

Journal of Sport and Kinetic Movement

No.22
Vol. II, /2013

ISSN 2286 – 3524
ISSN-L 2286 – 3524



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ISSN 2286 – 3524

ISSN-L 2286 – 3524

Publisher: Universitaria

156 Brestei Street, 200177, Craiova, Romania

Editorial office address:

University of Craiova, Physical Education and Sports Faculty

156 Brestei Street, 200177, Craiova, Romania

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Session

Physical Education and Sport

METHODS OF EXPRESSION OF THE ATHLETES' PERSONAL AUTONOMY AFTER INTERRACTING WITH THE MEDIA

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Abstract: It is well known the fact that the personal autonomy represents the capacity to control your own life together with the feeling that there is the possibility of performing this control. The study's results locate the athletes in the media's area, far from the upper limit of the „small” scores and from the lower limit of the „big” scaores (considering the age and the gender of the participants). The athletes are asking for advises from other persons when they have to take decisions and, considering their opinion, they express feelings even when from time to time those feelings are different. We can conclude that the athletes are relatively sensitive of the family's and friends' influence when they build their principles.

Introduction:

Based on the media's information, people evaluate the importance of the events in which they can be directly involved, they anticipate some of the social or political life trend and take decisions. Media presents not only the facts, but also an interpretation offering a particular context. Using media's products, millions of people are constantly exposed to the same messages and they end up sharing the same values and cultural representations, to have similar knowledge, to think through these information, ideas and similar symbols. So the media bonds different culture people through the information.

The press builds its messages depending of the audience's wishes and in this way the content of the press is oriented to „what pleases” the public, entertainment most exactly. The mass communication system was permanently expressed as an active

factor of the social life even since has established itself as an essential component of the modern world. Media is part of our daily life and accompanies us throughout life.

Studies dedicated to media's influence have shown that its messages do not reach the individuals immediately, they do not penetrate into people's thinking without encountering a critical resistance and instead of changing the attitudes they solidify and confirm the preexisted beliefs.

In ontogenesis, the person's evolution tends to start with heteronomy and to go to personal autonomy. Reiss & Havercamp (2003, quoted by Tudose, Tudose & Dobranici, 2011) considers that the personal autonomy is one of the personality development's goals, establishing the following basic relationship Basic Motivation – Purpose – Emotions – Values:

Basic wish:	Purpose:	Positive emotion:	Negative emotion:	Inherent value:
Independence	Personal autonomy	Personal freedom	Dependancy	Self confidence

Summarizing the various existing definitions in the literature, we highlight that personal autonomy is a feature of self-awareness (Șchiopu, 1997) and therefore

personality. Personal autonomy has in view a general guiding of the subject in relation to the environment or the general physical and socio-cultural environment, expressing

a degree of freedom and unaffected capacity of deliberation, requires conscious self through self-adjustment (Neveanu Popescu, 1978).

Albu (2007) defines personal autonomy as "the ability to control their own lives with the feeling that it is possible to exercise this control". Definition as worded integrates two trends seen in the authors who have dealt with personal autonomy: "the relationship of the concept of personal autonomy with the cognitive abilities and its inclusion within emotively".

Cognitive autonomy means: the ability to reason independently to form your own opinions and make decisions, the ability to think critically; the desire of enrichment and improvement of knowledge (the desire for information), the capacity of self-assessment; a sense of confidence in yourself, believing that you can choose what to do. Interpreting low scores: they need help of others when it is about taking decisions, they do not trust their own abilities, and they are influenced by the opinions of others. Interpreting high scores: they have the ability to make their own decisions, they analyse critical information received, they form opinions without being influenced by others, they can self-assess.

Behavioural autonomy is self-directing their behaviour and act upon decisions.

Materials and methods

Subjects of study

The research was conducted during July-October 2012 in several sports centers (Lia Manoliu Sport Center , Floreasca pool, Snagov Sport Center , BNR Arenas, Floreasca Hall) on a group of 17 participants, aged between 17 and 36 years practicing gymnastics, tennis, fencing, water polo and rowing. Subjects of the study gave their consent to participation in research and the use of results in this publication or in future publications.

Psychological Test

Personal self-assessment questionnaire (AP Questionnaire) is designed to assess the four dimensions of personal autonomy: cognitive autonomy, behavioral autonomy, emotional autonomy and self-value

Interpreting low scores: working as other dictate or how they believe that others would want, they need encouragement throughout their actions; they quit performing difficult tasks if they are not helped. Interpreting high scores: acting according to their own decisions, regardless of opinions of others, does not abandon performing a task if difficulties come on the way, struggles to cope alone.

Emotional autonomy means making and expressing feeling independently. Interpreting low scores: they avoid to express their feelings when they are different from the others or when they don't know the others' emotions. Interpreting high scores: they are not reluctant to express their feelings, even if they are not shared by others.

Adjective (self-value) autonomy means setting up a proper set of beliefs and principles, resistant to the pressure of others. Interpreting low scores: they are influenced by family and friends when they are creating their principles, they give up their beliefs when others disagree with them or have other ideas. Interpreting high scores: they do not give up their beliefs and principles just because they are different from those of others or because others disagree with them.

autonomy. The evaluation of the subjects' personal autonomy was realised by applying the AP Questionnaire, component of the psychological assessment computerized platform Cognitrom Assessment System (CAS ++).

Working hypothesis

There are significant differences between high-performance athletes in the degree of personal autonomy (self-value, behavioural, cognitive and emotional autonomy) after interacting with the media.

The research results

The results of the AP Questionnaire subjects (Personal self-assessment questionnaire) were recorded in Table 1. The table 2 present the statistical results of our study.

Table No.1. The results of athlete's personal autonomy assessment questionnaire

Athlete	Self-value autonomy	Behavioral autonomy	Cognitive autonomy	Emotional autonomy
1	26	31	34	25
2	23	28	25	26
3	26	31	33	20
4	25	35	34	22
5	27	32	29	30
6	27	38	28	30
7	31	33	35	37
8	32	49	35	27
9	20	36	26	29
10	24	46	35	32
11	27	38	30	30
12	24	32	32	26
13	26	39	34	22
14	31	40	39	25
15	32	41	41	28
16	26	44	38	25
17	25	32	25	27

Table No.2. Descriptive statistics

	N	Minimum	Maximum	Media	Standard deviation
Self-value autonomy	16	23	32	27.00	2.92
Behavioural autonomy	17	28	49	36.76	5.88
Cognitive autonomy	17	25	41	32.53	4.77
Emotional autonomy	17	20	37	27.12	4.11
Valid N (listwise)	16				

Conclusions

The value of Mann-Whitney test for emotional autonomy is 2,000. The critical value for alpha level of 0.05 and $N = 11$ and also $N = 4$ is 6. As the U-value calculated is less than the critical value table ($2 < 6$), and $p = 0.006$, one can conclude that in terms of emotional autonomy among athletes who answered "to a very small extent" (median = 26) and those who responded "in a somewhat small / do not know" (median = 30) there are significant differences in the statistical report.

Athletes who said that they give very little telephone statements regarding their professional activity to the journalists have a level of emotional autonomy significantly lower (avoids to express their feelings when they are different from those of others), compared to those who answered "in a small or to a certain degree / do not know". The latter (giving a greater telephone statements regarding their professional journalists) are less reluctant to express their feelings even if they don't know the others' feelings. Effect size is $r = 0.68$, which shows that the effect of the group variable on the emotional autonomy results is very strong.

Referring to the athletes (subjects in our study) that filled the personal autonomy Assessment Questionnaire (AP), the recorded results placed athletes in the media (we consider the self-value, emotional, cognitive and behavioural autonomy) score far from the upper limit of "small scores" and the lower limit of the "large scores" (taking into account the age and gender of the participants). Thus participants ask others' advice when making decisions, taking into account their Sage Publ

views and they express their feelings even if from time to time are different from those of others. The athletes are relatively sensitive to the influence of family and friends when they are formulating their principles.

In summary, as a result of statistical processing of the data, the null hypothesis is rejected for the following survey items OSP 1, 2, 3, 5, 6, 8, 9, 11, 13, 14, 15, 16 and 20. In these circumstances, the research hypothesis is accepted, which states that athletes interacting with the media can influence the degree of personal autonomy, putting their mark on their progress in training and competition.

Thus, it highlights the impact that media coverage has on the athletes and the need to overcome the negative effects that can occur in certain situations. In this context, it is to the fore the importance of psychological preparation, the unit athlete-coach-psychologist, to ensure optimal mental condition necessary to achieve great performance.

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The contribution of the legislative environment on the optimization of the management of sports activities

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Abstract: Political, governmental and legislative factors represent opportunities and risks for all types of organizations, regardless of their size and category, including those working in the field of sport. For organizations largely depending on government contracts or grants, political predictions are of particular importance in an external diagnosis. The political component reflects, in a composition which is specific to each country, the political forces and the relationships between them, the degree of involvement of the State in the economy, the degree of stability of the national, regional and international political climate, etc. Moreover, the political power existing at any given time in a country can encourage business by creating a climate of stability and by cultivating among the public opinion an objective perception of the economic and business mechanisms. Also in the plan of external relations political power can create facilities for domestic economic agents, such as, for example, measures to protect domestic market or support in getting export contracts. The legislative framework is made up of all legal regulations which concern the activity of the organization. Among them, first and foremost it stands out the legislation protecting the economy and business.

Key words: legislative environment, optimization, management, sports activities

The legal environment in which sports organizations operate has significantly changed in the last decade. The growth of the litigious society where people seek the correction with the help of the legal system to end discussions has forced the nonprofit sports organizations to better know their legal responsibilities and problems associated with risk management. At the same time there has been an increase in the practice of profession in sport which increased the expectations of service and behaviour standards by the customers and members, by the community and by the legal system itself. The Canadian Center for Sport and Law made it clear that the society is nowadays more oriented towards sports and the public expects that the nonprofit organizations to be more responsible and similar to businesses. High professionalism in sport means that nonprofit sports organizations are now engaged in a broader variety of growth of revenues and commercial activity, the establishing of contracts with suppliers, with sponsors and traders and other businesses, and in some cases the employment of paid staff, even at the sports community level (Healey, 2005, p. 37)

Specific organizations such as the European Sports Commission (ESC) or the Sport and Recreation New Zealand (SPARC) have implemented guidelines of voluntary authorities for non-profit sports organizations. In most Western countries, for-profit companies are covered by federal laws.

An example in this respect could be Australia. The activity of the companies is regulated by the Australian Securities and Investments Commission (ASIC) under the authority of the Corporation Act. A similar legislative framework operates at provincial level in Canada. The reports of the requirements and the regime of the financial disclosures of those states and the provincial regulations often vary enormously, making it difficult to promote the responsibility and professionalism of the activity across the whole country. A report published about the reforming the regulation of non-profit organizations in Australia (University of Melbourne, Centre for Corporate Law and Securities Regulation - CCLSR) recommends the introduction of a single Commonwealth regulatory regime for nonprofit organizations by reference to the powers in states toward the Commonwealth. Such a

move will make it easier for nonprofit sports organizations at national level the adoption of unitary structures that function as a single legal entity with the State. This is the preferred model of federal sports agencies, such as the ASC.

At this point it is important to analyze the legal obligations and the potential dependability problems encountered by each member of the board. The Law 69/2000 on physical education and sports identifies the focal point of the responsibility of the managers as representing the interest of the members in the business management of the organization within the law. Their duties include: endeavour – to act reasonably, prudently, in good faith and with favorable interests regarding the Organization and its members; loyalty – to put the interests of the organization in the first place and to not use his position of director for any other private interests, and compliance - to act within the sphere of governmental policies of the Organization and within the sphere of other laws, rules and regulations that apply to the Organization (Law 69/2000). A manager who fails to fulfill his obligations in this manner may be deemed personally liable in one or more of the following four situations: (1) statute – breaking the law; (2) contract – a contract is breached or violated; (3) damage – an action or a lack of action, intentional or unintentional, causes damage or injustices to another person, or (4) lawless deeds – errors, omissions, actions or decisions which infringe upon others intervening in their rights, opportunities or privileges.

Such potential requirements for personal liability may, of course, discourage people to want to take responsibility for a leadership position as a member of its board of directors. To counter this obstacle, most of the large nonprofit sports organizations ask for insurances, the costs of which have raised in recent years.

Governmental policies on sports. In a review of government policy we have identified three dominant ideologies which require the development of sports policy: the dilettantism and, more recently, the promercantilism. We may argue that these ideologies exist nowadays too among the

members of the community of the sports policy (e.g., the national and regional government departments, the NGB, the Olympic Councils and the specific sports agencies) and that these members do not necessarily share the same ideology in any issue specific to sports policy. Therefore, nonprofit sports organizations are conducted in an environment of sports policy in which sport values (dilettantism, volunteering, community involvement) are promoted, yet at the same time they are encouraged to become financially independent in order to reduce their support from the Government, becoming commercially more involved. Some nonprofit sports organizations are supplied with significant funds destined to programs for elite athletes and they are supported to host major events in order to determine the economic benefits to the communities. However, these same organizations receive too little direct financial assistance to increase the quality or quantity of sporting experiences at community level or at the fundamental level in sport.

According to Barbu and Stroe (2007), governmental interference in sport is generally seen as being elevated to the rank of law in recent years in a number of EU countries, including Romania. The intervention was carried out in the form of increased funding, of the development of policies and programmes aimed at increasing participation rates in organized sports and at improving the standards of performance of elite athletes. Nonprofit sports organizations have argued that while “Government influence on the sports policy of the community increases”, the fragmentary nature of the government intervention is problematic for these. National policies on sport, developed by countries such as Australia, Canada, New Zealand, the US and the EU are run by government agencies with sport specific responsibility. These agencies can politically influence the education or the health agencies, both directly influencing the way in which the activities related to sport appear in the school curriculum or how sport is used to promote a healthy lifestyle. The effect is an access route toward the governing mode, which intends

to support, to regulate or to encourage the activities of nonprofit sports organizations and their boards of directors.

In their work "Still playing the game at arm's length? The selective re-investment in British sport, 1995-2000", Oakley, B. and Green, M. (2001, p. 91) concluded that: "at least in the United Kingdom, it is known the emergence of a community policy more discrete and slightly concentrated, operating around the interests of the sporting elite, which suggests that the competitive political process has been dominated by principles of performance unsatisfactory for the interest of the group." In other words, funds intended for elite athletes and programs for high performance are viewed as a cornerstone of sports national policy and focus on government intervention. For example, the NGB's of high profile, mostly Olympic sports, received the largest portion of the funds intended for sports along with an increase in the Government's expectations, allotted to the councils of these organizations with the purpose to produce improved levels of elite performances.

