bine aspectele privind prezenţa echipei reprezentative de polo pe apă a României, la prima ediţie a Campionatelor Europene de Natatie, Budapesta, 1926.

În urma documentării realizate, prin datele prezentate, lucrarea completează cunoştinţele noastre privind acţiunile întreprinse pentru înscrierea şi asigurarea prezenţei delegaţiei României, la campionatele continentale de natatie, cauzele care au condus la retragerea din competiţie a echipei de polo pe apă şi meciurile amicale susţinute cu selecţionata echipelor din liga secundă a Ungariei şi formaţia Beszkár Budapesta.

Cuvinte cheie: istoria sportului, polo pe apă, campionatul european, România.

Abstract

Based on the study of press articles from Oradea from the interwar period and otherdocuments, we aimed to identify new information for better knowledge of the details concerningthe presence of Water Polo Team representing Romania at the first edition of the European Swimming Championships in Budapest, 1926.

Following the documentation, the paper completes our knowledge about the steps takento ensure the registration and presence of the Romanian delegation at the continental swimming championships, the causes that led to the withdrawal of the team from the competition and the friendly matches with the second league teams from Hungary and Budapest Beszkár team.

Key words: sport history, water polo, european championship, Romania.

Introducere

Printre evenimentele importante din istoria natatiei din ţara noastră se regăsesc şi activităţile legate de prezenţa echipei reprezentative de polo pe apă a României, la prima ediţie a Campionatelor Europene de Natatie. Cu toate că este un moment important, fiind prima încercare de conectare a poloului românesc la sistemul competiţional internaţional oficial, acest eveniment este puţin cunoscut şi există, în continuare, multe aspecte încă neelucidate. În literatura de specialitate, puţinii autori care fac referire la acest eveniment, fie că doar menţionează posibila participare (Postolache, 1979), fie că se bazează pe informaţii verbale furnizate de diverşi cunoascători ai domeniului, semnalează lipsa informaţiilor, atât în evidenţa organizatorilor Campionatelor Europene, a Federaţiei Române de Natatie, cât şi în celelalte surse de documentare pe care le-au consultat (Vasiliu, 1998).

Pornind de la aceste constatări, am iniţiat o cercetare a documentelor aflate în presa orădeană la Biblioteca Judeţeană „Gheorghe Şincai" şi arhiva din cadrul Direcţiei Judeţeane Bihor a Arhivelor Naţionale ale României, urmărind să identificăm noi informaţii care se referă la prezenţa echipei României la Campionatele Europene de Natatie de la Budapesta, 1926, şi, pe baza acestora, să redactăm un articol, care să contribuie la o mai bună cunoaştere a acestui aspect din istoria jocului de polo pe apă de la noi din ţară.

Evenimente care au condus la organizarea primului Campionat European de Natatie

În anii care au urmat Primului Război Mondial, perioada de după încetarea ostilităţilor şi încheierea păcii a dus la transformări majore asupra hărţii politico-economice a Europei, a avut influenţe asupra raportului de forţe dintre state, a dat posibilitatea şi a creat condiţii ca majoritatea ţărilor de pe continentul nostru să se poată afirma pe diverse

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planuri (Diaconu, 1995). Alături de prefacerile politice şi economice, sportul a fost domeniul în care s-au realizat cele mai mari schimbări, atât la nivelul ţărilor, cât şi pe plan internaţional (Kun, 1984). Natația, şi în cadrul acesteia jocul de polo, a cunoscut o evoluţie ascendentă, atât sub aspect cantitativ, prin mărirea numărului practicanţilor, sporirea ţărilor în care tinerii au îmbrăţişat acest sport, creşterea şi diversificarea competiţiilor organizate, cât şi calitativ, prin optimizarea pregătirii şi participării în concursuri ca rezultat al îmbunătăţirii metodicii antrenamentului, al implicării în acest proces a unor domenii ale ştiinţei ca psihologia, fiziologia, pedagogia etc. (Kun, 1963).

Chiar dacă Federaţia Internaţională de Natație era printre organizaţiile sportive internaţionale fondate printre primele, în anul 1908, condiţiile pentru organizarea unor competiţii mondiale sau continentale s-au întrunit abia după jumătatea celei de a doua decade. Poloul pe apă, alături de box, haltere, lupte greco-romane şi scrimă, s-a numărat printre sporturile la care forurile europene de conducere au organizat, până în anul 1926, campionate continentale (Antal, 1974). După desemnarea Ungariei ca ţară organizatoare, la nivelul mai multor federaţii naţionale au început pregătirile în vederea participării la acest eveniment major al poloului pe apă din Europa. Printre ţările în care s-au făcut demersuri pentru a lua parte la turneul de polo s-au numărat Ungaria, Germania, Suedia, Belgia, România, Cehia, Grecia şi Turcia (Szerelemhegyi, 1928).

Pregătirile în vederea participării reprezentativei României

Activitatea bună desfăşurată la nivelul Comisiei Regionale Oradea a Federaţiei Societăţilor Sportive din România, rezultatele echipelor de polo orădene pe plan regional, calităţile manageriale dovedite şi bunele relaţii ale conducătorilor secţiei de polo de la Asociaţia Sportivă Oradea cu reprezentaţi ai echipelor de polo pe apă din Budapesta şi cu persoane din fruntea Federaţiei Maghiare de Natație, lipsa mijloacelor organizatorice şi financiare la nivelul forului de specialitate din România au contribuit la însărcinarea orădenilor Sonnenfeld Andor şi König László cu selecţia, pregătirea şi participarea echipei reprezentative de polo pe apă a României, la prima ediţie a Campionatelor Europene de Natație, Budapesta 1926 .

Încă din primele luni ale anului 1926 au început acţiunile de selecţie a componenţilor lotului reprezentativ de polo al României şi soluţionare a unor aspecte de natură tehnică şi organizatorică. În echipa care urma să facă deplasarea la Budapesta, au fost convocaţi jucători din oraşele ale căror echipe erau cele mai puternice din ţară, Oradea, Cluj şi Târgu Mureş (Tőrők, 1937). La scurt timp de la iniţierea acţiunilor legate de formarea echipei naţionale, Comisia Regională de Natație Cluj a făcut cunoscute propunerile cu jucătorii din raza sa de jurisdicţie pentru a face parte din delegaţia României. Poloiştii nominalizaţi au fost Csiszár Zoltán, Heim Pál şi Péterffy (***, 1926e). Ceilalţi componenţi ai echipei, Sonnenfeld Andor, König László, Devich Dezső, Krecsmáry Imre, Vicsai László, Nemes István, Felicidesz Béla şi Kun László, proveneau de la Asociaţia Sportivă Oradea (***, 1926f).

Pentru popularizarea Campionatului European de Natație şi a delegaţiei României, care urma să participe la această competiţie, dr. König László publică un articol în care sunt prezentaţi conducătorii, înotătorii şi jucătorii echipei reprezentative de polo pe apă a României (König, 1926) De asemenea, este publicată o fotografie a jucătorilor de polo din Oradea, care se pregăteau pentru participarea la prima ediţie a Campionatelor Europene de Natație (***, 1926a).

În cadrul măsurilor organizatorice întreprinse, organizatorii Campionatului European, pe baza înscrierilor înaintate de federaţiile naţionale, au întocmit programul disputării jocurilor în cadrul turneului european de polo pe apă. Programul echipei României a fost următorul:

18 august 1926	România - Suedia	Arbitru: Nussbaum (Germania)
19 august 1926	România - Ungaria	Arbitru: Delahanye (Belgia)
20 august 1926	România - Germania	Arbitru: Driguy (Franţa)
21 august 1926	România - Belgia	Arbitru: Kellen (Austria)

(***, 1926e)

Prezenţa echipei României la Budapesta

Delegaţia României, care a plecat din gara Oradea spre Budapesta, formată din înotători şi jucători de polo din Oradea, Cluj şi Târgu Mureş, era condusă de Sonnenfeld Andor. Alături de sportivi, au făcut deplasarea oficiali, susţinători şi membri de familie. Printre ei s-au numărat Szeghalmi Sándor, Konc Rudolf, Seliceanu Gligor, Schmidt Béla, Fazekas István, dr. Popescu, Krecsmáry Margit şi Vicsai Nasi (Breuer, 1926).