Green analyzed the impact of these elevated expectations of the NGB in England and concluded that the increased emphasis put by the Government on elite sports performance (supported by the increased funds from the National Lottery) lead to the decisions of the national level of sports organizations to vary to the very point where the objectives of the elite sports were supposing "increased priority over other conceptions of sports participation" (Green, 2004, p. 382).

In a later publication, Green reaffirmed his opinion that "the interests of the development of elite sport have influenced the process of sports policies in Australia, Canada, the US and the EU over the past two decades, the same thing also happening in other countries over the past 10 years" (Green, 2005, p. 161). The role of the agencies in the State was crucial in specifying, building and sustaining by means of the control of resources and the dependence of type on values and beliefs which encouraged the achievements of the elite. Nonprofit sports organizations have lobbied for the increase of the funds and for

supporting other areas of development in sports as well as for the development of community sports clubs and programmes for mass participation. However, in our opinion, the agencies in the United States, Canada, the EU, Australia, New Zealand and other countries have created a dependency relationship with sports organizations with regard to the resources of sponsorship programmes of elite sports marginalized by other areas from sports policy and later on from support of the investment.

The strength of the governmental policy on elite sport has forced nonprofit sports organizations to make contractual arrangements with governmental sports agencies in order to provide results for the programmes of sports elite or of high performance. Therefore, the governmental managing councils had to appoint more paid staff, to oversee larger joint investment funds, to monitor a higher number of funds through reports, to find better trained and experienced staff to manage their organization. Also, there was an increase of the demands of management councils to find a balance within the Organization to achieve the goals of their sporting elite as well as of duties to continue to create favorable opportunities for the sport at the community level.

Adaptation and harmonization of Romanian legislation in to the EU legislation. Legislation in the field of sports law comprises a series of Government Decisions, Laws and Government Emergency Ordinances aimed at the proper functioning of the activity of physical education and sport.

Within the Norms on the regulation of financial issues in sports activities there were adopted laws to legalize domestic actions (cantonments, semi-cantonments and training camps, transportation of athletes and accompanying persons to sports activities, accommodation of participants in sports activities, sums granted as per day expenditures, etc.) international actions, food allowances, prizes, bonuses and other rights, effort diet, and others.

The Regulation for the implementation of the provisions of Law on physical

education and sport 69/2000 requires the use of normative documents as steps for the proper conduct of sporting activity. In chapter General Provisions terms such as assignment, endorsement, approval, registration, affiliation, legitimation, sport association, sport structure, sport branch etc. are explained.

Having in view of the need to correlate the domestic regulations with the international regulations concerning the status of the professional athlete in Romania, taking into account the specificity of sport activity, in order to avoid significant financial losses of some important sport structures in Romania, Law 69 was amended by Government Emergency Ordinance 205 of 22 December 2005.

Also within the framework of this regulation there are treated rules concerning physical education and sport at school, university and military levels, the organization of Sports Register, the monitoring and control, and social protection of performance athletes.

As procedures, the regulation also stipulates the procedure of approval of establishing of sports structures; the procedure of revocation of the acknowledgment of functioning of sports structures, endorsement and authorization of the affiliation of the national sports federations and of all organizations with sports profile to international sports federations, to European and international bodies and to other sporting bodies; the procedure of authorization of carrying out on Romanian territory of European, World and Regional Championships, the participation of the national representatives to the European, World and Regional Championships organized abroad

As special provisions relating to the national sports federations, are presented: the official recognition of the practicing of a sport branch in Romania; the procedure of affiliation of a club or a county association to a National Sports Federation.

The National Agency for Sport was the body which was coordinating the activity in the field of physical education and sports, under the Law on Physical Education and Sport, Law 69 of 28 April 2000, thus taking

over the tasks of the Ministry of Youth and Sports.

The Government Ordinance 26/2000 as amended by Government Ordinance 37/2003 stipulates that the acquisition of legal personality is done by registration in the Register of associations and foundations at the Registry Office of the District Court in whose territorial jurisdiction the organization is established, except for the federations which will register at the Court in whose jurisdiction the federation will have its headquarters.

In total these changes impose greater pressures on the voluntary members of the management board, requiring them to be appropriately qualified and to have experience in handling the problems presented. In some cases, pressures act preventively in attracting individuals to leadership positions. Healey (2005, p. 36) argued that recruiting and staffing have been adversely affected due to fear of the possibility of exposure to personal legal liability and of the risk of financial target.

Legislation in the field of sport in Romania in the current context of country member of the EU. Sport is a phenomenon of the modern world, which arose in the context of physical education, designating the education carried out by means of race and competition. Due to its emergence, a switch was done from the hygiene objectives aimed by the physical education to the educational ones concerning the educational values of the race.

Pierre de Fredi, baron of Coubertin, the "renovator" of the Modern Olympic Games, believes that "nothing is either solid or lasting in physical education, if it is not carried out in collaboration with sports", being a field of manifestation of human excellence.

In Romania, the conception of the practice of sport branches began to develop in the early 20th century, by practicing and promoting sports branches established in Europe and in the world, as well as the national sport (oina), in parallel with the establishment of organizational structures, in the form of sports clubs, which covered all social strata. The State and the non-governmental organizations had a good

conception about the sport and its educational and formative valences (Barbu, 2009).

After World War II, the conception of practicing the sport in our country has undergone substantial changes, in accordance with the prevailing ideology until 1990, objectified in slogans like "Sport for the people", "Sport as a training factor for work and defense", "First in sport, first in school" etc. During this period, for many young people practicing the performance sport became a means of escaping the social constraints, characteristic to those times, and of providing a decent living. However, the system of physical education and sport "held up" because of its organizational structures (clubs and sports associations), which led to the affirmation of Romania in international competitions.

In order to provide a clearer picture on the organization of physical education and sport until the post-revolution period, we consider that it is welcomed a short browsing through the numerous regulations issued to date and accessible today.

D. Healey, through his paper "Sport and the Law" presented at the University of New South Wales Press, Sydney (2005, p. 37) concludes the impact that the legislative environment has on sports activities on the basis of the change of the existing laws and of the variety of sources from which emerges the regulation of the activities of authorities, which present the nonprofit sports organizations with several challenges regarding the authority regardless of their organizational capacity. This includes a consent apparently complex which hampers the fulfilment of requirements, a high level of public research of the management and performance processes, and difficulty in attracting the voluntary management board or the members of the board, mainly in low-profile sports. Furthermore, the voluntary model of councils and their "multiple and complex centers of responsibility (e.g., their responsibility to those who make donations, members, customers and legislative bodies) ... [are] ... important obstacles in the way of good professing the corporate authority."

Conclusions

In our opinion, the regulation of the corporate authorities in developed countries, including in Romania, is achieved by norms that constrain but also by those who do not constrain, by international recommendations and industry specific standards, by comments of analysts and of freelancers and by decisions of the judges, the sources of the regulation for nonprofit organizations are similar and they usually appear as one of the four forms: a) the established set of laws of the Government supported through monitoring and enforcement; b) interpretations of the statutory law done by judges; c) the best of profession recommendations such as the "Authority Code for the Voluntary and Community Sector" developed by the National Council for voluntary organizations in the EU; d) calculation standards and control standards.

We may appreciate that the environment of sports activity consists of a set of elements among which we mention: the quality of sports products plus other dimensions such as speed and flexibility, their innovation, integrity through which all organizational decisions and actions are combined and activated, the legislative framework which is achieved through rules and regulations that may affect directly or indirectly the activity of individuals, organizations, institutions and bodies, plus the governmental policies on sports.

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Junior Goalkeepers' Pattern of Playing and Training

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Abstract: The current paper aims to highlight the main features of the goalkeeper's pattern of playing and training, not only in terms of physical, technical or tactical preparation, but also from psychological point of view. The purpose of this research is to establish the junior goalkeepers' pattern of playing and training, in order to improve the methodology of selecting and training the goalkeepers, putting a great focus on their integrating and participating in the fielders' training, which will lead to more efficient use of arms and legs in the goal as well as to better collaboration with the other players.

The research was based upon observing and analysing the two goalkeepers' behaviour throughout training sessions and official matches within one season in Junior C National Championship. During each game we noted down the goalkeepers' interventions in specific technical and tactical actions and our findings supported the hypotheses.

As a result of the exercises used during the training sessions, the goalkeeper's behaviour has obviously improved, the main proof being the fact that the number of received goals were reduced by half. On this basis, it may be concluded that a goalkeeper who masters all tactical elements during the game strengthens the behaviour of the players in the defending area and creates more opportunities for initiating rapid attack and counterattack.

Keywords: football, pattern,, training, performance, goalkeeper.

Introduction

Reaching superior performance in football is determined by early identification of gifted children. The selection and training of a specialized goalkeeper requires a long and methodical activity built on scientific basis. Being an efficient goalkeeper also requires passion, tenacity and dedication, as they should overcome some difficulty involved in training. Nowadays, the goalkeeper's tasks differ a lot from those of the past. Not only does he defend the goal, but also participates actively in the entire development of the game, playing an important role both in attack and in defence.

Features of the goalkeeper's pattern of playing and physical training

In the selection process it is necessary to take into account the goalkeeper's family's anthropometric history, which can provide data related to physical development, especially his height as an adult.

Selection tests should allow drawing conclusions on (Epuran M., Horn E., p. 92): precision of the execution, emotional control, execution speed, cooperation spirit, observation spirit, independence to fulfil tasks. Thanks to the evolution of football, the goalkeeper's playing and training need to be upgraded. In other words, upgrading

means that a goalkeeper must possess certain skills and qualities, which increases his efficiency.

Goalkeepers' training debuts with a stage of initiation of children with skills for this sport, training during this focussing on developing and strengthening motor skills. Specific tasks refer to (Ionescu I., 2005, p. 145): general physical development, strengthening health; development of physical qualities required by the game; acquiring certain technical and tactical elements specific to their position; educating moral and will qualities.

To accomplish these tasks, it is advisable that the goalkeepers' training should focus on the following coordinates:

-using a great number of physical exercises, with different structure of movements and a varied character of neuromuscular effort. This will lead to the general physical development of dynamic stereotypes, in order to gain greater motor experience and also, to the development of the body functional capacities. The exercises for flexibility, mobility, speed and expansion are complemented by elements from gymnastics, athletics and relays.

-the technical training aims at successively learning of the basic techniques required in the game: directly catching the ball while

diving, boxing the ball or blocking it with the feet, the misleading movement, launching the ball in game, etc.

-the education process of moral and will qualities should respect children's age and individual peculiarities. Receptivity, the development of the spirit of observation and imitation, an accentuated desire of knowledge and affirmation, spontaneity and special attachment may be optimized especially when children are given -through watching some matches or meeting accomplished goalkeepers- the possibility of deciphering the mechanisms of great posture in goal. The goalkeeper's personality – as compared to the other players' - must exhibit clearer thinking and higher analytic vision of different situations. At the same time, goalkeepers show an increased attachment to the group. From the psychological training point of view (Apolzan D., 2010, p. 247), the modern goalkeeper has to be calm, focused, balanced and able to anticipate, qualities that help him take the most adequate decisions, both for defending the goal and initiating attacks and counterattacks of his own team. The lack of these as well as the technical and tactical deficiencies prevent the goalkeeper from affirming in the actual conditions of football game. Through his efficiency and whole behaviour he must inspire confidence to the team.

-when evaluating the potential of a young goalkeeper, it is necessary to take into account not only what he expresses when assessing, but also a number of factors, such as: focusing capacity, personality, experience (if existent), quality and quantity of specific performed work. The goalkeeper must have, first of all, courage, pleasure and the desire to plunge and have contact with the lawn. From the motor point of view, the goalkeepers must possess great reaction speed, an essential quality for this post.

-the goalkeeper's better reaction speed is related to the phenomenon known as anticipation, which is a reflex of its specific training. Performing a quick stretch is an ability specific to the goalkeeper. The reaction speed of these players in game is probably related to the reaction time, anticipation and movement time. The jogs

are very short and it comes to sprinting almost every time. He must control his body in the air, while turning, twisting and bending.

-the goalkeeper's efficiency also depends on his visual acuity. There is an excellent correlation between visual acuity, the player's dynamic and blocking the ball.

It is also important to know how much and how often goalkeepers should be trained separately or together with the other players, as well as in which circumstances training must be done and what exactly should be worked on. It is also equally important to work specifically with goalkeepers, considering these do not have to do exercises that are unrelated to the game.

Goalkeeper's training will be planned in such a way as to ensure his development according to the requirements of modern football.

Materials and methods

In statistical terms, it is obvious that there are increasingly fewer football goalkeepers who integrate into senior teams, not to mention their lack of participation in high performance teams within strong championships, not only in Europe but all over the world. The research was based upon observing and analysing the two goalkeeper's behaviour during training sessions and official matches within one season (1st July 2012 – 25th May 2013) of Junior C National Championship.

During each game we noted down the goalkeepers' interventions in specific technical and tactical actions: going out of the net to block the ball or to distribute it, going out of the net to stop centres (crosses), shooting towards the goal, distribution by kicking or throwing the ball. Both successful and unsuccessful game actions were recorded, then the data were analysed and conclusions were drawn.

Purpose of research

The purpose of this research is to establish the most important aspects regarding junior goalkeepers' pattern of playing and training, in order to improve the methodology of selecting and training the goalkeepers, putting a great focus on their integrating and participating in the fielders' training which will lead to more efficient

use of arms and legs in the goal as well as to better collaboration with the other players.

Research Hypotheses

1. If we manage to apply a training programme that is agedly appropriate to working with young goalkeepers, we'll get superior statistical results in goalkeepers' interventions. Thus, the methods used during the training sessions will contribute to increasing efficiency in using legs and arms during the game, this leading to better correlation with the fielders.

2. If we take into account the model of junior goalkeeper's training and playing, we'll get a higher percentage of integrating them in lots of high-performance senior teams.

Subjects and the place of research

The experimental group consisted of two goalkeepers (born in 1999) from Children and Junior Centre „Gica Popescu” Football School, both of them participating in Junior

C County Championship. The research was undertaken on „Gica Popescu” Stadium and the pitches where the team played away.

Results

After observing the matches with focus on the goalkeeper's behaviour, we made comparisons between the former and the latter parts of the season in order to find whether the exercises suggested were efficient or not. Thus, the results were as it follows:

1. Going out of the net to block the ball. Throughout the 28 matches, it was recorded a total of 70 outgoing, 53 of which were solved. 5 of the unsolved 17 attempts to block the ball ended in goals, due to wrongly anticipating the distance between the player possessing the ball and the goal. This results in the total average of outgoing of 2.5 per match, 1.9 of which is the average of successful attempts, whereas 0.6 represents the average of failures.

Tab. nr. 1. The efficiency of the goalkeeper going out of the net to block the ball

Going out of the net to block the ball	good	wrong	total	p
The former part of season	25	12	37	
The latter part of season	28	5	33	< 0,05
General total	53	17	70	

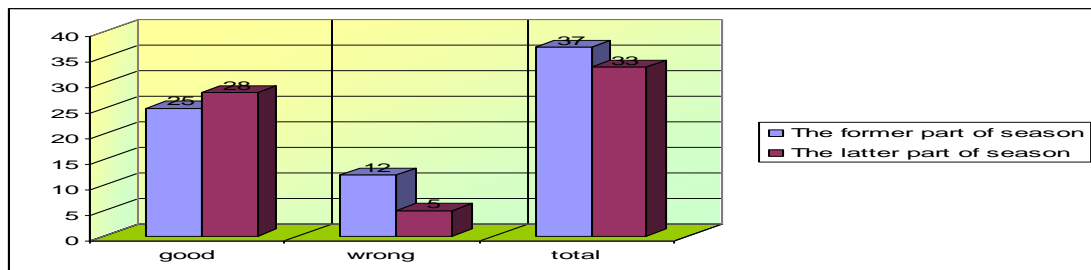


Fig. 1. The graph of the goalkeeper going out of the net to block the ball

2. Going out of the net to distribute the ball. During all matches, the total of outgoing to distribute the ball over 16 m (the main reason for this distance was to avoid certain counterattacks or launching the ball too deeply) was 99, 65 of which were efficient whereas 34 were inefficient. 3 of the unsuccessful attempts ended in goals. The total average of outgoing to distribute the ball over 16 m is 3.5, the efficient attempts represent 2.3, the average of the inefficient ones is 1.2.

Tab. nr. 2. The efficiency of the goalkeeper going out of the net to distribute the ball

Going out of the net to distribute the	good	wrong	total	p
The former part of season	29	22	51	
The latter part of season	36	12	48	< 0,05
General total	65	34	99	

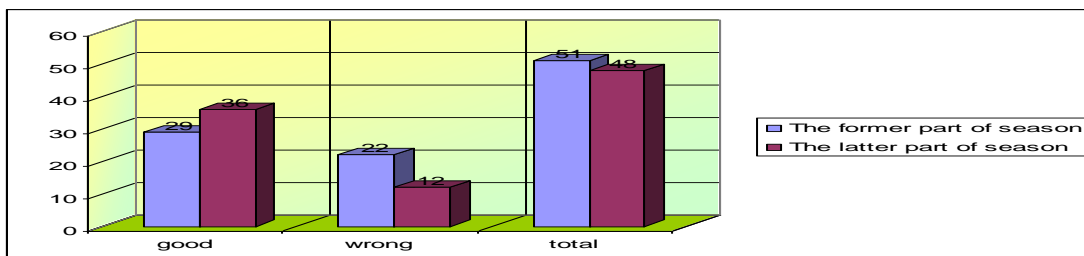


Fig. 2 The graph of the goalkeeper going out of the net to distribute the ball

3. Going out of the goal to stop crosses. The total of goings out of the goal to stop crosses during the 28 matches was 193, 126 of which were efficient whereas 77 were wrong. 5 of the wrong ones led to goals. The total average of the goalkeeper going out of the goal to stop crosses is 6.9 per match, 4.5 of which were good and 2.7 were wrong.

Tab. nr. 3. The efficiency of the goalkeeper going out of the goal to stop crosses

Goings out of the goal to stop	good	wrong	total	p
The former part of season	57	55	102	
The latter part of season	69	22	91	< 0,05
General total	126	77	193	

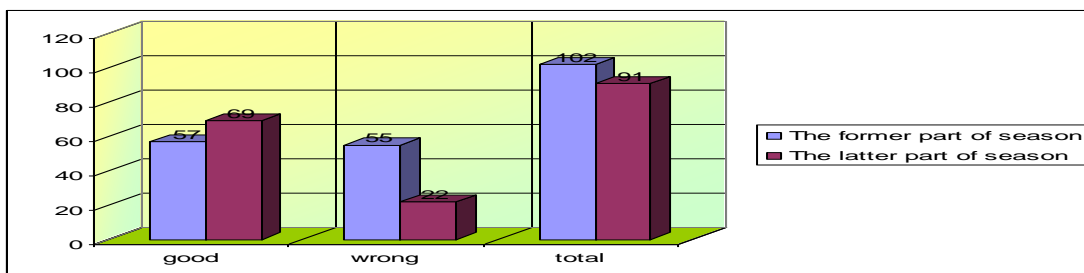


Fig. 3. The graph of the goalkeeper going out of the goal to stop crosses

4. Shooting towards the goal. As far as shooting to score is concerned, there was a total of 154 shoots towards the net, 131 of which were solved successfully by the goalkeeper, the rest of them (23) were goals. There were 3 circumstances in which a goal was scored, because the goalkeepers rejected the balls too soon, which allowed the forwarders to score easily. In 4 situations the goals were unavoidable and it was impossible for the goalkeepers to defend the goal. The average of shoots towards the goal per match was 5.5, 4.67 is the average of shoots solved by the goalkeepers and 0.82 the average of the unsolved ones.

Tab. nr. 4. The efficiency of shooting towards the goal

Shooting towards the goal	solved	unsolved	total	p
The former part of season	67	16	83	
The latter part of season	64	7	71	< 0,05
General total	131	23	154	

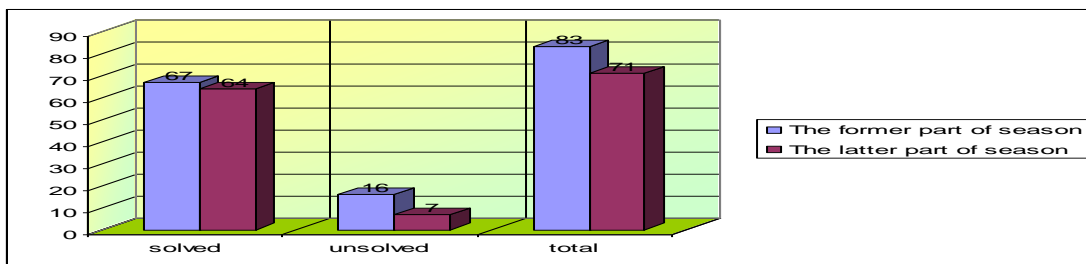


Fig. 4. The graph of shooting towards the goal

5. Distribution by kicking the ball. During the 28 matches a total of 207 kicks was recorded, 30 of these kicks were precise whereas 62 were sent to the opponents. The average per match is 15.3, 5 of which are precise kicks and 10.3 are those sent to the opponents.

Tab. nr. 5. The efficiency of distribution by kicking the ball

Distribution by kicking the ball	good	wrong	total	p
The former part of season	61	64	125	
The latter part of season	47	35	82	< 0,05
General total	108	99	207	

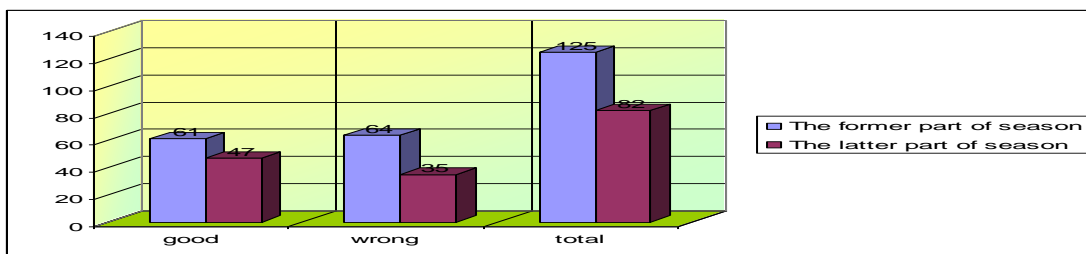


Fig. 5. The graph of distribution by kicking the ball

6. Distribution by throwing the ball. As far as this type of distribution is concerned, it was recorded a total of 109 throws, 86 of which were precise and the rest of throws (26) were sent to the opponents. The average of throws per match is 3.89, divided as it follows 2.96 – the precise ones and 0.92 – those sent to the opponents.

Tab. nr. 6. The efficiency of distribution by throwing the ball

Distribution by throwing the ball	solved	unsolved	total	p
The former part of season	42	19	61	
The latter part of season	41	7	48	< 0,05
General total	83	26	109	

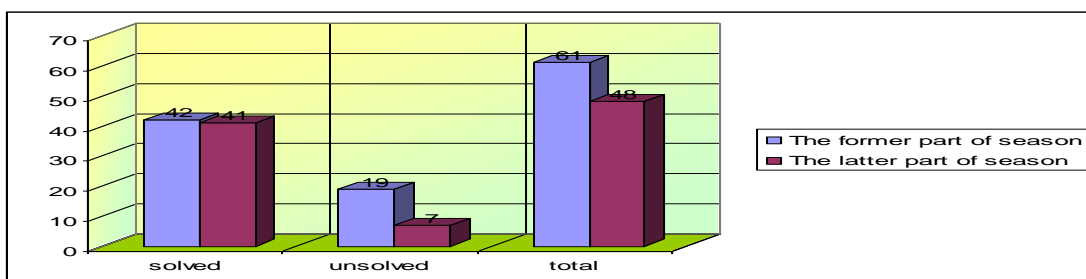


Fig. 6. The graph of distribution by throwing the ball

Discussions

- Using complex specific means of training, in efficiently designed structures, as well as individualized training will lead to optimizing the evolution of players specialized in goalkeeper's position;
- Using well dosed training programmes and sessions individualized on training factors will lead to goalkeepers' progress;
- The goalkeeper is a player whose performance can influence the outcome of a match; consequently, his pattern of playing and training is extremely important for coaches in training design;
- Goalkeepers need specially designed training according to individual characteristics;
- Suppleness, mobility and agility are vital and must be attentively trained;
- Concentration, confidence and courage are psychological aspects that must be specifically trained;
- The goalkeeper must be trained in direct correlation with the other players to increase the efficiency of the game in defence, as well as in attack (triggering counterattack);
- Training must be updated according to the current particularities of modern football game.

After analysing and interpreting the data, the following conclusions have been drawn:

1. A goalkeeper who masters all tactical elements during the game strengthens the

behaviour of the players in the defending area and creates more opportunities for initiating rapid attack and counterattack.

2. When making comparisons between technical elements mastered by the goalkeeper and the unsuccessful ones, it is obvious that there is a positive difference between the former and the latter part of the championship. As a result of the exercises used during the training sessions, the goalkeeper's behaviour has obviously improved, the main proof being the fact that the number of received goals were reduced by half.

3. Throughout the 28 observed matches, the two goalkeepers were closely monitored, which enabled the trainer to correct the deficiencies occurred during official games. According to the conclusions, our findings support the hypotheses, the goalkeeper's mistakes were reduced in number and his training played a crucial role in establishing the goalkeeper's strong position within the team during the game.

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STUDY ON THE EFFICIENCY OF THE VERIFICATION MEANS IN JUNIOR HANDBALL TRAINING

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Abstract: The research aims to look for ways to optimize the preparation of junior handball players, identifying the most effective means of action, related to the specific requirements of the competition.

Thus, we subjected/submit to evaluation a series of 24 exercises, used in training junior handball players of LPS Targu-Jiu. We determined the rate of effort of each exercise, by reporting immediately after, the heart rate recorded to the standard handball heart rate ($FC = 200b/min$), then we determined the usefulness of exercises through a hierarchy based on the opinion of the coach. Finally, we calculated the coefficient of efficiency, which reflects the appropriateness of using each training exercise.

The analysis of the results showed, that 4 of 24 structures are inefficient (EGC less than 0.200), 10 exercises have an effective average and 10 means have a high degree of efficiency (EGC in the range of 1 to 0,437), issues that can contribute to optimize the training programs and, thus, to the training economy.

Key words: handball, junior, effort coefficient, usefulness coefficient, efficiency coefficient

Introduction

The fact that performance handball has known an unprecedented development, is no longer a novelty. Observation and analysis of the world elite handball team's games confirms this constantly, this being also the source of the separation of new directions and trends of development of modern handball (Kunst-Ghermanescu, I., 1983).

Adapting the training methodology to the new conditions, seeking solutions to maximize performance, involves simultaneously the monitoring of the game evolution, adjusting training patterns, other requirements being constantly added to the previous ones, usually based on thorough research.

Achieving these goals begins with an analysis of existing models, of the concrete starting point, then goes on to identify trends and ways to solve new situations.

By analysing the existing models, like a concrete starting point, we achieve those goals, then we go on to identify trends and ways to solve new situations. They will materialize, at some point in the development and implementation of a new course of training, in which the means of operation to be used, both for the improvement of general and specific motor

ability, will be selected in a pyramidal system, with full fidelity to the objective set.

Research Purpose

The aim of the research is looking for ways to optimize the preparation of junior handball players. Thus, we subjected to evaluation a series of exercises to observe their effectiveness by reference to the standard effort of handball, but also their usefulness, according to the coach opinion. This verification was based on statistical and mathematical determinations, by calculating the coefficients of effort, utility and efficiency.

Subjects and methods

The experiment was conducted in the junior team LPS Targu Jiu, coach Chepea Bogdan, and verified the means of 24 (exercises) implemented in preparing players and which were distributed into four categories according to the prevailing motor abilities (speed, strength, endurance and coordinative abilities).

The test method consisted in measuring the heart rate, immediately after the exercise (by palpation on the chest, under the left pectoral muscle).

Data processing methods were represented by calculating the coefficients of effort (CS), the calculation of coefficients of

utility (CU) and the calculation of coefficients of efficiency (CGE) for each exercise. The effort coefficients provide useful information for dosing the effort, but it is also an indicator for the calculation of the coefficient of efficiency. The utility coefficient (CU) allows a hierarchy of means and reflects the usefulness of an exercise compared to another, based on the subjective assessment of the coach. The general coefficient of efficiency may reflect the appropriateness of using each training exercise.

The assessment of the exercises was the first step in order to determine the effort coefficient (CS), which was based on the heart rate (FC) recorded for each means, more precisely, through its comparing to the standard heart rate, considered for handball game 200b/min (Demeter, A., 1979).