La sosirea în Keletipályaudvar din Budapesta, delegaţia română a fost aşteptată de reprezentaţi ai organizatorilor. În seara aceleaşi zile, Sonnenfeld Andor, dr. König László, Seliceanu Gligor şi Sziarits Monika au participat la primirea oficială de către preşedintele Federaţiei Maghiare de Natație, Dormándy, care a avut loc la Clubul de Natație de pe Insula Margareta (Breuer, 1926).

La şedinţa tehnică, motivând că echipele Cehoslovaciei, Greciei şi Turciei au renunţat să facă deplasarea şi că, în acest fel, exista o mare diferenţă valorică între echipa noastră şi celelalte patru participante, că organizatorii au schimbat sistemul de disputare a jocurilor stabilit iniţial, conducătorul delegaţiei române, Sonnenfeld Andor, a anunţat că reprezentativa de polo a României s-a retras din competiţie. În numele organizatorilor, dr. Donáth Leó, a luat cunoştinţă cu regret că echipa României s-a retras din turneul de polo pe apă, locul ei fiind luat de Ungaria B, care a concurat în afară de concurs (***, 1926c).

În ziua deschiderii oficiale a Campionatului European de Natație, ţinută la Császárfürdő din Budapesta, poloiştii români au asistat, alături de un public numeros, la festivităţile organizate în prezenţa sefului statului Horthy Miklos, a preşedintelui Federaţiei Internaţionale de Natație, Bergwal, a peşedintelui Federaţiei Maghiare de Natație, Dormándy, şi a altor persoane oficiale (***, 1926d).

În zilele următoare, poloiştii români au susţinut două jocuri amicale. Primul, în bazinul Lágymányosi, cu selecţionata echipelor din liga secundă de polo pe apă a Ungariei, meci pierdut cu 12-0. Prin acest rezultat s-a confirmat părerea exprimată de Sonnenfeld Andor că

între nivelul poloului din România şi cel din ţările din elita europeană a acestui sport era o diferenţă valorică considerabilă. În celălalt joc, cu Beszkár Budapesta, echipă clasată pe locul întâi în liga a II-a de polo din Ungaria, prin golul înscris de Krecsmáry, echipa noastră s-a impus cu 1-0, demonstrând, parţial, potenţialul pe care îl avea poloul din România (Breuer, 1926).

Chiar dacă echipa reprezentativă a României nu a participat oficial la turneul de polo, prezenţa sa la Budapesta pe perioada desfăşurării campionatului continental a reprezentat primul contact al poloului românesc cu o competiţie internaţională oficială a echipelor reprezentative din Europa. Prin meciurile amicale disputate, jucătorii români au câştigat experienţă competiţională internaţională şi au demonstrat nivelul poloului românesc la acea dată (***, 1926b).

Concluzii

1. Prin valorificarea informaţiilor din o serie de surse de documentare, sunt prezentate o seamă de date, care contribuie la mai buna cunoaştere a prezenţei echipei de polo a României la prima ediţie a Campionatelor Europene de Natație.

2. Echipa care a făcut deplasarea la Budapesta era alcătuită pe scheletul formaţiei Asociaţia Sportivă Oradea şi întărită cu jucători din Cluj şi Târgu Mureş.

3. Considerând că, în condiţiile în care echipele reprezentative din Cehia, Grecia şi Turcia au renunţat să facă deplasarea, era o mare diferenţă valorică şi raportul de forţe dintre echipa României şi selecţionatele naţionale ale Belgiei, Germaniei, Suediei şi Ungariei era net în favoarea acestora, la şedinţa tehnică, conducătorul delegaţiei române, Sonnenfeld Andor, a anunţat retragerea reprezentativei României din competiţie.

4. Pe durata Campionatelor Europene, echipa a disputat două jocuri amicale, cu selecţionata echipelor din liga a II-a a Ungariei şi cu formaţia din Budapesta, Beszkár, prima clasată în liga secundă maghiară.

5. Cu toate că nu a participat oficial la întreceri, prezenţa la Budapesta a echipei reprezentative a României pe durata Campionatelor Europene de Natație de la Budapesta, 1926, a reprezentat primul contact al poloului românesc cu o competiţie internaţională oficială.

Conflicte de interese

Nimic de semnalat.

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Cartea se adresează atât studenţilor, cât şi specialiştilor care urmează o carieră didactică. Materialul este structurat şi elaborat ţinând seama de programa cursului de Didactica educaţiei fizice şi psihomotorii, ale cărei conţinuturi au în vedere legislaţia privind formarea iniţială a specialistului pentru cariera didactică.

Didactica specialităţii este o lucrare care abordează tematici ale didacticii generale, parcurse în studiul Pedagogiei. Oferta unei duble pregătiri, teoretică şi practico-aplicativă, este de nelipsit pentru orice specialist, profesor de orice materie, economist, manager etc.

În cazul nostru, la disciplina educaţie fizică, Didactica generală suprapune metodica, aceasta fiind o didactică practică şi aplicativă, care poate asigura însuşirea şi implementarea continuă a tematicilor specifice, fixate de predarea şi punerea în practică a teoriilor.

Expresivitatea corporală, comunicarea motrică, euritmia şi dansul în dezvoltarea copiilor
(Bodily expressiveness, motor communication, eurythmy and dance in child development)
Autor: Carmen Aneta Preja
Editura: GMI Cluj-Napoca, 2014
152 pagini

Lucrarea tratează subiecte ca: expresivitatea corporală şi comunicarea motrică, motricitatea de expresie în educaţia fizică şcolară şi sportivă, sisteme de evaluare. Toate pun la dispoziţia celor interesaţi (în special celor cu pregătire în domeniul sportiv) un sistem bogat de mijloace de dezvoltare a capacităţii de expresie, precum şi exerciţii accesibile tuturor.

Atât mijloacele educaţionale pentru formarea şi dezvoltarea capacităţii de expresie, cât şi locul improvizaţiilor structurale în lecţia de educaţie fizică, incită la lecturarea cu plăcere a acestei cărţi.

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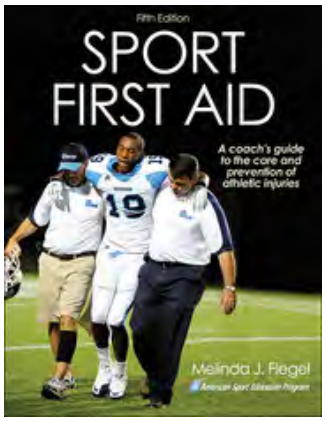
Sport First Aid. 5th Edition
(Primul ajutor în sport. Ediţia a 5-a)
Autor: Melinda Flegel
Editura: Human Kinetics, august 2014
328 pagini; Preţ: € 35,10



O carte care în aproximativ 17 ani ajunge deja la a 5-a ediţie vorbeşte indiscutabil de la sine. Dar dacă mai spunem că ea este girată de atotputernicul în domeniu, American Sport Education Program (ASEP), pentru a sta la baza cursului de prim ajutor pe care-l tutelează, şi că reprezintă un produs foarte recent al celei mai mari edituri din lume, pe tărâmul ştiinţelor sportului - Human Kinetics - se strâng suficiente argumente pentru a ne motiva opţiunea de a o include în elita cărţilor de căpătâi ale specialiştilor ce frecventează paginile revistei noastre. Specialişti care, cu siguranţă, sunt preocupaţi de a fi la curent cu informaţia într-o problematică de care este de dorit să nu te loveşti niciodată într-o carieră, dar dacă ai ghinionul să te loveşti este ideal-obligatoriu să te afli în situaţia de a şti perfect ce, când şi cum trebuie făcut, altfel spus să fi la zi cu procedurile „standard” şi cu succesiunea exactă în care trebuie să le aplici.