The heart rate was recorded after each exercise, according to the protocol (Nicu, A., 1993) "in times of extreme effort, in terms of physiological possibilities of execution of each exercise (...), immediately after the exercise", by palpation on the chest wall, under the left pectoral muscle and not the carotid area". Then we recorded the arithmetic mean of the calculated frequencies collected for the 15 handball players (junior competitive echelon III), who participated in our study. The coefficient of effort, proper to each proposed structure, was determined by the formula (1.1):

$$CS = \frac{\overline{FC}}{FC_{etalon}} = \frac{\overline{FC}}{200} \quad (1.1)$$

In this case, we found that the average heart rates vary within the values of 125.73 b/min, reached after applying a specific coordinative capacity means, and 200 b/min (standard value), achieved after applying an endurance specific means, which determines the effort factors (obtained by relating the value of the standard heart) frequency with values between 0.6287 and 1 (maximum effort coefficient). In fact, most elaborate structures that are based on motor skills used for coordinative capacity development register low effort coefficients values (0.6287 to 0.7303) and the higher values

correspond to the means for the speed development (0.7470 to 0.8837) and endurance development (0.7730 to 1).

The usefulness coefficient (CU), which reflects the view of the coach on the priority of an exercise, compared to another, involves the development of a support matrix, which results from comparing each means successively with others. Thus, a more important degree of usefulness, compared to other means, is marked with a plus sign (+), while a lower one with the minus sign (-) and the difficult to compare situations are marked with "zero" (0).

In this case, the 24 means have determined 23 comparisons for each exercise, which makes the value of a sign (+ or -) to be 0.043, value determined by performing the division of the maximum coefficient of usefulness 1 by the number of means, with which comparisons were made, and a sign value 0 to be 0.0215, this being half the value of a sign (+).

Thus, each sign (+) leads to a 0,043 points addition, each sign (-), a decrease of 0,043 points, while 0 will mean the addition of 0215 points to the amount of negative signs.

The amount of negative corrections (- and 0) is subtracted from the maximum value of the coefficient of usefulness (1) resulting the coefficient of each means.

The coefficient of usefulness, calculated based on the coach assessment, has values between 0.162 (corresponding to a means of developing strength in the lower limbs - "alternative jumping on the gym bench") and 1, the maximum possible value, recorded for the means to develop the endurance "Huștiuluc" dynamic game.

In our approach this coefficient supported detection of the less useful means (0.162, 0.226, 0.291) and their proposal for review. If we consider only the coefficient of efficiency, these means should be used only occasionally.

The general coefficient of efficiency of each means (CGE) is determined by the product of its effort coefficient value (CS) and its usefulness coefficient (CU), representing "actually the movement and location of each means in the training economy" (Nicu, A., 1993).

The calculated global efficiency coefficient is in the range of 0.117 to 1, corresponding to the same means that represent the lines in the case of the coefficient of usefulness, also (strength and endurance).

In conclusion, after analysing the results, we found that the means with the highest coefficient of efficiency (Table 1) are part of those who develop predominately endurance, speed, and lastly strength (1-

.437), means that should be reflected in the significant share of the work programs. An average share should be allocated to the means that have a higher coefficient than 0.200, where M5 falls, also, which initially presented a small MIC and the means: M11 (F5) M24 (C6) M19 (C1), M23 (C5) can be used occasionally, or may be replaced by other means.

Table 1. The effort coefficient values (CS), the usefulness coefficient values (CU), the global efficiency coefficient values (CGE) calculated for the developed means

Exercises	Code	CS	CU	CGE
M1	V1	0.8837	0.808	0.714
M2	V2	0.8587	0.785	0.674
M3	V3	0.8467	0.549	0.465
M4	V4	0.8137	0.657	0.535
M5	V5	0.7997	0.291	0.233
M6	V6	0.7470	0.484	0.362
M7	F1	0.7610	0.830	0.632
M8	F2	0.8020	0.485	0.389
M9	F3	0.7383	0.592	0.437
M10	F4	0.7400	0.463	0.343
M11	F5	0.7233	0.162	0.117
M12	F6	0.7137	0.399	0.285
M13	R1	1.0000	1.00	1.000
M14	R2	0.8910	0.571	0.509
M15	R3	0.9320	0.680	0.634
M16	R4	0.8367	0.742	0.621
M17	R5	0.7883	0.312	0.246
M18	R6	0.7730	0.377	0.291
M19	C1	0.6287	0.312	0.196
M20	C2	0.7303	0.442	0.323
M21	C3	0.6977	0.313	0.218
M22	C4	0.6930	0.334	0.231
M23	C5	0.6413	0.291	0.187
M24	C6	0.6380	0.226	0.144

Discussions and Conclusions

The efficiency of the training patterns is conditioned by the meeting of the optimum framework revealed by: the quality of the training. Namely the approach of its factors. the quality of human material (reflected by the somatic type, the motor and mental ability of the players) and not least the degree of effectiveness of the means used.

Often. in practice, the criteria for selection and evaluation of means exclude factors such as deep knowledge of their substrate and especially their effects on the players (most coaches does not use specific methods to verify the efficiency of the means applied).

Calculating the effort. usefulness and the general efficiency coefficients allows the ranking and selection of the means. Based on fidelity criteria to the adaptive players

profile (expressed by FC) and the coach assessment (determining the usefulness of a means against another). Thus, for the 24 structures oriented mainly on motor capacity, the general efficiency coefficient calculated indicated four inefficient means and also the means with the highest degree of efficiency, issues that can contribute to optimizing training programs and thus to the economy of training.

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Vulnerability and mental health

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Abstract: Vulnerability and courage are an integral part of the human being. We can not be brave without being vulnerable. We must realize that we are able to act with courage in every circumstance of our lives. It is true that people become brave when their life is happy and fulfilled. We are brave and confident when you are loved and supported by dear people around us. We become vulnerable when we do not get people's support.

Courage means to be yourself at all times. Courage means that you will want to become a better human being. Courage means that you will be able to give you a chance to recover your mistakes. Courage means to have self-confidence. Courage is being able to admit when you're wrong and give you the chance to act differently in the future. Courage means to love yourself even if you know you're not perfect. Courage means to want to strengthen sensitivities and become a strong and confident human being. Courage means to take responsibility of your actions.

The vulnerability occurs when you do not trust yourself. Therefore you need to see life with confidence. If you feel the need to be supported, have the courage to ask for that support!

We must try to act perfectly using our imperfect means. For not to be vulnerable, we must have infinite faith in our strength and to love ourselves with our whole heart!

Key words: vulnerability, courage, mental health, connection, motivation.

Introduction

Enjoy life = mental health

„Mental health describes a level of psychological well-being, or an absence of a mental disorder. From the perspective of „positive psychology” or „holism”, mental health may include an individual's ability to enjoy life, and create a balance between life activities and efforts to achieve psychological resilience. Mental health can also be defined as an expression of emotions, and as signifying a successful adaptation to a range of demands”.(1)

There are many reasons why physical activity is good for your body – having a healthy heart and supple joints are just two.

„Physical activity is also good for your mental health. Experts believe that exercise releases chemicals in your brain that make you feel good. Regular exercise can also boost your self-esteem and help you concentrate, sleep, look and feel better”.(2)

Taking part in physical activities offers many opportunities. It's a great way to meet people. And it can be a chance to give yourself a well-deserved break from the hustle and bustle of daily life – to find some quiet time. Leading an active life can help raise your self-worth and improve your

confidence. It can help you feel valued – and value yourself.

Exercise and physical activity can provide something worthwhile in your life. Something that you really enjoy, that gives you a goal to aim for and a sense of purpose.

„Here are a few of the benefits:

- less tension, stress and mental fatigue
- a natural energy boost
- improved sleep
- a sense of achievement
- focus in life and motivation
- less anger or frustration
- a healthy appetite
- better social life
- having fun”.(3)

How active do I need to be?

You should aim to do 30 minutes of moderate exercise five times a week. It may sound like a lot, but it isn't as daunting as it first appears.

„Moderate exercise means being energetic enough so you:

- breathe a little heavier than normal, but aren't out of breath

- feel warmer, but don't end up hot and sweaty.

You don't have to leap in at the full amount.

- Build up slowly at a pace that suits you
- You don't have to do a solid half hour either. Find three ten-minute slots each day if that suits you – or two quarter hours".(4)

„I've hiked a lot and have often had to depend on what was in my pack. Inner strengths are the supplies you've got in your pack as you make your way down the twisting and often hard road of life. They include a positive mood, common sense, integrity, inner peace, determination, and a warm heart. Researchers have identified other strengths as well, such as self-compassion, secure attachment, emotional intelligence, learned optimism, the relaxation response, self-esteem, distress tolerance, self-regulation, resilience, and executive functions".(5)

Once you have decided that you want to be more physically active, there are a few points it's worth thinking about. Apart from improving your physical and mental well-being, what else do you want to get out of being active?

An active lifestyle doesn't necessarily mean doing a sporty exercise, or limiting yourself to just one activity. A walk, doing housework and gardening are all physical activities.

„A well-known idea in medicine and psychology is that how you feel and act both over the course of your life and in specific relationships and situations-is determined by three factors: the challenges you face, the vulnerabilities these challenges grind on, and the strengths you have for meeting your challenges and protecting your vulnerabilities. For example, the challenge of a critical boss would be intensified by a person's vulnerability to anxiety, but he or she could cope by calling on inner strengths of self-soothing and feeling respected by others.

We all have vulnerabilities. Personally, I wish it were not so easy for me to become worried and self-critical. And life has no

end of challenges, from minor hassles like dropped cell phone calls to old age, disease, and death. You need strengths to deal with challenges and vulnerabilities, and as either or both of these grow, so must your strengths to match them. If you want to feel less stressed, anxious, frustrated, irritable, depressed, disappointed, lonely, guilty, hurt, or inadequate, having more inner strengths will help you".(6)

„What makes you vulnerable makes you beautiful"

„Vulnerability has never been my strong suit. It's no wonder. In order to be vulnerable, you have to be okay with all of you. That's the thing about vulnerability that no one tells you about.

Being vulnerable is not just about showing the parts of you that are shiny and pretty and fun. It's about revealing what you deny or keep hidden from other people. We all do this to some extent. I bet you've never said to a friend, "Oh my god, I just love that I'm insecure."

But that's the point, isn't it? You've got to love everything, if you want to be vulnerable by choice.

Most of us have probably experienced vulnerability through default. More often than not, we are either forced into that state through conflict, or we are surprised by it after our circumstances feel more comfortable".(7)

„What makes you vulnerable makes you beautiful"- says Brené Brown

„The concept of «vulnerability» at the heart of the Initiative is anchored in the realization that fundamental to our shared humanity is our shared vulnerability, which is universal and constant -- inherent in the human condition. Further, societal institutions are shaped by the recognition of, and need to respond to, this shared vulnerability.

While vulnerability can never be eliminated, society through its institutions confers certain «assets» or resources, such as wealth, health, education, family relationships, and marketable skills on individuals and groups. These assets give individuals «resilience» in the face of their vulnerability".(8)

Happiness can make us vulnerable or courageous.

„We are happy by being connected with other people present in our lives (family, friends, children or even work colleagues). The core of our unhappiness lies with the question «Is there something about me that I fear or have the certainty that will cause the others to stop from connecting with me?» The way we answer is essential. One of the most powerful things to hold us back in our lives is the fear that we are not worthy of connection.

What is the common element for courage and vulnerability? Definition. Courage comes from a Latin word that meant «to be able to tell the story of who you are with your whole heart». Aka to allow yourself to be seen, to be vulnerable. That translates into the willingness to say I love you first. To invest in a relationship knowing that it might not work. To be who you are even if you fear exclusion. To start a business or a new way of living even if you fear failure. To think that you are too unimportant to change the world even before you start.

Vulnerability is the core of our shame and fear. But, at the same time, it is the core of our creativity, tenderness, belonging and love. I particularly liked Dr. Brown's funny side comment regarding this: «You know those people who find out that vulnerability and tenderness is so important and they immediately surrender and walk into it? Well that's not me and I don't even hang out with people like that. When this came out of my research, I had to do one year of therapy to be able to accept it».(9)

Conclusions

„How do we select emotions? We try to make the imperfect perfect. The uncertain certain. We fail to see that those who cannot practice compassion towards themselves cannot practice compassion towards the others.

What is the solution? Believe that you are enough (worthy of love even if you are

imperfect) and love with your whole heart.”(10)

We must realize that we are imperfect and we must fight to defeat our fears. It is true that we can all control our emotions. We need to try to control our vulnerabilities. People have a duty to them-selves, which is to fight and become stronger and more confident. Self confidence means peace of mind. Peace of mind means spirit and mental health.

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SPORT, HEALTH OF HUMAN BEINGS AND GROWTH OF THEIR PERFORMANCES IN THE PRESENT ECONOMIC CONTEX

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Abstract: An important factor positively influencing the health of the people is physical activity. If it becomes systematic and rational, physical activity boosts health and reduces the risk of coronary heart disease, hypertension, diabetes, obesity, osteoporosis and depression. Physical activity should not be separated from several other essential components that define the person's lifestyle, such as eating food (body mass index is directly dependent on it), smoking and drinking alcohol, alternation of activities, social and cultural activities and how leisure is spent etc.

Keywords: human action, physical activity, physical education, society, work.

Introduction:

Human activities in society are determined by necessity and human needs, which are constantly diversifying and expanding while they represent their objective and subjective support. Human action, in response to human needs, is not limited to economics - basic domain of social life that ensures the production of goods and services people need - and it captures the other areas of society such as: legal, political, moral, religious, cultural - spiritual ones and so on. In this way, human society manifests itself as a global system of human activities and relationships arising from necessity and structured on particular areas of social life and the general social progress results from their interdependence and development at different rates. A sector of non-economic activities, namely of the socio-cultural domain, which evolves into a close relationship with society, and within it with the economy, is the sport and recreational activities.

The concept of physical education does not refer to a purely social phenomenon, a specific interaction between members of society, but to the result of human experiences that include any event based on a driving activity. The misconception that physical education's domain is much broader, wider than its actual boundaries is largely widespread. The error is based on the confusion made between the results of

physical education on human beings and the social phenomenon of physical education, or, put in other words, reducing physical education to its consequences and understanding it through the effects caused. Physical education is not a process or a dynamic system, but a reality spread in the physical characteristics of each individual which is caused by a particular sport practice; everything that contributes to human physical development is included in the notion of physical education.

The concept of sports, mentioned in the Larousse dictionary from 1876, was taking into account its three elements: free air, bet and practicing various individual exercises, through which the human body in moving undergoes successively some attitudes (poses). Among the most important aristocratic skills of the time listed were horse racing, boating, hunting, fishing, shooting, gymnastics, horseback riding, skating, swimming, etc.

The 1949 edition of the same dictionary defined the sport in a broader way as intense physical exercise, with no immediate practical purpose, practiced due to the desire to fight for defeating some natural difficulties, some enemies (competitors, teams) or previous performances (own or others). In this case, the elements defining sport become richer and refer to exercises that develop muscular strength, agility, skill, emulation, and

individual and group games which take place on the basis of rules.

Over time, other characteristic elements were added that helped define the sport even in a broader sense. Thus, sport is funny games, action adventure, fun, worship of intense muscular effort generated by the desire for progress, which may include the risk; any driving situation codified and institutionalized in form of competition; social practices contained in a set of cultural practices; mass sports, performance sports and leisure sports; a key phenomenon of our time; health and medicine; competition based on fair play; education and risk, "all forms of physical activity which, through organized or unorganized participation, aim at expressing or improving physical and mental fitness, development of social relations or obtaining results in competitions at all levels" [1].

Physical Education and Sport claim their origin from "gymnastics", a term used by Friedrich Ludwig John (1778 - 1852), signifying the preparation, training and development of youth. The one who established and contributed to the spread and formalization of the term physical education was Frenchman Georges Demeny (in his "Physical education in Sweden", 1892 and in elaborating the military gymnastics regulations, 1902).

In the modern world, the concept of physical education and sport has a double meaning. First, the term physical education and sports refers to the culture of the human body, which aims to develop physical fitness, strengthen health and a stronger manifestation of personality, a process that is practiced individually and voluntarily. Second, the concept of physical education and sport education means a school discipline (mandatory or optional) or, in a broader sense, sports education in school clubs, schools, universities and in some extracurricular activities.

The concept of physical and sporting activities means all activities undertaken by sports organizations (training, competitions, events and sport demonstrations), physical education and sports activities in schools of all levels, leisure activities, physical

activities performed in nature, physical and occupational activities etc.

Sports science and law in Romania, taking into account the wide variety of physical activities and sports, delineate these activities in some basic types, depending on the objectives they pursue and the reasons on which they are based. The following classifications are in use:

- a) sports activities specific for growing up (ludic activity), but present in adults' life, which fulfill functions of education and social integration;
- b) competition and fighting activities (agonistic) that satisfy the desire for affirmation of the individual in relation to other individuals;
- c) Gimn activities (gymnastics, bodybuilding, etc.) which ensures, through the help of systematic and rational exercises, self-training and physical autoeducation of the individual;
- d) recreational sports or leisure activities, whose purpose is the functionality of the human body, entertainment, relaxation, active rest, without strict competitive rules;
- e) compensatory activities necessary for people in need of motion.

The concept of physical activity and sport in our country has used European and global perspective; it refers to similar activities that were institutionalized and are regulated by law, with strong will and firm action of harmonizing sports law in our country with the legislation applied in the other countries of European Union.

However, each type of physical activity and sport is an open system that interacts with other types of sports and together form the national system of physical and sporting activities. This, in turn, acts as a subsystem or a component of the overall social system, to which it belongs and whose general objectives are pursued and customized by sports as well.

Indispensable component of modern society, involving the use of significant resources (thus producing complex social effects) and having appropriate structures that make it functional as both autonomous activity and through the interdependence with other activities in society, sport has become subject for the application of

management, seeking its scientific organization on economically and socially rational basis.

Physical development of the individual is the combined result of physical education - as distinct social reality -, labor and other social or natural factors. In relation to the interaction between the individual and his social environment, physical education emerged as a necessary social subsystem, which become specialized to meet a specific requirement. Awareness of society's influences occurs through physical activity, aiming mostly to the development of human physical aspect in accordance with the laws of biological growth and depending on the requirements of society.

The whole arsenal of instruments that work in physical education prepares the individual, biologically speaking, to be able succeed in society. In general, physical education does not refer to a specific social activity. Its objective is to help to the formation of humans able to carry out his/hers physical potentialities in every area of human reality. To achieve this, one must be physically multilateral educated.

Continuing the formation of human physical appearance done under other social interactions, and especially ahead of these actions, physical education is the specific way in which society transmits its experience and seeks to achieve the ideals regarding normal development of human being's biological component.

In terms of grassroots sport – physical exercise practiced in leisure -, it is manifested in a wide range of ways from playing football to fishing and hunting. Concrete forms of these activities do not form a proper system in the strict sense of this category, but rather exist alongside each other. They are practiced in pure personal pleasure.

As noted by M. Guillaume: "sports are apparently absurd: fight without killing your opponent, depriving a human of a balloon as if it would be a very valuable object, walk, run, jump, swim, paddle to get nowhere, throw unnecessary weight in a place where someone will find it and raise it "[2]. This seemingly absurd character will not be seen in professional sports

where you fight aiming for victory and performance and even less in physical education, which aims to develop the biological component of human nature, its social integration.

In higher forms of mass sports activities, a true ecstasy of motion or a physical euphoria is reached. Such specific essence of the forms of practicing physical exercises explains the considerable energy that the individual is able to prove, though he is not prepared for it. "Children who play seem not to get tired. While playing the game he regains his strength, like an Anteus or batteries that charge with a dynamo." What George Magnane [3] states on children's games can be applied, within certain limits, to adult games.

Practicing physical exercise in leisure time, the individual tries to confront his own psycho-physical forces with the external reality, which resists him, so he wants to prove himself in this struggle and demonstrate his power.

Seen in historical perspective, physical education appears as a social phenomenon related to leisure. Primitive communities could delegate some of its members to systematically educate the young generation based on the creation of a minimum leisure time snatched from the production process.

As shown in the historical analysis, physical education and sport in general are involved in the reproduction of economic and social life as it contributes to the formation of labor. Leisure to which we relate activities specific for grassroots sports represents the opposite of working time. Not every job (thus also any labor) takes place within the economy. Some activities, though non-economic, are carried out within social need and are imposed by specific requirements of the society.

Consumption of human energy occurs during the working time as well. Leisure time is something outside of labor time in general and not only the time spent working in economy. He belongs exclusively to the human. Free time is available to the individual; it can be consumed as desired. Exercises, trips, tourism, sports and recreational facilities are part of the activities which use free time in a pleasant

way. Due to mass sports, individuals may enter into interpersonal relationships to organize a trip, aim to play a game of volleyball, chess, or hunting etc. Thus, there is a better communication between people, relations between them are strengthened, being a benefit gained in economic terms; business relationships do not have that tense aspect when two or more partners practice sports in their free time together.

Sport together with health activity may contribute to the prevention, reduction and treatment of diseases caused by the industrial civilization and transition to post-industrial society (information society).

Unfortunately, the progress of industrial civilization has been accompanied by an increased number and intensity of diseases. Factors "guilty" for the unfavorable correlation between the development of civilization and negative evolution of diseases were undoubtedly the rapid transition from rural economy to industrial economy and increased urbanization, which often escape the control of systematization and normal urban equipping, as well as environmental pollution [4].

The demographic phenomena characterized mainly by an aging population and increasing old age diseases (chronic and degenerative) were acting in the same direction. In addition, contemporary industrial civilization, beside the benefits resulting from industrialization of all human activities have increased the number and intensity of occupational diseases, work became often monotonous and stressful, many people's native capabilities were used unilaterally, men lost interest in activities; the number of accidents at work have increased and the pollution of air, soil and water with different physical, chemical, radiation factors and sound waves did the same etc. [5]

Living rationally from a financial point of view is a prerequisite for the health of a person, with impact on the relationship between his height and weight measured by an indicator known as body mass index (BMI). The ratio of height and weight, judged in a wider context, is conditioned by genetics, presence or absence of hormonal quantities, concentration and quality of

food consumed, metabolic status, volume and intensity of physical activity performed and so on, resulting four groups in which a community's population can fit in: underweight persons, normal weight individuals, overweight humans and obese people.

Practicing sports, games and leisure, lifelong outdoor movement correlated with health protection, rational nutrition and implementation of correct programs of work, rest and living - proper for each age - contributes in large measure to maintain the normal parameters of human health.

Physical activity statistics of the Romanian population in their synthetic language point out two key lessons [6]:

a) Increase of the average life expectancy and therefore, the further aging trend of Romanian population, combined with current thinking on physical activity whose main characteristic is sedentariness, could worsen the health of the population. The most important remedy in this regard is the amplification of physical activity for the entire population and especially for mature and elderly population.

b) by relying in the future, on a growing and diversified participation in physical activity, sports and recreation, in performance sports, especially in recreational sports, which are open to all ages and socio-professional categories, sports management will gain importance and will win "land" in Romanian society of the future.

A man practicing physical exercise in his free time is healthier, fresher when he comes the next day at job with desire to work and a clear mind, while relationships between people taking part in sports during leisure are relaxed, so the effect of these facts on socio-economic plan is positive.

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INFLUENCE OF SPORTS TRAINING FACTORS ON THE INSTRUCTIVE-EDUCATIONAL TRAINING PROCESS CONCERNING THE GAME OPTIMIZATION AND THE SOMATIC AND MORPHO-FUNCTIONAL DEVELOPMENT TO JUNIORS AGED BETWEEN 17 AND 18 YEARS ATTENDING "GICĂ POPESCU" FOOTBALL SCHOOL

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Abstract: The present paper aims at the optimization of the training process, in order to meet the requirements of the modern game implying: physical, technical, tactical, biological, psychological and theoretical factors. This study intends to make juniors aware of the instructive-educational process, of the social message, or the scientific information specific to their area of activity, giving them the opportunity to promote and to apply it in training and in the game.

The paper also refers to the influence of sports training on the morpho-functional indices expressed by the juniors' body (juniors aged between 17 and 18 years), pointing out the fact that they are mutually reliant on the development of the general and specific training, as well as on the training methods.

Key words: Football, optimization, training

Introduction

Football development relies on a series of factors which need to be known by all those who study the football evolution. Their knowledge provides specifications concerning the orientation of tendencies and viewpoints in the future.

Considering the high performance in this area, there are certain issues, such as the experts' enhanced concern for the junior level. The design for the game methods to juniors' level plays an important role in football development and optimization. A new playing style is created based on the attack versus defense. It brought about a series of changes in the structure and the content of the instructive-educational process, in general, and of the training process, in particular. The requirements for practicing a rational game lacking in hazard and chance have influenced the technique and the strategy. Forces were well distributed on the whole area of the playing court.

Research purpose:

It consists in validating certain theoretical-methodical-practical concerns detached

from the field literature, as well as from juniors' training experience. As well, the paper aims at establishing ways of optimizing the instructive-educational process specific to the high performance football to junior I level.

Research hypothesis

1. 30% of the sports training session is allotted to the physical training which contributes to the formation of the junior's somatic constitutional type, as well as to the increase of strain ability and of skill through transfer.

2. The performance of 30% of technical training within the instructive-educational process influences the increase of the defense stage effectiveness focused on regaining the ball and the attack stage through finalization.

3. The tactical training representing 30%, combined with the other factors of the sports training, leads to the adaptation of the junior player aged between 17 and 18 years to the game demands.

The place and the period of research development:

The research has lasted 6 months, between the 1st of June and 15th of December 2012. Data were analyzed in Craiova city, within the sports complex of "Gică Popescu" Football School.

Tests were completed during three stages, namely:

1st stage – initial testing: we have evaluated the somatomotor indices of the group, as proposed for the period of 4th and 5th of June 2012.

2nd stage – final testing: we have evaluated the somatomotor indices of the group, as proposed for the period of 4th and 5th of September 2012.

3rd stage – final testing: we have evaluated the somatomotor indices of the group, as proposed for the period of 4th and 5th of December 2012.

Research subjects:

The junior I group included 18 individuals born in 1995 and 1996, all of them performing to the Sports Club within "Gică Popescu" Football School.

Data analysis and interpretation

Tables 1 and 2 illustrate specific data for the somatic and motor indices for the three testing and differences between the initial and the final testing.

Average of comparative indices of data concerning the anthropometric development collected during the three testing n=18

Table no 1

TESTING	Average of somatic indices						
	Waist (cm)	Weight (kg)	Chest (cm)	Thoracic perimeter (cm)			
				X.n	X.in	X.ex	
Initial testing	176.3	65.7	88.7	80.3	88.5	78.6	3851
Intermediate testing	177.4	66.8	90.6	81.5	89.2	79.1	3892
Final testing	178.7	68.3	91.8	84.6	90.7	80.9	3998
Dif. Ti - Tf	2.4	2.6	3.1	4.3	2.2	2.3	147

Average of comparative indices of data concerning the psychomotor development collected during the three testing n=18

Table no 2

TESTING	Average of motor indices									
	Speed running 60m. sec	Standing long jump cm	Cooper test m.	Push-ups ex	Sit-ups ex	Take-off cm	Mobility cm	Driving the ball through stakes ex	Free hitting from 25m ex	Hits to the head ex
Initial testing	8.15	1.97	3120	18.4	38.9	41.7	8.1	5.4	4.8	4.2
Intermediate testing	8.10	2.01	3170	19.9	40.8	43.6	8.2	5.1	5.00	5.3
Final testing	7.88	2.06	3285	23.8	44.7	56.1	8.7	4.8	5.7	6.6
Dif. Ti - Tf	0.27	0.9	165	5.4	5.8	14.4	0.6	0.6	0.9	2.4

Taking into account the interpretation of data provided in tables 1 and 2, one may notice that the juniors aged between 17 and 18 years performing for "Gică Popescu"

Football School register a progress for all the tested indices:

- The results achieved for the speed running on 60m distance are not satisfactory (11 sportsmen registering scores below the reference mean);
- Following the Cooper test, only 15 sportsmen run over 3200 m;
- For the performance of push-ups, sit-ups and for mobility, all the 18 sportsmen achieve over average results;
- For the take-off, 16 sportsmen register scores over the reference mean.

All these data which reveal an evolution from one testing to another confirm the importance of the physical factor within this team. Except for the waist index values, the results of the somatic indices contradict those achieved during the motor trials. When dealing with the thoracic perimeter and the vital ability, even though there is a progress in both cases from one testing to another, considering the reference values, the results are not so good.

The technical training is optimum (for all the three trials we register a significant improvement). The attack and defense objectives are treated equally 50%-50%.

The tactical training to this level of age is highly rated as compared to general training (about 30% instead of 15-20%).