Aparent lucrarea îi vizează pe cei din corpul medical, sau cel nemedical dar pregătit şi abilitat pentru intervenţii de urgenţă. În fapt însă ea este concepută, structurată şi redactată pentru antrenori, deoarece practic în cele mai multe situaţii antrenorul este primul care poate acţiona şi-l poate ajuta calificat, pe sportivul ce are nevoie de sfaturi şi măsuri imediate. În plus, materialul cărţii are şi o componentă care se referă la prevenirea îmbolnăvirilor şi accidentărilor, iar în această problemă nimeni nu poate fi mai implicat, mai calificat, mai ascultat şi mai eficient, dat fiind faptul că antrenorul este principalul răspunzător de

educaţia şi regimul de viaţă şi de pregătire al sportivului. Regim care, dacă are scăpări sau abateri, conduce inevitabil şi neîntârziat la probleme, în planul sănătăţii şi integrităţii corporale a sportivului. De altfel - lucru deloc lipsit de importanţă - autoarea însăşi are în spate o prodigioasă carieră de antrenor sportiv, ceea ce i-a permis să vadă şi să perceapă lucrurile din chiar interiorul profesiei celor cărora li se adresează.

În carte vom găsi prezentate procedurile şi paşii de parcurs în cazurile de supremă urgenţă, în care nu ne mai putem gândi la alt obiectiv decât la salvarea vieţii celui aflat în maximă dificultate, modul în care se realizează examinarea fizică a pacientului, tehnicile de stopare corectă a hemoragiilor, măsurile de adoptat în caz de distrugeri tisulare şi de fracturi, regulile de mobilizare şi de deplasare a sportivului accidentat, dar şi principiile de care trebuie să se ţină seama în cazul tranziţiei sportivului de la starea de convalescenţă către revenirea la antrenamente, până la reintegrarea lui completă în programul normal de antrenament al colegilor săi. Iar ca noutăţi, actuala ediţie conţine cele mai recente recomandări şi tehnici de resuscitare cardio-respiratorie, preluate după Asociaţia Americană a Inimii (American Heart Association), ghidurile de prevenţie, recunoaştere/diagnostic şi tratament, conform directivelor Centrelor Americane pentru Prevenţie şi Controlul Bolilor (Centers for Disease Control and Prevention) şi ghidul privind prevenirea deshidratării şi a stărilor grave generate de temperaturile ridicate, conform recomandărilor Asociaţiei Naţionale a Antrenorilor Sportivi (National Athletic Trainers' Association.

Chiar dacă paginile, capitolele şi părţile componente ale unui „manual" - aceasta fiind categoria de lucrări în care o putem încadra pe cea de care ne ocupăm acum - nu trebuie neapărat parcurse în ordinea plasării lor în cuprins, în cadrul prezentării/recenziei sale nu putem proceda în alt mod, drept pentru care ne vom conforma şi vom reţine că cele peste 300 de pagini şi 15 capitole sunt repartizate în 3 părţi, foarte diferite ca întindere. Cea de început se intitulează chiar „Introducere în primul ajutor al sportivilor" şi are două capitole; dintre care primul ni se pare de o deosebită importanţă, întrucât în textul său autoarea circumscrie rolul pe care antrenorul îl are (trebuie să-l aibă) în cadrul aşa-numitei „echipe responsabile de sănătatea sportivilor". Este vorba de un rol care - cel puţin în SUA, dar şi la noi tot mai evident - se dovedeşte a fi din ce în ce mai complex şi mai plin de responsabilitate, întrucât el se defineşte în planul următoarelor trei dimensiuni: cea legală/juridică/organizatorică care ţine de „fişa postului", să zicem, cea care decurge din aşteptările părinţilor/familiei sportivului şi cea care incumbă interacţiunea cu ceilalţi membri componenţi ai mai sus amintitei echipe.

Urmează partea secundă - „Cunoştinţele şi abilităţile de bază în primul ajutor al sportivilor" - cu patru secvenţe/capitole, în fiecare dintre acestea fiind dezvoltate fundamentele primului ajutor; de la anatomie şi terminologie (cap. 3), la paşii în care acţionăm în situaţii de urgenţă (cap. 4), respectiv de la evaluarea stării fizice şi tehnicile de prim ajutor (cap. 5), la regulile de mobilizare/deplasare a sportivului accidentat sau grav bolnav (cap. 6).

„Grosul" cărţii îl reprezintă partea a III-a - „Primul ajutor în cazul diverselor suferinţe/situaţii specifice". Sunt 9 capitole-teme, din care - aşa cum am sugerat deja mai sus - fiecare antrenor poate să aleagă să citească, să aprofundeze şi să exerseze, în primul rând sau doar pe acela/acelea, cu care există cea mai mare probabilitate să se confrunte, sau din experienţă ştie că se poate întâlni. Este vorba de urgenţele şi bolile respiratorii (cap. 7), traumatismele cerebrale, vertebrale şi ale nervilor (8), ale organelor interne (9), morţile subite (10), accidentele musculoscheletice ale jumătăţii superioare (12) şi inferioare (13) a corpului, leziunile faciale şi ale scalpului (14) şi afecţiunile pielii (15). Pentru că editura ne oferă acest „cadou", postând lucruri esenţiale din textul respectivului capitol (11) - http://www.humankinetics.com/excerpts/excerpts/learn-how-to-assess-and-prevent-heat-related-illnesses - dar şi pentru că ne confruntăm tot mai des cu temperaturi ridicate, iar mulţi dintre antrenorii noştri nu conştientizează nici pericolul şi nici nu prea ştiu ce să facă concret, ne oprim pentru câteva idei la aşa-numitele „probleme generate de condiţiile atmosferice". Accesând respectivul site vom găsi două tabele. Cel de jos - de care nu ne vom ocupa (Tabelul 11.2) - ne arată foarte clar cum trebuie să procedăm, de la o zi la alta, pe parcursul a două săptămâni de aclimatizare la temperaturi ridicate. În schimb, şi cu asta vom încheia, pentru că îl considerăm foarte explicit şi util, vom prelua mai jos Tabelul 11.1.

Temperatura	Umiditatea	Măsuri de aplicat
26,5 - 32°C	< 70%	Se monitorizează sportivii susceptibili
26,5 - 32°C	> 70%	5 min pauză, 30 min efort
32 – 37,5°C	< 70%	5 min pauză, 30 min efort
32 – 37,5°C	> 70%	Antrenemente scurte, dimineaţa devreme sau seara

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EVENTS
EVENIMENTE

MINISTERUL EDUCAȚIEI NAȚIONALE
Inspectoratul Școlar Județean Cluj

Societatea Medicală Română de Educație Fizică și Sport

The 2015 Cluj county school cross-country skiing calendar
Calendarul şcolar judeţean Cluj la schi-fond 2015

The 2015 winter school sports event project, consisting of cross-country skiing competitions, was carried out with enviable rigor in respecting the established schedule. This rigor was due in the first place to the abundance of snow this winter season, which allowed the events to be held according to the calendar, without delay. Secondly, success was due to the members of the Technical Commission, who organized these winter events with high expertise, as well as to the interest of local mayor's offices and schools in these competitions.