The other three conditions – the psychological, biological and theoretical conditions form a considerable part of the training process within the school games, thematic games and, particularly, within the official games.

Conclusions:

The use of physical action means specific to the football game provide an enhanced effectiveness to the training process, more precisely leading to the increase of the player's and, implicitly, of the team's strain ability.

The speed improvement during the official and amicable games generates an increase of the ball playing speed through the high number of actions consisting in overtaking the opponent, in technical-tactical combinations performed in 2, 3 and even 4 players.

The application of a complex system of sports training factors within the instructive-educational process leads to higher indices of the somatic and morpho-functional development. To this level of age, namely, junior I, the somatic indices continues to grow, however, we mention that for part of the players the values achieved are far from those register by senior players.

The application of tests and norms for evaluating the physical, technical and tactical level, different from those enforced by the Romanian Football Federation (RFF) and the achievement of positive results emphasize the need for a revision of the evaluation system according to the current requirements of the modern football game.

Through the use of physical drills applied for the present research, we have provided the training of specific motor skills and, at the same time, the training of technical-tactical aspects of the football game.

The introduction of superior technical elements within the football game has improved the ability of driving the ball, the reaction and execution speed, as well as, the mobility due to an adequate ability to resist. For this purpose, the technical training should be achieved taking into account a high efficiency for recovering, building and completion.

The enforcement of general and particular principles for a superior adjustment of the individual and group tactical training for attack represents a necessary condition for the training process.

Given the current game aspects, in the absence of an optimum psychological, theoretical and biological training correlated to the player's personality, the game outline, the restoration of strain ability and the recovery, the high performance is no longer possible.

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Session

Physical Therapy and Sports Medicine

Abnormal joint variations in upper extremity of spastic cerebral palsy

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Abstract: The aims of this study were to investigate the nature and extent of upper limb deformities in cerebral palsy patients that implicate the upper extremity, based on the topographic involved area, like diplegia, hemiplegia, triplegia, and tetraplegia. Classification of typical contracture and deformity of the anatomical regions was done using the following scales: Gschwind & Tonkin for the forearm, Zancolli et al. for the hand and wrist, and House et al. for thumb deformities.

Key: deformity classification, spastic upper extremity, cerebral palsy

Introduction

One of the most problematic and disabling diseases of the nervous system is a group of different motor disorders, which are commonly known for the therapists and public by a general name: cerebral palsy. Cerebral palsy (CP) describes a group of permanent disorders of movement and posture development, causing activity limitation, that are attributed to a non-progressive disturbances that occurred in the developing fetal or infant brain [1].

For the health future of the child, the evaluation offer a clinical scenario and also a prognosis, next the rehabilitation therapy is applied in for the CP type, all those having an certain impact on the quality of life of CP patients and their families and society also.

The language and terms regarding this condition change and level since April 2006 when was publish the report on the Definition and Classification of Cerebral Palsy, corresponding to the work of an international community. All the experience from this field was cumulate and represents today a starting point in the management of the CP case.

The assessment for an early diagnosis and the orientation of therapy, periodic evaluation and tracking is still a sore spot for many specialists, from different corners of the world; the accessibilities differ greatly from one country to another. The assessment scales are really merging all scientific knowledge on this issue, all the practical experiences of the researchers in

the field, offering easy ways, easily repeatable, inexpensive, reliable and free of side effects for the patient and others.

One of the main reasons in decreasing and non-developing functional skill in CP are the abnormalities of the muscular tonus. Such abnormalities may be clinical categorized in the form of hypertonus, hypotonus or muscular fluctuation.

Spastic motor pattern is the most frequently encountered (two-thirds of children have spasticity) in CP and is one of the main diagnostic features of cerebral palsy. Children are classified as having spastic quadriplegia or tetraplegia, where all four limbs are affected; spastic diplegia, when the lower limbs are predominantly involved; or spastic hemiplegia or monoplegia, where one side of the body or single limb is predominantly affected.

Typically, the upper limb (UL) is more involved than the lower, with impairments of tonus leading to spasticity, sensation, and reduced strength [2].

When the patient suffers from a spastic form of cerebral palsy, an excessive tonus activity of some muscles is usually accompanied by the inhibition of other muscles activity and a decrease in muscle antagonists tonus. Muscle tone is usually increases in long two-jointed muscles, i.e., flexor and adducting muscles, whereas hypotonia appears more often in short mono-jointed muscles, i.e., extensor and abducting muscles [3]. Muscular imbalance occurred in CP patients and leads to

development of contractures, deformities and pathological postures. Effective use of the arm and hand to reach, grasp, release, and manipulate objects is often compromised.

Adducting and inner rotational contractures are very frequently formed /present in the shoulder joints; these are caused by spastic tension and contractions in the large pectoral muscle, wide back muscles, and pronator shoulder muscles (large round scapula muscle, and the subscapularis muscle). The hand faces inwards and towards the torso; the patient has difficulty lifting it up, to the side, or turning it inside out. Shoulder retroflexion is less common, due to the reduction of wide back muscles, which is more characteristic of the hyperkinetic form of cerebral palsy: the shoulders are thrown back; the forearms are in a supinated position, and bent at a right angle [4].

Flexion contractures in the elbow joints are due to contractions in the shoulder bicep muscles, the radial shoulder muscles. Spastic muscle contractions combined with flexion contractures can be frequently observed when the forearm twists internally, which is caused by contractions of round and square pronators. Extreme pronation deformity decreases the sight of the object being grasped and thus obstructs the visual stimulus in these patients with compromised stereognosis. Palpation of the pronator teres during passive supination of the forearm can be the witness of spasticity. Evaluation for active supination and pronation should also be determined, as well as the position of the forearm at rest. Classification described by Gschwind and Tonkin [5] provides a fair assessment of the forearm deformation.)

Forearm Pronation Deformity Classification by (Gschwind and Tonkin)

Group: I: Active supination is present beyond the neutral position.

Group: II: Active supination is present in the neutral position or less.

Group: III: No active supination is present and there is loose passive supination.

Group: IV: No active supination present and there is tight passive supination

In the radial-carpal joint, flexion contractures in the hand are almost always

combined with hand abduction towards the elbow, flexion contractures in the fingers of the patient's hands, and adduction and abduction of his thumb. The flexion contracture of the wrist weakens and makes grasping very difficult. This is due to the flexor muscle of the wrist, particularly the flexor carpi ulnaris, remaining contracted during finger flexion (co-contraction). Also the flexion of the wrist slackens the long flexors and hence weakens the grip. This alters the normal pattern of grasping functions of the hand. In serious cases, these deformities lead to severe dysfunctional disorders in hand functions. Zancolli classified the deformities in cerebral palsy as extrinsic and intrinsic based on the predominance of localization of the spasticity of the deformity.

Zancolli's classification [6] is probably the most popular one:

- Type **I** includes the spastic intrinsic-plus hands, in which spasticity of the interosseous and lumbrical muscles causes flexion of the MP joints and extension of the IP joints, sometimes associated with a swan neck deformity. In this type a wrist flexion deformity is rare.

- Type **II** includes the spastic flexion-pronation hands with (hyper)flexion of the wrist and pronation of the forearm. Three groups are individualized depending on the degree of active finger extension. In the first group, with the wrist in neutral or near neutral, there is full active extension of the fingers. In the second group there is nearly complete active extension of the fingers, but only with some degree of wrist flexion. This group is subdivided further based on the presence (subgroup A) or absence (subgroup B) of active wrist extension. In the third group there is no active finger extension, even with maximum wrist flexion.

Thumb involvement is also common in cerebral palsy. The thumb held flexed inside the palm impairs grip and grasp and lack of abduction and extension limits the size of the object the patient can grasp. The presence of thumb in the palm also obstructs the function of other fingers. It may even contribute to rejection of the hand and cause problems in hygiene. [7]

House [9] has classified thumb deformities in four types:

- _ Type I is an isolated adduction of the first metacarpal.
- _ Type II is adduction of the first metacarpal with flexion of the MP joint.
- _ Type III is adduction of the first metacarpal with MP joint hyperextension.
- _ Type IV is adduction of the first metacarpal

McConnell and colleagues [8] reviewed 18 classification systems for the upper limb in children with cerebral palsy, and found House and Zancolli classification reliable and clinically useful. The three commonly used classifications for the thumb deformity in cerebral palsy are those described by House and colleagues [9], Sakellarides et al. [7] and Tonkin [5].

Material and methods:

It was studied a representative sample of 72 children diagnosed with spastic CP, aged 6.7 - 14.5 years at baseline, it was possible to collect all the data necessary to achieve the research objectives and complex anamnestic and clinical-functional evaluable.

The study was conducted as a descriptive non-experimental and include children diagnosed with CP type, with central neurological upper limb unilateral or bilateral spastic form.

Inclusion criteria were: age from 7 -14 years; unilateral or bilateral involvement of the upper limb; disorder spastic motor type,

without orthopaedic surgery during the study, preservation of visual and auditory function.

Physical assessment included an evaluation of the classification of hand posture deformation: Gschwind & Tonkin for deformations in the forearm, the Zancolli for hand - fist deformity and the House for thumb deformity. The Zancolli classification assesses the ability of the wrist and finger extension, the House classification evaluates thumb deformity for the affected hand.

The motor examination of the upper limb should address these points: the dominant and deforming spastic muscles, their strength, and voluntary control, the status of the weak or nonfunctioning antagonists, global motor control of the upper limb, voluntary control of various muscle groups.

Results and discussion:

Spastic syndrome in the group of children studied was distributed as follows: hemiplegia was present in 30 (41.6%) cases, diplegia in 21 (29.2%) cases, tetraplegia in 21 (29.2%) of cases.

We mention that the classification of subjects was performed by the classification system described by Reference and Training Manual of the Surveillance of Cerebral Palsy in Europe (SCPE) [10] , which divides cerebral palsy into three groups based on neuromotor abnormality predominance of spastic, dyskinetic and ataxic.

Table 1. - Distribution by topography spastic syndrome in the studied group of subjects

Topography spastic syndrome		Number (%) subjects	
Hemiplegia	Right	16 (22.2%)	30 (41.6%)
	Left	14 (19.4%)	
Diplegia	21 (29.2%)		
Tetraplegia	21 (29.2%)		
TOTAL		72 (100%)	

Forearm pronation deformation assessment using the classification system Tonkin

Table 2. – Distribution according to the presence of active supination group of study group

Tonkin deformation	number(%)subjects
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absence
39%



present
61%

Fig.2. - Tonkin deformation in study group.

present	44 (61,11%)
absence	28 (38,89%)
TOTAL	72 (100%)

From the totally of 72 children studied, 44(61,11%) have shown changes in the movement of pronation/supination in varying degrees to the affected upper limb, while 28 (38,89%) had no changes to the supination movement.

Assessment of wrist and finger extension deformation using for the classification the Zancolli system

Table 3. – Distribution according to the presence of Zancolli deformation in study group

Zancolli Deformation	Number (%) subjects
present	37 (51,39%)
absence	35 (48,61%)
TOTAL	72 (100%)



Fig.3. - Zancolli deformation in study group

In the case of the 72 children studied, 37 (51,39%) present deformities of the wrist and finger extension in varying degrees and 35 (48,61%) cases did not shows deviations of the posture of hand.

Evaluation of thumb deformity using House system classification

Table 4. Distribution according to the presence of deformation by House system in the study group

House Deformation	Number (%) subjects
present	35 (43,06%)
absence	37 (56,94%)
TOTAL	72 (100%)

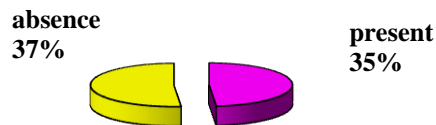


Fig.6.2.3. - House deformation in study group

For the 72 children studied, 31 (43.06%) showed changes in the thumb with flexion deformities and / or adducted, while for the other 37 (56.94%) children we did not detect deviations thumb position.

Distribution of types of upper limb deformities by the topography of spastic CP

Table 5: Upper limb deformity in different topographic groups

Average Grading (↑ Severity 1 → 4) n = 72	Topography spastic CP / number of affected subjects		
	Hemiplegia (n=30)	Diplegia (n=21)	Tetraplegia (n=21)
Tonkin's Scale of forearm deformity	23	0	21
Zancolli's Scale of hand & wrist deformity	19	0	18
House's scale of thumb	15	0	20

deformity			
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Children with quadriplegia display the most severe deformity in the upper limb, deformities are present simultaneously at the level of the forearm and also to the wrist and thumb, and in some cases an upper limb is most affected in comparing with each other.

For the children with forms of unilateral spastic PC having a severe hemiplegic type, the upper limbs were more affected than children with severe diplegia, as shown in Table 5.

In our study we noted forearm pronation deformities according to the Tonkin classification in 41 (57%) children, limitation of extension of the wrist and fingers in various degrees using Zancolli classification to 37 children (51.39%) and thumb in palm deformity - House classification encountered at 31 (43.06%) cases from the studied group. In a recent evaluation study entitled "Effect of upper limb deformities on gross motor and upper limb functions in children with spastic cerebral palsy", published by Elsevier in 2011 on a sample of 234 children with spastic form PCI, Park ES. et al. have found limitations in forearm supination at 70.5 % of children and 62.8 % had disturbances in the wrist and finger extension on at least one member forming the thumb while the hand is found in 47 % of subjects [11].

Another study regarding hand function was published in 2008 by Arner and Eliasson [12] in "Hand function in cerebral palsy. It report findings in 367 children in the Longitudinal Population-Based Health Care Program "conducted on a group of children with CP aged from 4 to 14 years showed that 60 % of them had minor problems in hand function. According to the study, achieving independence in daily activities was observed in 87 % of children with unilateral spastic CP and a total 63% of children with bilateral spastic. According to House functional classification, both hands were used spontaneously and independently in 55% of children consignment (House 7-8), and 5 % could not use his hands in conducting (House 0). A minor increase in flexor muscle tone (Zancolli level I) was observed in 69% of children, only 2% was found in level 3 Zancolli in both hands. Spastic thumb deformation of one hand was

revealed in the case of 25% of children group and both hands in only 15%.

In our study the most common deformities were presented in children with severe bilateral upper limb, deformation highlighted both the forearm and the hand, and in some cases an upper limb was most affected compared to the other.

Conclusion:

The upper limb deformity and function in patients with cerebral palsy was described based on the topographic area of involvement. There was an association between the degree of spasticity and motor control with the diplegic group having the mildest spasticity and best motor control, while tetraplegics were the most spastic with poorest motor control.

Acknowledgements. This work was supported by the strategic grant POSDR/89/1.5/S/61968, Project ID 61968 (2009), co-financed by the European Social Fund within the Sectorial Operational Program Human Resources Development 2007-2013.

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Handball and fence profesional training influence over somatosensory evoked potential parameters

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Abstract: Our purpose was to evaluate the parameters (latencies and inter-wave latencies intervals) of somatosensory evoked potential SEP waves at a group consisted of 18 professional male sportsmen, homogenous regarding age, height, weight and training regime, active for between 5 and 12 years exclusively in either handball or fencing (different stress degrees of the upper members) and to compare the resulted data in order to emphasize the influence of profesional trainig. All the investigated sportsmen have been subjected to SEP tests and the responses obtained by stimulating the median nerve in the fist articulation (radial-carpal) bilaterally and successively were recorded and measured using the Nihon Kohden Neuropack MEB-9100 device. From the multitude of parameters provided by the analysis of recorded tracks, the values of SEP component waves latencies and those of inter-waves latency intervals were kept and statistically processed. The testing through SEP of athletes has shown the existence of higher values of the component waves latencies, for the entire group, obtained by stimulating the right median nerve, compared to those obtained by stimulating the left hand, although subjects were right handed, probably the effect of dominant member infraclinic lesions. The values of the Pearson correlation coefficient for the entire group, showed a positive left-right correlation for the wave latencies originated in the subcortical levels and specific cortical and a high left-right correlation for waves and interwave intervals, originated in the cortical non-specific areas, of association, a location more functionally and plastically changed by specific sports training.

Key words: professional training, handball, fencing, somatosensory evoked potentials parameters.

Introduction

Somatosensory evoked potential (SEP) represent the bio-electrical response generated by stimulation of a peripheral nerve, thus, being a nervous system common investigation, with applicability in physical effort physiology, exploring the somatosensory system influx conduction, with proprioceptive receptors large participation, which are heavily involved in sports effort (Chiappa, K.H., 1990).

Our purpose was to evaluate the parameters (latencies and inter-wave latency intervals) of SEP waves at athletes from various sports: handball, fencing and to compare the obtained data, in order to emphasize the influence of profesional trainig, necessary for following evolution of the ability to develop specific skills through training, thus, reflecting efficiency of specific profesional training for each of the investigated sports.

Materials and method

Were studied sports where the stress on the upper limbs is uneven: handbal, where there is an intense participation of both upper limbs (with enhanced stress on one of them) and the lower ones, fencing,

where the effort is sustained predominantly by one of the upper limbs. This option became available by taking into account the more extensive representation of upper limbs in the motor cortex, thus, a higher number of plastic changes (Buonomano, D.V., 1998) are possible to appear as a result of repeated complex movements performed during specific training. Our studies aimed to compare two groups of sportsmen without including a sedentary subjects sample group, as the motor cortex did not display significant differences between professional sportsmen and sedentary groups. Data gathered from literature shows the lack of significant differences between the SEP parameters in high-performing sportsmen (gymnasts, athletes) and sedentary subjects (Thomas, N.G., 1996). Investigated group comprised 18 male athletes, active for between 5 and 12 years exclusively in either handball or fencing, with average ages, heights and weights alongside the standard deviation presented in Table 1.

Table 1 Average ages, heights and weights for the studied group

	Whole group	Handball	Fencing
	males	males	males

Age years	20.06	22.00	16.33
Standard deviation	3.11	2.45	0.52
Height cm	183.81	188.25	171.13
Standard deviation	10.44	5.65	4.05
Weight Kg	75.65	78.75	62.00
Standard deviation	15.13	12.40	11.89

Analysing the age histogram for the whole male group, the age homogeneity of the group is noted. Although there are characteristic weight differences between the selected sports, the analysed group is homogenous both from the point of view of weight and height and training regime. Taking into account the fact that the investigations took place in equivalent conditions for all subjects, we can state that the determining factor for the different behaviour of the administered tests were the changes induced by the practiced sports.

The testing was performed under current ethical rules, each participant being informed of the experimental processes.

All the investigated sportsmen have been subjected to electric-neuro-physiological investigations by measuring the somatosensory evoked potentials (SEP). The SEP responses obtained by stimulating the median nerve in the fist articulation (radial-carpal) bilaterally and successively were recorded and measured using the Nihon Kohden Neuropack MEB-9100 device.

The stimulation was performed through electrical stimuli, with a current intensity 3-4mA above the motor threshold, with a duration of 0.2 ms, and a 3Hz frequency. The evoked response was registered with surface electrodes placed on the scalp according to the electroencephalography 10-20 system. The Fz electrode was preferred as a reference electrode and the registration electrodes

were placed laterally opposite the stimulation, 2 cm posterior to C3 (C3') and respectively C4 (C4') On recorded tracks, P14, N20, P22-25, N25, P30, N35, P40 waves components were noted and their latencies, amplitudes and inter-wave intervals were calculated: P14-N20, N20-P25, N25-P30, P30-N35, N35-P40.

Results

After using SEP tests and following the processing of values obtained by measuring the parameters characteristic to the component waves, were recorded results that define both the entire studied group and the two sporting disciplines.

From the multitude of parameters provided by the analysis of recorded tracks, the values of SEP component waves latencies and those of inter-waves latency intervals were kept and statistically processed.

A differentiating left-right wave latency pattern is observed at the studied group, by stimulating the left hand lower values for the wave latencies are obtained, the same for the values of inter-waves intervals, with the exception of P14-N20 and P30-N35 intervals (Table 2, Figure 1). The left-right differences previously mentioned are not statistically significant, as Table 3 shows. A high left-right correlation has been observed for the non-specific cortex waves and the subcortical levels (P14) ones, but, unlike the last ones, the specific cortex waves are not correlated by stimulating the two hands (Table 4).

Table 2. Average values for the SEP wave latencies (ms) and for the SEP inter-waves intervals (ms) ± standard deviations for the group of sportsmen

SEP waves							SEP inter-waves intervals				
P14	N20	P22-25	N25	P30	N35	P40	P14-N20	N20-P25	N25-P30	P30-N35	N35-P40
Left hand											
16.971	20.053	22.675	25.406	30.400	34.162	38.336	3.143	2.656	5.171	3.862	4.369

±0.77 9	±1.03 3	±1.140	±1.48 3	±3.29 6	±3.56 1	±2.73 0	±0.96 8	±0.48 8	±2.95 8	±1.99 4	±2.34 2
Right hand											
17.267 3	20.15 3	22.863	25.63 8	30.77 9	34.39 2	38.96 7	2.813	3.835	5.323	3.675	4.915
±1.23 4	±0.75 5	±0.947	±1.21 5	±2.89 2	±4.16 0	±2.68 5	±1.01 2	±0.38 2	±2.81 9	±1.68 6	±2.81 4

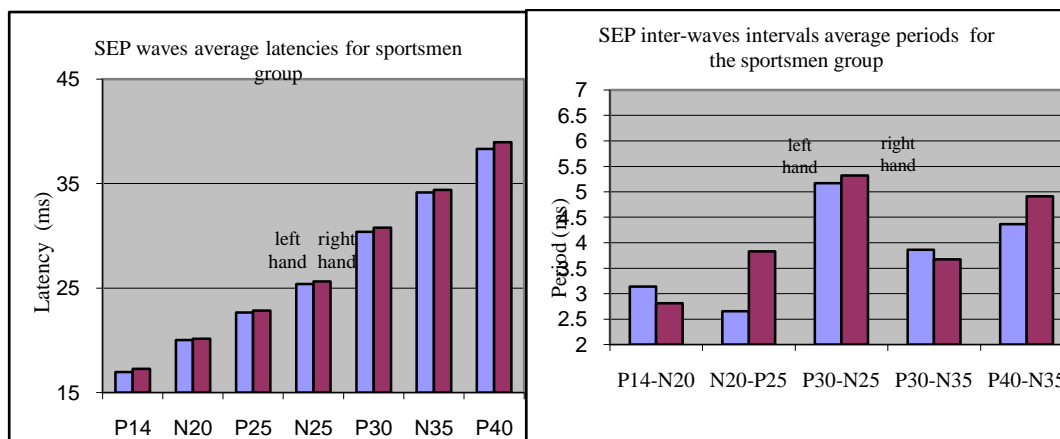


Figure 1. Graphs of the SEP waves average latencies and SEP inter-waves intervals periods in the sportsmen group

Table 3. Values of p (Student test) on the statistical comparison of the SEP wave latencies obtained in the sportsmen group by stimulating the left hand with those obtained by stimulating the right hand

SEP waves							SEP inter-wave intervals				
P14	N20	P22-25	N25	P30	N35	P40	P14-N20	N20-P25	N25-P30	P30-N35	N35-P40
0.511	0.722	0.577	0.597	0.694	0.859	0.559	0.397	0.299	0.878	0.815	0.551

Table 4. Values of the Pearson correlation coefficient of SEP latencies obtained for male lot by stimulating the left hand and by stimulating the right hand

SEP waves							SEP inter-wave intervals				
P14	N20	P22-25	N25	P30	N35	P40	P14-N20	N20-P25	N25-P30	P30-N35	N35-P40
0.788	0.071	-0.120	0.028	0.948	0.943	0.928	0.417	0.142	0.821	0.924	0.922

An analysis of the subjects from each sport type from SEP point of view was also performed. In the handball subgroup, the SEP latencies values and latency intervals were recorded (Table 5), with the same left-right pattern present at the entire studied group. The signalled left-right differences are not statistically supported (Table 6).

Table 5. Average values for the SEP wave latencies (ms) and for the SEP inter-wave intervals (ms) ± standard deviations for the handball subgroup

SEP waves							SEP inter-wave intervals				
P14	N20	P22-25	N25	P30	N35	P40	P14-N20	N20-P25	N25-P30	P30-N35	N35-P40
Left hand											
17.080	19.917	22.433	24.833	31.267	34.980	39.900	3.020	2.517	6.433	4.520	4.920
±0.81 4	±0.58 8	±0.85 5	±1.48 3	±3.58 6	±4.12 3	±2.90 2	±0.67 2	±0.42 6	±2.94 4	±2.49 6	±2.49 5
Right hand											
17.550	20.433	23.200	25.867	31.750	35.000	40.017	2.883	2.767	5.883	3.900	5.017
±1.21 3	±0.58 2	±0.90 3	±0.73 4	±2.99 6	±4.78 7	±3.11 9	±0.72 5	±0.34 4	±3.31 3	±2.15 3	±3.13 4

Table 6. Values of p (Student test) on the statistical comparison of the SEP wave latencies obtained in the handball group by stimulating the left hand with those obtained for stimulating the right hand

SEP waves							SEP inter-wave intervals				
P14	N20	P22-25	N25	P30	N35	P40	P14-N20	N20-P25	N25-P30	P30-N35	N35-P40
0.480	0.157	0.162	0.157	0.805	0.994	0.951	0.755	0.290	0.767	0.685	0.957

The calculation of the Pearson coefficient, supports a positive left-right correlation for P14, P30, N35 and P40 waves and a reverse correlation for the P22-25 wave. There is a positive correlation for N25-P30, P30-N35 and N35-P40 inter-waves latency intervals and a reverse correlation for N20-P22-25, as shown in Table 7. For a more complex comparison, we have also chosen to compare the values of the handball subgroup to those of the fencing subgroup. For wave latencies, this comparison does not show differences, but the interwave intervals comparison showed differences for N25-P30 (Figure 2).

Table 7. Values of Pearson correlation coefficient of SEP latencies obtained for the handball subgroup by stimulating the left hand and by stimulating the right hand

SEP waves							SEP inter-wave intervals				
P14	N20	P22-25	N25	P30	N35	P40	P14-N20	N20-P25	N25-P30	P30-N35	N35-P40
0.531	-0.405	-0.668	-0.464	0.933	0.970	0.964	0.327	-0.649	0.948	0.985	0.983

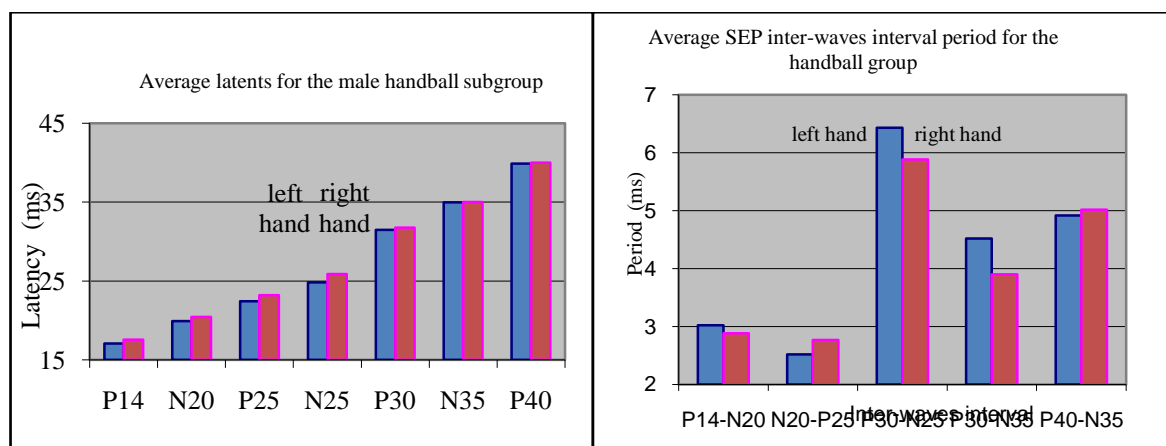


Figure 2. Graph of the average SEP wave latencies and SEP inter-wave intervals in the handball subgroup

Statistical comparison of studied values for entire group and handball subgroup does not reveal significant differences (Table 8). Male fencing subgroup is characterised by the values of SEP latency waves and interwave latency intervals from Table 9. Table 10 contains the 'p' values for the left-right differences and it allows the statement that this differences are not significant (for P40 wave there is a borderline significant value - 0.052).