1. Rogojel Center - The *Vlădeasa* Cup, 3rd edition, 17 January 2015

Girls 11-12 years	Boys 11-12 years	Girls 13-14 years	Boys 13-14 years	Relay	Ranking
Gligan Adina-Râşca	Safta Claudiu-Mărişel	Todoruţ Ioana-Răchiţele	Răşinar Valentin-Răchiţele	Râşca	Mărişel
Abrudan Alina-Mărişel	Lăpuşte Andrei-Râşca	Cordoş Mariana-Rogojel	Dreve Cristian-Râşca	Mărişel	Râşca
Mariş Larisa-Mărişel	Buş Bogdan Vasile-Rogojel	Fort Adela-Rogojel	Matiş Vlad Ioan-Mărişel	Răchiţele	Răchiţele

Physical education teacher Aurel Crişan - organization; Dorin Potra - mountain rescue - organization and assistance; Director: Prof. Mariana Paşcalău; Mayor: Gheorghe Cuc

2. Râşca Center - The *Sălănducu* Cup, 17th edition, 24 January 2015

Girls 11-12 years	Boys 11-12 years	Girls 13-14 years	Boys 13-14 years	Relay	Ranking
Gligan Adina-Râşca	Lăpuşte Andrei-Râşca	Todoruţ Ioana-Răchiţele	DreveCristian-Râşca	Râşca	Râşca
Trif Cristina-Beliş	Safta Claudiu-Mărişel	Macriş Alexandra-Râşca	Răşinar Valentin-Răchiţele	Mărişel	Mărişel
Mariş Larisa-Mărişel	Trif Daniel-Beliş	Cordoş Mariana-Rogojel	Tomoş Ionel-Râşca	Beliş	Beliş

Physical education teacher: Ardelean Ilea - organization; Director: Prof. Laura Mărcean; Deputy mayor: Traian Matiş; Mayor: Ioan Morar

3. Mărişel Center - The *Pelaghia Roşu* Cup, 29th edition, 7 February 2015

Girls 11-12 years	Boys 11-12 years	Girls 13-14 years	Boys 13-14 years	Relay	Ranking
Gligan Adina-Râşca	Lăpuşte Andrei-Râşca	Macriş Alexandra-Râşca	Răşinar Valentin-Răchiţele	Râşca	Râşca
Trif Cristina-Beliş	Safta Claudiu-Mărişel	Todoruţ Ioana-Răchiţele	Dreve Cristian-Râşca	Mărişel	Mărişel
Mariş Larisa-Mărişel	Okos David	Cordoş Mariana-Rogojel	Tomoş Ionel-Râşca	Sîncraiu	Sîncraiu

Physical education teacher: Ioan Maris; Director: Prof. Dana Fenesan; Mayor: Traian Mariş

4. Beliş Center - The *Scoruşet* Cup, 20th edition, 14 February 2015

Girls 11-12 years	Boys 11-12 years	Girls 13-14 years	Boys 13-14 years	Relay	Ranking
Gligan Adina-Râşca	Lăpuşte Andrei-Râşca	Macriş Alexandra-Râşca	Dreve Cristian-Râşca	Râşca	Râşca
Trif Cristina-Beliş	Safta Claudiu-Mărişel	Cordoş Mariana-Rogojel	Tomoş Ionel-Râşca	Mărişel	Mărişel
Mariş Larisa-Mărişel	Tosea Ovidiu-Râşca	Todoruţ Ioana-Răchiţele	Răşinar Valentin-Răchiţele	Răchiţele	Răchiţele

Physical education teacher: Anghel Todea; Deputy mayor: Mariana Ciumafaie; Mayor: I. Crainic

5. Sâncraiu Center - The *Tomordok* Cup, 11th edition, 15 February 2015

Girls 11-12 years	Boys 11-12 years	Girls 13-14 years	Boys 13-14 years	Relay	Ranking
Gligan Adina-Râşca	Lăpuşte Andrei-Râşca	Macriş Alexandra-Râşca	Dreve Cristian-Râşca	Râşca	Râşca
Trif Cristina-Beliş	Safta Claudiu-Mărişel	Todoruţ Ioana-Răchiţele	Răşinar Valentin-Răchiţele	Mărişel	Mărişel
Mariş Larisa-Mărişel	Tosea Ovidiu-Râşca	Cordoş Mariana-Rogojel	Matiş Vlad Ioan-Mărişel	Răchiţele	Sîncraiu

Physical education teacher: Csudom Norbert; Director: Prof. Lakatos Andrei; Deputy mayor: Peter Arpad (former competitor, main organizer); Mayor: Poka Andrei

6. Băişoara Center - The *Little Mountain Hunters* Cup, 36th edition, 22 February 2015

Girls 11-12 years	Boys 11-12 years	Girls 13-14 years	Boys 13-14 years	Relay	Ranking
Gligan Adina-Râşca	Lăpuşte Andrei-Râşca	Cordoş Mariana-Rogojel	Dreve Cristian-Râşca	Râşca	Râşca
Mariş Larisa-Mărişel	Buş Bogdan Vasile-Rogojel	Trif Cristina-Beliş	Tomoş Ionel-Râşca	Rogojel	Rogojel
Pleş Eliza-Rogojel	Safta Claudiu-Mărişel	Fort Ioana Adela-Rogojel	Răşinar Valentin-Răchiţele	Mărişel	Sîncraiu

Organizers: ISJ Cluj, Pof. Cristian Potora - School Inspectorate - physical education; Director: Prof. Monica Horodinca – Children's Palace Cluj; Competition Director: Prof. Ioan Muresan - coordinator of the Technical and Referee Commission

The participating mountain centers in 2015 were the following: Rogojel, Râşca, Mărişel, Beliş, Sâncraiu, Răchiţele, Măguri-Bogdăneşti, Băişoara. In all competitions, the races were organized for two age categories (11-12 and 13-14 years), boys and girls, as well as relay. Finally, general rankings by centers were established.

We present the Technical and Referee Commision including professors who ensured the success of the competitions: Ioan Cătinaş, Cristian Potora, Traian Bocu, Mircea Eleches, Elena Balea, Mira Hagianu, Vasile Orăsan, Iuliu Mako, Eugen Marean, Victor Ursuţiu, Sandu Drăgan, Mureşan Ioan – team coordinator.

The results obtained by age and sex categories and the institutions involved are listed in the tables 1 to 6.

We mention that during the spring-summer-automn seasons, cross-country running competitions are organized in Râşca, Răchiţele and Dăbâca, and cyclotourism competitions are held in Rogojel, with the participation of all mountain centers and neighboring schools.

* * *

Proiectul manifestărilor sportive şcolare de iarnă, care constă în întreceri la schi-fond, s-a desfăşurat şi anul acesta cu o rigurozitate demnă de invidiat în ceea ce priveşte respectarea calendarului stabilit. Această rigurozitate se datorează în primul rând faptului că sezonul hibernal a fost generos în zăpadă, competiţiile desfăşurându-se conform calendarului, fără amânări. În al doilea rând, succesul s-a datorat profesorilor componenţi ai comisiei tehnice de specialitate care au organizat cu multă expertiză aceste competiţii de iarnă şi atenţiei de care se bucură manifestările din partea primăriilor locale şi interesului acordat din partea şcolilor din localităţile unde s-au desfăşurat competiţiile.

Centrele montane participante în anul 2015 au fost următoarele: Rogojel, Râşca, Mărişel, Beliş, Sâncraiu, Răchiţele, Măguri-Bogdăneşti, Băişoara. La toate competiţiile, întrecerile au fost organizate la două categorii de vârstă (11-12 ani), băieţi şi fete, precum şi ştafete. În final au fost alcătuite clasamente generale pe centre.

Prezentăm Comisia tehnică şi de arbitri formată din profesori care au asigurat reuşita competiţiilor: Ioan Cătinaş, Cristian Potora, Traian Bocu, Mircea Eleches, Elena Balea, Mira Hagianu, Vasile Orăsan, Iuliu Mako, Eugen Marean, Victor Ursuţiu, Sandu Drăgan, Ioan Mureşan - coordonatorul echipei.

Rezultatele obţinute pe categorii de vârstă şi gen şi instituţiile implicate sunt enumerate pe scurt în tabelele

1. Centrul Rogojel - Cupa *Vlădeasa* ediţia a III-a, 17 ianuarie 2015

Fete 11-12 ani	Băieţi 11-12 ani	Fete 13-14 ani	Băieţi 13-14 ani	Ştafetă	Clasament
Gligan Adina-Râşca	Safta Claudiu-Mărişel	Todoruţ Ioana-Răchiţele	Răşinar Valentin-Răchiţele	Râşca	Mărişel
Abrudan Alina-Mărişel	Lăpuşte Andrei-Râşca	Cordoş Mariana-Rogojel	Dreve Cristian-Râşca	Mărişel	Râşca
Mariş Larisa-Mărişel	Buş Bogdan Vasile-Rogojel	Forţ Adela-Rogojel	Matiş Vlad Ioan-Mărişel	Răchiţele	Răchiţele

Prof. ed. fizică Aurel Crişan- organizare; Dorin Potra - salvamont - organizare şi asistenţă; Director: Prof. Mariana Paşcalău; Primar : Gheorghe Cuc

2. Centrul Râşca - Cupa *Sălănducu* ediţia a XVII-a, 24 ianuarie 2015

Fete 11-12 ani	Băieţi 11-12 ani	Fete 13-14 ani	Băieţi 13-14 ani	Ştafetă	Clasament
Gligan Adina-Râşca	Lăpuşte Andrei-Râşca	Todoruţ Ioana-Răchiţele	Dreve Cristian-Râşca	Râşca	Râşca
Trif Cristina-Beliş	Safta Claudiu-Mărişel	Macriş Alexandra-Râşca	Răşinar Valentin-Răchiţele	Mărişel	Mărişel
Mariş Larisa-Mărişel	Trif Daniel-Beliş	Cordoş Mariana-Rogojel	Tomoş Ionel-Râşca	Beliş	Beliş

Prof. ed. fizică : Ardelean Ilea - organizare; Director : Prof. Laura Mărcean; Viceprimar :Traian Matiş; Primar : Ioan Morar

3. Centrul Mărişel - Cupa *Pelaghia Roşu* ediţia a XXIX-a, 7 februarie 2015

Fete 11-12 ani	Băieţi 11-12 ani	Fete 13-14 ani	Băieţi 13-14 ani	Ştafetă	Clasament
Gligan Adina-Râşca	Lăpuşte Andrei-Râşca	Macriş Alexandra-Râşca	Răşinar Valentin-Răchiţele	Râşca	Râşca
Trif Cristina-Beliş	Safta Claudiu-Mărişel	Todoruţ Ioana-Răchiţele	Dreve Cristian-Râşca	Mărişel	Mărişel
Mariş Larisa-Mărişel	Okos David-Sâncraiu	Cordoş Mariana-Rogojel	Tomoş Ionel-Râşca	Sîncraiu	Sâncraiu

Prof. ed. fizică Ioan Mariş; Director: Prof. Dana Feneşan; Primar: Traian Mariş

4. Centrul Beliş – Cupa *Scoruşet* ediţia a XX-a, 14 februarie 2015

Fete 11-12 ani	Băieţi 11-12 ani	Fete 13-14 ani	Băieţi 13-14 ani	Ştafetă	Clasament
Gligan Adina-Râşca	Lăpuşte Andrei-Râşca	Macriş Alexandra-Râşca	Dreve Cristian-Râşca	Râşca	Râşca
Trif Cristina-Beliş	Safta Claudiu-Mărişel	Cordoş Mariana-Rogojel	Tomoş Ionel-Râşca	Mărişel	Mărişel
Mariş Larisa-Mărişel	Tosea Ovidiu-Râşca	Todoruţ Ioana-Răchiţele	Răşinar Valentin-Răchiţele	Răchiţele	Răchiţele

Prof. ed. fizică: Anghel Todea;Viceprimar: Mariana Ciumafaie; Primar: I. Crainic

5. Centrul Sâncraiu Cupa *Tomordok* ediţia a XI-a, 15 februarie 2015

Fete 11-12 ani	Băieţi 11-12 ani	Fete 13-14 ani	Băieţi 13-14 ani	Ştafetă	Clasament
Gligan Adina-Râşca	Lăpuşte Andrei-Râşca	Macriş Alexandra-Râşca	Dreve Cristian-Râşca	Râşca	Râşca
Trif Cristina-Beliş	Safta Claudiu-Mărişel	Todoruţ Ioana-Răchiţele	Răşinar Valentin-Răchiţele	Mărişel	Mărişel
Mariş Larisa-Mărişel	Tosea Ovidiu-Râşca	Cordoş Mariana-Rogojel	Matiş Vlad Ioan-Mărişel	Răchiţele	Sâncraiu

Prof. ed. fizică: Csudom Norbert; Director:Prof. Lakatos Andrei; Viceprimar Peter Arpad (fost concurent, organizatorul principal); Primar: Poka Andrei

6. Centrul Băişoara Cupa *Micii vânători de munte* ediţia a XXXVI-a, 22 februarie 2015

Fete 11-12 ani	Băieţi 11-12 ani	Fete 13-14 ani	Băieţi 13-14 ani	Ştafetă	Clasament
Gligan Adina-Râşca	Lăpuşte Andrei-Râşca	Cordoş Mariana-Rogojel	Dreve Cristian-Râşca	Râşca	Râşca
Mariş Larisa-Mărişel	Buş Bogdan Vasile-Rogojel	Trif Cristina-Beliş	Tomoş Ionel-Râşca	Rogojel	Rogojel
Pleş Eliza-Rogojel	Safta Claudiu-Mărişel	Forţ Ioana Adela-Rogojel	Răşinar Valentin-Răchiţele	Mărişel	Sâncraiu

Organizatori: ISJ Cluj, Pof. Cristian Potora - Inspector şcolar - ed. fizică; Director: Prof. Monica Horodinca - Palatul copiilor Cluj; Director de concurs: Prof Ioan Muresan - coordonatorul Comisiei tehnice şi de arbitraj.

de la 1 la 6.

Menţionăm că în sezoanele de primăvară - vară - toamnă se organizează (compensatoriu) concursuri de cros la Râşca, Răchitele şi Dăbâca şi de cicloturism la Rogojel, la care participă toate centrele montane şi şcolile învecinate.

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Image during the competition, Rogojel -Vlădeasa

Beliş - Competitors ready to start

Image during the competition

Prize award ceremony, Beliş

The Technical and Referee Commission along with some team leader teachers

Prize award ceremony in Sâncraiu

FOR THE ATTENTION OF CONTRIBUTORS

The subject of the Journal

The journal has a multidisciplinary nature oriented toward biomedical, health, exercise, social sciences fields, applicable in activities of physical training and sport, so that the dealt subjects and the authors belong to several disciplines in these fields. The main rubrics are: "Original studies" and "Reviews".

Regarding "Reviews" the main subjects that are presented are: oxidative stress in physical effort; mental training; psychoneuroendocrinology of sport effort; physical culture in the practice of the family doctor; extreme sports and risks; emotional determinatives of performance; the recovery of patients with spinal column disorders; stress syndromes and psychosomatics; olympic education, legal aspects of sport; physical effort in the elderly; psychomotricity disorders; high altitude sportive training; fitness; biomechanics of movements; EUROFIT tests and other evaluation methods of physical effort; adverse reactions of physical effort; sport endocrinology; depression in sportsmen/women; classical and genetic drug usage; Olympic Games etc.

Among articles devoted to original studies and researches we are particularly interested in the following: the methodology in physical education and sport; influence of some ions on effort capacity; psychological profiles of students regarding physical education; methodology in sport gymnastics; the selection of performance sportsmen.

Other articles approach particular subjects regarding different sports: swimming, rhythmic and artistic gymnastics, handball, volleyball, basketball, athletics, ski, football, field and table tennis, wrestling, sumo.

The authors of the two rubrics are doctors, professors and educators, from universities and preuniversity education, trainers, scientific researchers etc.

Other rubrics of the journal are: the editorial, editorial news, reviews of the latest books in the field and others that are presented rarely (inventions and innovations, universitaria, preuniversitaria, forum, memories, competition calendar, portraits, scientific events).

We highlight the rubric "The memory of the photographic eye", where photos, some very rare, of sportsmen in the past and present are presented.

Articles signed by authors from the Republic of Moldova regarding the organization of sport education, variability of the cardiac rhythm, the stages of effort adaptability and articles by some authors from France, Portugal, Canada must also be mentioned.

The main objective of the journal is highlighting the results of research activities as well as the permanent and actual dissemination of information for specialists in the field. The journal assumes an important role regarding the achievement of necessary scores of the teaching staff in the university and preuniversity education as well as of doctors in the medical network (by recognizing the journal by the Romanian College of Physicians), regarding didactic and professional promotion.

Another merit of the journal is the obligatory publication of the table of contents and an English summary for all articles. Frequently articles are published in extenso in a language with international circulation (English, French).

The journal is published quarterly and the works are accepted for publication in the Romanian and English language. The journal is sent by e-mail or on a floppy disk (or CD-ROM) and printed, by mail at the address of the editorial staff. The works of contributors that are resident abroad and of Romanian authors must be mailed to the Editorial staff at the following address:

„Palestrica of the third millennium – Civilization and sport"
Chief Editor: Prof. dr. Traian Bocu
Contact address: palestrica@gmail.com or traian_bocu@yahoo.com
Mail address: Clinicilor street no. 1 postal code 400006, Cluj-Napoca, România
Telephone:0264-598575
Website: www.pm3.ro

Objectives

Our intention is that the journal continues to be a route to highlight the research results of its contributors, especially by stimulating their participation in project competitions. Articles that are published in this journal are considered as part of the process of promotion in one's university career (accreditation that is obtained after consultation with the National Council for Attestation of Universitary Titles and Diplomas).

We also intend to encourage the publication of studies and research, that include original relevant elements especially from young people. All articles must bring a minimum of personal contribution (theoretical or practical), that will be highlighted in the article.

In the future we propose to accomplish criteria that would allow the promotion of the journal to superior levels according international recognition.

THE STRUCTURE AND SUBMISSION OF ARTICLES

The manuscript must be prepared according to the stipulations of the International Committee of Medical Journal Editors (http://www.icmjee.org).

The number of words for the electronic format:

– 4000 words for original articles;

– 2000 words for case studies;
– 5000-6000 words for review articles.

Format of the page: edited in WORD format, A4. Printed pages of the article will be numbered successively from 1 to the final page.

Font: Times New Roman, size 11 pt.; it should be edited on a full page, with diacritical marks, double spaced, respecting equal margins of 2 cm.

Illustrations:

The images (graphics, photos etc.) should be numbered consecutively in the text, with arabic numbers. They should be edited with EXCEL or SPSS programs, and sent as distinct files: „figure 1.tif", „figure 2. jpg", and at the editors demanding in original also. Every graphic should have a legend, written **under** the image.

The tables should be numbered consecutively in the text, with roman numbers, and sent as distinct files, accompanied by a legend that will be put **above** the table.

PREPARATION OF THE ARTICLES

1. Title page: – includes the title of article (maximum 45 characters), the name of authors followed by surname, work place, mail address of the institute and mail adress and e-mail address of the first author. It will follow the name of article in the English language.

2. Summary: For original articles a summary structured like this is necessary: (Premize-Background, Obiective-Aims, Metode-Methods, Resultate-Results, Concluzii-Conclusions), in the Romanian language, of maximum 250 words, followed by 3-8 key words (if its possible from the list of established terms). All articles will have a summary in the English language. Within the summary (abstract) abbreviations, footnotes or bibliographic references should not be used.

Premises and objectives. Description of the importance of the study and explanation of premises and research objectives.

Methods. Include the following aspects of the study:

Description of the basic category of the study: of orientation and applicative.

Localization and the period of study. Description and size of groups, sex (gender), age and other socio-demographic variables should be given.

Methods and instruments of investigation that are used.

Results. The descriptive and inferential statistical data (with specification of the used statistical tests): the differences between the initial and the final measurement, for the investigated parameters, the significance of correlation coefficients are necessary. The specification of the level of significance (the value ***p*** or the dimension of effect ***d***) and the type of the used statistical test etc are obligatory.

Conclusions. Conclusions that have a direct link with the presented study should be given.

Orientation articles and case studies should have an unstructured summary (without respecting the structure of experimental articles) to a limit of 150 words.

3. Text

Original articles should include the following chapters which will not be identical with the summary titles: Introduction (General considerations), Hypothesis, Materials and methods (including ethical and statistical informations), Results, Discussing results, Conclusions and suggestions. Other type of articles, as orientation articles, case studies, Editorials, do not have an obligatory format. Excessive abbreviations are not recommended. The first abbreviation in the text is represented first *in extenso*, having its abbreviation in parenthesis, and thereafter the short form should be used.

Authors must undertake the responsibility for the correctness of published materials.

4. Bibliography

The bibliography should include the following data:

For articles from journals or other periodical publications the international Vancouver Reference Style should be used: the name of all authors as initials and the surname, the year of publication, the title of the article in its original language, the title of the journal in its international abbreviation (italic characters), number of volume, pages.

Articles: Pop M, Albu VR, Vişan D et al. Probleme de pedagogie în sport. Educaţie Fizică şi Sport 2000; 25(4):2-8.

Books: Drăgan I (coord.). Medicina sportivă, Editura Medicală, 2002, Bucureşti, 2002, 272-275.

Chapters from books: Hăulică I, Bălţatu O. Fiziologia senescenţei. In: Hăulică I. (sub red.) Fiziologia umană, Ed. Medicală, Bucureşti, 1996, 931-947.

Starting with issue 4/2010, every article should include a minimum of 15 bibliographic references and a maximum of 100, mostly journals articles published in the last 10 years. Only a limited number of references (1-3) older than 10 years will be allowed. At least 20% of the cited resources should be from recent international literature (not older than 10 years).

Peer-review process

In the final stage all materials will be closely reviewed by at least two competent referees in the field (Professors, and Docent doctors) so as to correspond in content and form with the requirements of an international journal. After this stage, the materials will be sent to the journal's referees, according to their profiles. After receiving the observations from the referees, the editorial staff shall inform the authors of necessary corrections and the publishing requirements of the journal. This process (from receiving the article to transmitting the observations) should last about 4 weeks. The author will be informed if the article was accepted for publication or not. If it is accepted, the period of correction by the author will follow in order to correspond to the publishing requirements.

Conflict of interest

The authors must mention all possible conflicts of interest including financial and other types. If you are sure that there is no conflict of interest we ask you to mention this. The financing sources should be mentioned in your work too.

Specifications

The specifications must be made only linked to the people outside the study but which have had a substantial contribution, such as some statistical processing or review of the text in the English language. The authors have the responsibility to obtain the written permission from the mentioned persons with the name written within the respective chapter, in case the readers refer to the interpretation of results and conclusions of these persons. Also it should be specified if the article uses some partial results from certain projects or if these are based on master or doctoral theses sustained by the author.

Ethical criteria

The Editors will notify authors in due time, whether their article is accepted or not or whether there is a need to modify texts. Also the Editors reserve the right to edit articles accordingly. Papers that have been printed or sent for publication to other journals will not be accepted. All authors should send a separate letter containing a written statement proposing the article for submission, pledging to observe the ethics of citation of sources used (bibliographic references, figures, tables, questionnaires).

For original papers, according to the requirements of the Helsinki Declaration, the Amsterdam Protocol, Directive 86/609/EEC, and the regulations of the Bioethical Committees from the locations where the studies were performed, the authors must provide the following:

- the informed consent of the family, for studies in children and juniors;
- the informed consent of adult subjects, patients and athletes, for their participation;
- malpractice insurance certificate for doctors, for studies in human subjects;
- certificate from the Bioethical Committees, for human study protocols;
- certificate from the Bioethical Committees, for animal study protocols.

The data will be mentioned in the paper, in the section Materials and Methods. The documents will be obtained before the beginning of the study. Will be mentioned also the registration number of the certificate from the Bioethical Committees.

Editorial submissions will be not returned to authors, whether published or not.

FOR THE ATTENTION OF THE SPONSORS

Requests for advertising space should be sent to the Editors of the "Palestrica of the Third Millennium" journal, 1, Clinicilor St., 400006, Cluj-Napoca, Romania. The price of an A4 full colour page of advertising for 2012 will be EUR 250 and EUR 800 for an advert in all 4 issues. The costs of publication of a logo on the cover will be determined according to its size. Payment should be made to the Romanian Medical Society of Physical Education and Sports, CIF 26198743. Banca Transilvania, Cluj branch, IBAN: RO32 BTRL 0130 1205 S623 12XX (RON).

SUBSCRIPTION COSTS

The "Palestrica of the Third Millennium" journal is printed quarterly. The subscription price is 100 EUR for institutions abroad and 50 EUR for individual subscribers outside Romania. For Romanian institutions, the subscription price is 120 RON, and for individual subscribers the price is 100 RON. Note that distribution fees are included in the postal costs.

Payment of subscriptions should be made by bank transfer to the Romanian Medical Society of Physical Education and Sports, CIF 26198743. Banca Transilvania, Cluj branch, IBAN: RO32 BTRL 0130 1205 S623 12XX (RON), RO07 BTRL 01,304,205 S623 12XX (EUR), RO56 BTRL 01,302,205 S623 12XX (USD). SWIFT: BTRLRO 22

Please note that in 2010 a tax for each article submitted was introduced. Consequently, all authors of articles will pay the sum of 150 RON to the Romanian Medical Society of Physical Education and Sport published above. Authors who have paid the subscription fee will be exempt from this tax. Other information can be obtained online at www.pm3.ro "Instructions for Authors", at our e-mail address palestrica@gmail.com or at the postal address: 1, Clinicilor St., 400006, Cluj-Napoca, Romania, phone: +40264-598575.

INDEXING

Title of the journal: Palestrica of the third millennium – Civilization and sport

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Profile: a Journal of Study and interdisciplinary research

Editor: "Iuliu Haţieganu" University of Medicine and Pharmacy of Cluj-Napoca and The Romanian Medical Society of Physical Education and Sports in collaboration with the Cluj County School Inspectorate

The level and attestation of the journal: a journal rated B+ by CNCSIS in the period 2007-2011 and certified by CMR since 2003

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Vol. 16, no. 1, Ianuarie-Martie 2015, 85–87

ÎN ATENŢIA COLABORATORILOR

Tematica revistei

Ca tematică, revista are un caracter multidisciplinar orientat pe domeniile biomedical, sănătate, efort fizic, ştiinţe sociale, aplicate la activităţile de educaţie fizică şi sport, astfel încât subiectele tratate şi autorii aparţin mai multor specialităţi din aceste domenii. Principalele rubrici sunt: „Articole originale" şi „Articole de sinteză".

Exemplificăm rubrica „Articole de sinteză" prin temele importante expuse: stresul oxidativ în efortul fizic; antrenamentul mintal; psihoneuroendocrinologia efortului sportiv; cultura fizică în practica medicului de familie; sporturi extreme şi riscuri; determinanţi emoţionali ai performanţei; recuperarea pacienţilor cu suferinţe ale coloanei vertebrale; sindroame de stres şi psihosomatică; educaţia olimpică, aspecte juridice ale sportului; efortul fizic la vârstnici; tulburări ale psihomotricităţii; pregătirea sportivă la altitudine; fitness; biomecanica mişcărilor; testele EUROFIT şi alte metode de evaluare a efortului fizic; reacţii adverse ale eforturilor; endocrinologie sportivă; depresia la sportivi; dopajul clasic şi genetic; Jocurile Olimpice etc.

Dintre articolele consacrate studiilor şi cercetărilor experimentale notăm pe cele care vizează: metodica educaţiei fizice şi sportului; influenţa unor ioni asupra capacităţii de efort; profilul psihologic al studentului la educaţie fizică; metodica în gimnastica sportivă; selecţia sportivilor de performanţă.

Alte articole tratează teme particulare vizând diferite sporturi: înotul, gimnastica ritmică şi artistică, handbalul, voleiul, baschetul, atletismul, schiul, fotbalul, tenisul de masă şi câmp, luptele libere, sumo.

Autorii celor două rubrici de mai sus sunt medici, profesori şi educatori din învăţământul universitar şi preuniversitar, antrenori, cercetători ştiinţifici etc.

Alte rubrici ale revistei sunt: editorialul, actualităţile editoriale, recenziile unor cărţi - ultimele publicate în domeniu, la care se adaugă şi altele prezentate mai rar (invenţii şi inovaţii, universitaria, preuniversitaria, forum, remember, calendar competiţional, portrete, evenimente ştiinţifice).

Subliniem rubrica "Memoria ochiului fotografic", unde se prezintă fotografii, unele foarte rare, ale sportivilor din trecut şi prezent.

De menţionat articolele semnate de autori din Republica Moldova privind organizarea învăţământului sportiv, variabilitatea ritmului cardiac, etapele adaptării la efort, articole ale unor autori din Franţa, Portugalia, Canada.

Scopul principal al revistei îl constituie valorificarea rezultatelor activităţilor de cercetare precum şi informarea permanentă şi actuală a specialiştilor din domeniile amintite. Revista îşi asumă şi un rol important în îndeplinirea punctajelor necesare cadrelor didactice din învăţământul universitar şi preuniversitar precum şi medicilor din reţeaua medicală (prin recunoaşterea revistei de către Colegiul Medicilor din România), în avansarea didactică şi profesională.

Un alt merit al revistei este publicarea obligatorie a cuprinsului şi a câte unui rezumat în limba engleză, pentru toate articolele. Frecvent sunt publicate articole în extenso într-o limbă de circulaţie internaţională (engleză, franceză).

Revista este publicată trimestrial iar lucrările sunt acceptate pentru publicare în limba română şi engleză. Articolele vor fi redactate în format WORD (nu se acceptă articole în format PDF). Expedierea se face prin e-mail sau pe dischetă (sau CD-ROM) şi listate, prin poştă pe adresa redacţiei. Lucrările colaboratorilor rezidenţi în străinătate şi ale autorilor români trebuie expediate pe adresa redacţiei:

Revista «Palestrica Mileniului III»
Redactor şef: Prof. dr. Traian Bocu
Adresa de contact: palestrica@gmail.com sau traian_bocu@yahoo.com
Adresa poştală: Str. Clinicilor nr.1 cod 400006, Cluj-Napoca, România
Telefon:0264-598575
Website: www.pm3.ro

Obiective

Ne propunem ca revista să continue a fi o formă de valorificare a rezultatelor activităţii de cercetare a colaboratorilor săi, în special prin stimularea participării acestora la competiţii de proiecte. Menţionăm că articolele publicate în cadrul revistei sunt luate în considerare în procesul de promovare în cariera universitară (acreditare obţinută în urma consultării Consiliului Naţional de Atestare a Titlurilor şi Diplomelor Universitare).

Ne propunem de asemenea să încurajăm publicarea de studii şi cercetări, care să cuprindă elemente originale relevante mai ales de către tineri. Toate articolele vor trebui să aducă un minimum de contribuţie personală (teoretică sau practică), care să fie evidenţiată în cadrul articolului.

În perspectivă ne propunem îndeplinirea criteriilor care să permită promovarea revistei la niveluri superioare cu recunoaştere internaţională.

STRUCTURA ŞI TRIMITEREA ARTICOLELOR

Manuscrisul trebuie pregătit în acord cu prevederile Comitetului Internaţional al Editurilor Revistelor Medicale (http://www.icmjee.org).

Numărul cuvintelor pentru formatul electronic:

– 4000 cuvinte pentru articolele originale,
– 2000 de cuvinte pentru studiile de caz,
– 5000–6000 cuvinte pentru articolele de sinteză.

Format pagină: redactarea va fi realizată în format A4. Paginile listate ale articolului vor fi numerotate succesiv de la 1 până la pagina finală.

Font: Times New Roman, mărime 11 pt.; redactarea se va face pe pagina întreagă, cu diacritice, la două rânduri, respectând margini egale de 2 cm pe toate laturile.

Ilustraţiile:

Figurile (grafice, fotografii etc.) vor fi numerotate consecutiv în text, cu cifre arabe. Vor fi editate cu programul EXCEL sau SPSS, şi vor fi trimise ca fişiere separate: „figura 1.tif", „figura 2. jpg", iar la solicitarea redacţiei şi în original. Fiecare grafic va avea o legendă care se trece **sub** figura respectivă.

Tabelele vor fi numerotate consecutiv în text, cu cifre romane, şi vor fi trimise ca fişiere separate, însoţite de o legendă ce se plasează **deasupra** tabelului.

PREGĂTIREA ARTICOLELOR

1. Pagina de titlu: – cuprinde titlul articolului (maxim 45 caractere), numele autorilor urmat de prenume, locul de muncă, adresa postală a instituţiei, adresa poştală şi adresa e-mail a primului autor. Va fi urmat de titlul articolului în limba engleză.

2. Rezumatul: Pentru articolele experimentale este necesar un rezumat structurat (Premize-Background, Obiective-Aims, Metode-Methods, Rezultate-Results, Concluzii-Conclusions), în limba română, de maxim 250 cuvinte (20 de rânduri, font Times New Roman, font size 11), urmat de 3–5 cuvinte cheie (dacă este posibil din lista de termeni consacraţi). Toate articolele vor avea un rezumat în limba engleză. Nu se vor folosi prescurtări, note de subsol sau referinţe.

Premize şi obiective: descrierea importanţei studiului şi precizarea premizelor şi obiectivelor cercetării.

Metodele: includ următoarele aspecte ale studiului:

Descrierea categoriei de bază a studiului: de orientare sau aplicativ.

Localizarea şi perioada de desfăşurare a studiului. Colaboratorii vor prezenta descrierea şi mărimea loturilor, sexul (genul), vârsta şi alte variabile socio-demografice.

Metodele şi instrumentele de investigaţie folosite.

Rezultatele vor prezenta datele statistice descriptive şi inferenţiale obţinute (cu precizarea testelor statistice folosite): diferenţele dintre măsurătoarea iniţială şi cea finală, pentru parametri investigaţi, semnificaţia coeficienţilor de corelaţie. Este obligatorie precizarea nivelului de semnificaţie (valoarea ***p*** sau mărimea efectului ***d***) şi a testului statistic folosit etc.

Concluziile care au directă legătură cu studiul prezentat.

Articolele de orientare şi studiile de caz vor avea un rezumat nestructurat (fără a respecta structura articolelor experimentale) în limita a 150 cuvinte (maxim 12 rânduri, font Times New Roman, font size 11).

3. Textul

Articolele experimentale vor cuprinde următoarele capitole: Introducere, Ipoteză, Materiale şi Metode (inclusiv informaţiile etice şi statistice), Rezultate, Discutarea rezultatelor, Concluzii (şi propuneri). Celelalte tipuri de articole, cum ar fi articolele de orientare, studiile de caz, editorialele, nu au un format impus.

Răspunderea pentru corectitudinea materialelor publicate revine în întregime autorilor.

4. Bibliografia

Bibliografia va cuprinde:

Pentru articole din reviste sau alte periodice se va menţiona: numele tuturor autorilor şi iniţialele prenumelui, anul apariţiei, titlul articolului în limba originală, titlul revistei în prescurtare internaţională (caractere italice), numărul volumului, paginile

Articole: Pop M, Albu VR, Vişan D et al. Probleme de pedagogie în sport. Educaţia Fizică şi Sportul 2000; 25(4):2-8.

Cărţi: Drăgan I (coord.). Medicina sportivă aplicată. Ed. Editis, Bucureşti 1994, 372-375.

Capitole din cărţi: Hăulică I, Bălţatu O. Fiziologia senescenţei. În: Hăulică I. (sub red.) Fiziologia umană. Ed. Medicală, Bucureşti 1996, 931-947.

Începând cu revista 4/2010, fiecare articol va trebui să se bazeze pe un minimum de 15 şi un maximum de 100 referinţe bibliografice, în majoritate articole nu mai vechi de 10 ani. Sunt admise un număr limitat de cărţi şi articole de referinţă (1-3), cu o vechime mai mare de 10 ani. Un procent de 20% din referinţele bibliografice citate trebuie să menţioneze literatură străină studiată, cu respectarea criteriului actualităţii acesteia (nu mai vechi de 10 ani).

Procesul de recenzare (peer-review)

Într-o primă etapă toate materialele sunt revizuite riguros de cel puţin doi referenţi competenţi în domeniu respectiv (profesori universitari doctori şi doctori docenţi) pentru ca textele să corespundă ca fond şi formă de prezentare cerinţelor unei reviste serioase. După această etapă materialele sunt expediate referenţilor revistei, în funcţie de profilul materialelor. În urma observaţiilor primite din partea referenţilor, redacţia comunică observaţiile autorilor în vederea corectării acestora şi încadrării în cerinţele de publicare impuse de revistă. Acest proces (de la primirea articolului până la transmiterea observaţiilor) durează aproximativ 4 săptămâni. Cu această ocazie se comunică autorului daca articolul a fost acceptat spre publicare sau nu. În situaţia acceptării, urmează perioada de corectare a articolului de către autor în vederea încadrării în criteriile de publicare.

Conflicte de interese

Se cere autorilor să menţioneze toate posibilele conflicte de interese incluzând relaţiile financiare şi de alte tipuri. Dacă sunteţi siguri că nu există nici un conflict de interese vă rugăm să menţionaţi acest lucru. Sursele de finanţare ar trebui să

fie menţionate în lucrarea dumneavoastră.

Precizări

Precizările trebuie făcute doar în legătură cu persoanele din afara studiului, care au avut o contribuţie substanţială la studiul respectiv, cum ar fi anumite prelucrări statistice sau revizuirea textului în limba engleză. Autorii au responsabilitatea de a obţine permisiunea scrisă din partea persoanelor menţionate cu numele în cadrul acestui capitol, în caz că cititorii se referă la interpretarea rezultatelor şi concluziilor acestor persoane. De asemenea, la acest capitol se vor face precizări în cazul în care articolul valorifică rezultate parţiale din anumite proiecte sau dacă acesta se bazează pe teze de masterat sau doctorat susţinute de autor, alte precizări.

Criterii deontologice

Redacţia va răspunde în timp util autorilor privind acceptarea, neacceptarea sau necesitatea modificării textului şi îşi rezervă dreptul de a opera modificări care vizează forma lucrărilor.

Nu se acceptă lucrări care au mai fost tipărite sau trimise spre publicare la alte reviste. Autorii vor trimite redacţiei odată cu articolul propus spre publicare, într-un fişier word separat, o declaraţie scrisă în acest sens, cu angajamentul respectării normelor deontologice referitoare la citarea surselor pentru materialele folosite (referinţe bibliografice, figuri, tabele, chestionare).

Pentru articolele originale, în conformitate cu îndeplinirea condiţiilor Declaraţiei de la Helsinki, a Protocolului de la Amsterdam, a Directivei 86/609/EEC şi a reglementărilor Comisiilor de Bioetică din locaţiile unde s-au efectuat studiile, autorii trebuie să prezinte:

- acordul informat din partea familiei, pentru studiile pe copii şi juniori;
- acordul informat din partea subiecţilor adulţi, pacienţi şi sportivi, pentru participare;
- adeverinţă de Malpraxis pentru medici, pentru cercetările/studiile pe subiecţi umani;
- adeverinţă din partea Comisiilor de Etică, pentru protocolul de studiu pe subiecţi umani;
- adeverinţă din partea Comisiilor de Bioetică, pentru protocolul de studiu pe animale.

Datele vor fi menţionate în articol la secţiunea Material şi metodă. Documentele vot fi obţinute înainte de începerea studiului. Se va menţiona şi numărul de înregistrare al adeverinţei din partea Comisiilor de Etică.

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