Table 8. p values (Student test) on statistical comparison of the SEP waves latencies obtained in the sportsmen group with the handball subgroup ones

SEP waves							SEP inter-wave intervals				
P14	N20	P22-25	N25	P30	N35	P40	P14-N20	N20-P25	N25-P30	P30-N35	N35-P40
0.729	0.657	0.475	0.184	0.326	0.452	0.096	0.711	0.337	0.111	0.372	0.440
0.557	0.251	0.243	0.548	0.206	0.592	0.297	0.856	0.481	0.483	0.751	0.904

Table 9. Average values for the SEP wave latencies (ms) and for the SEP inter-wave intervals (ms) ± standard deviations for the fencing subgroup

SEP waves							SEP inter-wave intervals				
P14	N20	P22-25	N25	P30	N35	P40	P14-N20	N20-P25	N25-P30	P30-N35	N35-P40
Left hand											
17.200	20.317	23.150	25.817	28.575	32.567	36.550	3.020	2.833	3.200	3.400	4.233
±0.834	±1.380	±1.349	±1.436	±2.316	±2.219	±0.580	±1.287	±0.532	±1.857	±0.529	±2.511
Right hand											
17.740	20.033	22.783	25.317	29.075	33.200	37.475	2.060	2.750	4.500	3.733	4.367
±1.394	±0.905	±1.026	±1.589	±2.100	±2.946	±0.499	±1.201	±0.451	±2.003	±0.808	±2.589

Table 10. Values of p (Student test) on statistical comparison of the SEP wave latencies obtained in the fencing group by stimulating the left hand with those obtained by stimulating the right hand

SEP waves							SEP inter-wave intervals				
P14	N20	P22-25	N25	P30	N35	P40	P14-N20	N20-P25	N25-P30	P30-N35	N35-P40
0.478	0.683	0.608	0.580	0.760	0.781	0.052	0.257	0.776	0.378	0.582	0.952

Correlation test shows positive left-right correlations for P14, P30, N35 waves latencies and for interwave interval N35-40, as well as a reverse correlation for P30-N35, as shown in Table 11. The analysis of the left-right differences in the male fencing subgroup shows changes for a pattern that is characteristic to this group, compared to the same differences of N20, P22-25 and N25 waves for the studied group. The same analysis, applied to the interwave latency intervals shows differences between the two subgroups for N20-P22-25 and P30-N35 (Figure 3). Complete comparison through statistical analysis of SEP waves latencies and interwave intervals in the fencing subgroups and sportsmen group, not reveals significant differences (Table 12).

Table 11. Values of Pearson correlation coefficient of SEP waves latencies obtained for the fencing lot by stimulating the left hand and by stimulating the the right hand

SEP waves		SEP inter-wave intervals									
P14	N20	P22-25	N25	P30	N35	P40	P14-N20	N20-P25	N25-P30	P30-N35	N35-P40
0.833	0.086	0.132	0.244	0.986	0.936	-0.098	0.377	0.459	0.393	-0.982	0.994

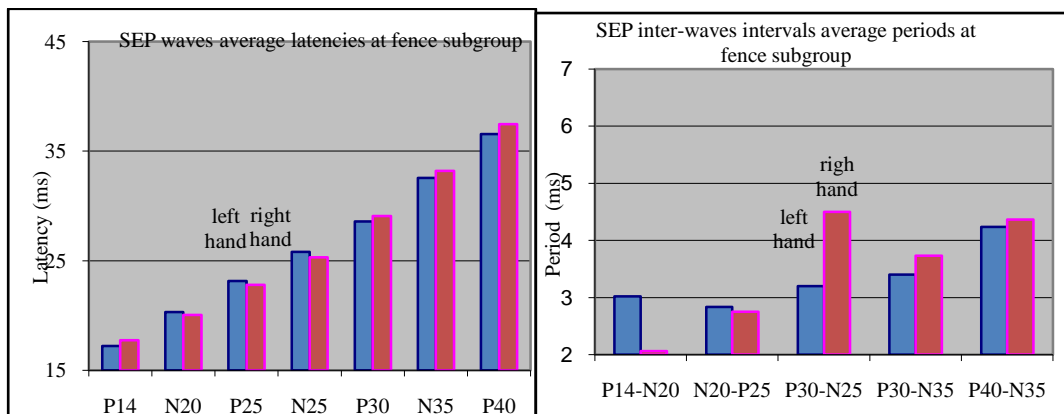


Figure 3. Graphs of the average SEP wave latencies and duration of inter-wave SEP intervals in the fencing

Table 12. Values of p (Student test) on statistical comparison of the SEP wave latencies obtained in the sportsmen group and fencing subgroup by stimulating the left hand and the right hand

SEP waves							SEP inter-wave intervals				
P14	N20	P22-25	N25	P30	N35	P40	P14-N20	N20-P25	N25-P30	P30-N35	N35-P40

Left hand											
0.461	0.385	0.148	0.349	0.116	0.304	0.109	0.711	0.218	0.064	0.669	0.896
Right hand											
0.392	0.630	0.789	0.398	0.097	0.533	0.273	0.072	0.474	0.458	0.955	0.698

An inter-sport comparison was realised to obtain a more complex definition of the neurophysiological pattern specific to each sport. Thus, the comparison of SEP wave latencies values between handball and fencing shows a significant value for wave P40, both for the left and right hand (Table 13). A positive correlation is noted between the late P30 and N35 waves in both hands and a reverse correlation in the right hand for the N25 wave (Table 14). For interwave latencies intervals values, there is a statistically significant difference for N35-P40 interval in the comparison of the handball and fencing subgroups for both right and left hands. The values of N25-P30 interval are statistically significant only for the left hand. Between the same sports, a high correlation for N35-P40 interval is recorded for both left and right hands. The values of N25-P30 interval are only correlated for the right hand (Table 15).

Table 13. Values of p (Student test) on statistical comparison of the SEP wave latencies obtained in the fencing and handball subgroups by stimulating the left and right hand

Left hand							Right hand						
P14	N20	P22-25	N25	P30	N35	P40	P14	N20	P22-25	N25	P30	N35	P40
0.842	0.430	0.471	0.671	0.057	0.073	0.010	0.801	0.619	0.359	0.402	0.130	0.251	0.038

Table 14. Values of Pearson correlation coefficient between SEP wave latencies in fencing and handball subgroups by stimulating the left and right hand

Left hand							Right hand						
P14	N20	P22-25	N25	P30	N35	P40	P14	N20	P22-25	N25	P30	N35	P40
-0.110	0.138	0.100	-0.003	0.747	0.835	0.368	-0.455	-0.084	-0.415	-0.504	0.561	0.720	0.364

Table 15. Comparison of the SEP wave latencies in the handball and fencing subgroups by stimulating the left and right hand

Left hand					Right hand				
P14-N20	N20-P25	N25-P30	P30-N35	N35-P40	P14-N20	N20-P25	N25-P30	P30-N35	N35-P40
p values (Student test) in the statistical comparison of the SEP latent wave values									
0.618	0.729	0.043	0.175	0.801	0.167	0.440	0.441	0.225	0.541
Pearson correlation coefficient values between SEP wave latents									

0.280	0.444	0.432	-0.011	0.871	-0.434	0.451	0.699	0.232	0.796
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Discussions

Comparison of the results we have obtained through SEP testing to the literature ones could only be partially made as the subject of our tests has been approached less in sportsmen and only with reference to waves generated by the specific cortex. The complex processing of all SEP waves and intervals has shown an unexpected aspect: the average wave latencies obtained by stimulating the right hand, for the entire group, was higher than the ones obtained by stimulating the left hand, although the sportsmen were right handed, with the exception of P14-N20 interval. It is worth noting that the left-right differences were not statistically significant.

Thomas does not discuss this aspect in his article, although he has processed SEP test results for long distance runners, gymnasts and sedentary people, he mention that he has not found statistically significant differences in the tested groups. The study of the left-right correlations shows a positive correlation for P14 (subcortical genesis) and N20 (specific cortical genesis) and a high degree of correlation for waves and inter-wave intervals generated by the non-specific cortex. The above affirmations support the presence of functional plastic changes at the previous mentioned levels, due to specific training in professional sportsmen. The non-correlation for P22-25 wave (specific cortical genesis) and interwave latency intervals P14-N20 and N20-P22-25 is notable, with a possible explanation-the dissociation of the two upper limbs activities at this level during specific sportive effort. In order to reach the goal of our study, we have also analysed the results of the subjects from the same sport – subgroup, with the values of the entire group. A particularity of those practising handbal is the left-right non-correlation for N25 wave, compared to the entire group, where the left-right differences for this wave do correlate. Compared with the entire group, where all waves latencies obtained by stimulating the left hand were lower compared to the stimulation of right hand, in handball players, P30 wave latencies were higher, another particularity of these sportsmen.

Left-right differences sense for P14-N20 and N25-P30 interwave intervals is reverse for handball athlets compared to the entire group, probably due to the different stress levels on the two limbs in specific effort. The analysis of the data for fencing subgroup shows a sense of left-right differences reversed for N20, P22-25 wave latencies and N20-P22-25 interval, compared to the entire group, an aspect present only at this sport, so, this can be considered the expression of specific cortex functional changes induced by physical training specific to fencers, especially for the superior nervous level. It is also noticeable that the systematic differences are obvious for SEP components generated in the non-specific cortex, a location more functionally and plastically changed by specific sports training (Sadowski, B., 2008). These observations can constitute original components of this study, as the specialized literature has payed attention only at the components generated by the specific cortex, both in sports medicine and in paraclinical exploration.

Conclusions

Testing through SEP of performance sportsmen, practicing fencing and handball, has shown the existence at the level of the entire group of a higher values of the component waves latencies, obtained by stimulating the right median nerve, compared to those obtained by stimulating the left hand, although subjects were right handed, is probably the effect of dominant member infraclinic lesions.

Values of the Pearson correlation coefficient, calculated for the entire group, shows a positive left-right correlation for the wave latencies originated in the subcortical levels and specific cortical (with the exception of P22-25), as well as a high left-right correlation for waves and interwave intervals, originated in the cortical non-specific areas, of association. The subgroup of handball players is characterised by left-right differences latency of the SEP components that are not statistically significant. At the same time, we can note a positive left-right correlation for most of the waves and intervals latencies, excepting P22-25 and N25

waves, whose non-correlation is a particularity of handball players. When comparing the handball subgroup with the entire group, there are significant statistical differences of the waves latencies representing the non-specific cortex. Fencers have a particular aspect of left-right latency differences sense, which is inverted for waves and the interval that represent the specific cortex (N20, P22-25), in comparison to the entire group, a modification which is caused by the different stress degree of the upper members in the specific sports effort. The paper is a complex study of the influence of physical effort characteristic to certain categories of professional sports, realised by using present functional exploration

methods as somatosensory evoked potentials.

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Rehabilitation of an adult with operated traumatic cervical myelopathy and sphincterian disturbances - a clinical case

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Abstract: Background & Purpose. Spine injury is a most devastating event that can occur in an individual's life, owing to which there is multisystem involvement and long term disability. The purpose of this case study is to describe and report outcomes of a conservative rehabilitation program with a locomotor training component in an adult with an incomplete Spinal Cord Injuries (myelic fracture).

Case Description. The patient was a 54 year old male who was involved in a road accident causing injury of the cervical spine with spinal cord involvement (myelic fracture). After two month the patient underwent a cervical intervertebral disc replacement surgery (metal prosthesis). As postoperative evolution is stationary maintaining motor deficit the old implant is removed and replaced with metallic Pyramesh prosthesis. One month after this surgery, following an acute generalized peritonitis, with multiple large perforations in the sigmoid colon, and with acute acalculous cholecystitis, temporary left iliac anus were performed.

Outcomes and Measures. Baseline measures included neurologic examination (manual muscle test), articular testing, functional scale (FIM), Beck Depression Scale and Berg scale. Following the baseline measurements, the patient participated in a physical therapy program. Measurements were repeated at 4-month and 8-month follow-up.

Results. The data shows an important difference in all parameters measured (muscle strength, ROM, balance, gait, functional skills and level of depression) comparing all three stages of evaluation, where the intermediate and final evaluation provided a better results compared with the initial one.

Key words: cervical spine injury, exercises program, rehabilitation effectiveness

Introduction

Spine injury is a most devastating event that can occur in an individual's life, owing to which there is multisystem involvement and long term disability. Cervical spine injury may occur as a consequence of sporting, diving or motor vehicle trauma. Spinal injuries can occur in many cases of cervical spine injuries.

Spinal Cord Injury (SCI) is the injury to neural elements of the spine which can result in different degrees of sensorimotor deficits and autonomic and sphincter dysfunction. The deficits depend on the severity of the injury, the segmental level of the lesion and the type of nerve fibres that are damaged. Furthermore, the neurological deficit or dysfunction can be temporary or permanent, complete or incomplete. Although incomplete Spinal Cord Injuries are usually less severe than complete injuries, they limit participation in

society, restricted opportunities, and compromise health.

The percentage of subjects who regain some walking capacity depends strongly on the extent of the spinal cord lesion. In subjects with SCI and some walking ability, the main limitation of over-ground ambulation is usually a reduced coordination, leg paresis, and impaired balance.

Long-term outcome after SCI comprises a combination of the initial extent of the injury, natural recovery from injury, medical interventions, rehabilitation, and social reintegration.

Evidence of the benefits of the medical rehabilitation is documented by the reduction in disability of person and a reasonable degree of independence in a performance of daily living skills with little socio-economic burden. It is therefore an important aim of the health care and

research communities to optimize the recovery process of subjects after SCI.

The purpose of this case study is to describe and report outcomes of a conservative rehabilitation program with a locomotor training component in an adult with an incomplete Spinal Cord Injuries (myelic fracture).

CASE REPORT

History

A 54-year-old male was involved in a road accident causing injury of the cervical spine with spinal cord involvement (myelic fracture). After trauma he was admitted in a neurosurgery department hospital. Two months after his injury following a neurological examination and magnetic resonance imaging of the cervical spine, the patient was hospitalized for a cervical compression syndrome (C6 sensitivity), spastic quadriplegia predominant in right upper limb and because of urinary incontinence. For those reasons the surgery is recommended.

An anterior cervical discectomy was performed at the C5 to C6 level with bilateral uncinectomy and rachicentesis and replacement of cervical intervertebral disc with a metal prosthesis (Stryker Soles). Postoperative evolution is stationary maintaining motor deficit. CT scan of the cervical spine C5-T1 highlights the presence of osteophytes at C6-C7 vertebral plateau intrusive endocanal.

The patient underwent another surgery based on partial discectomy, ablation of intrusive osteophytes and, the old implant was removed and replaced with metallic Pyramesh prosthesis. The postoperative evolution is slow favourable, with gradual improvement in sensory-motor deficit. The patients' postoperative status was quadriplegic. Neurologic examination revealed impossibility to maintain standing position, sitting position without assistance and walking ability, thenar eminence and interosseous muscle groups in upper limb and quadriceps present atrophy also the triceps sural in lower limb. Muscle strength for the quadriceps and gluteus medius (left and right side) was reduced to 2/5 and bilateral biceps brachialis and deltoid muscle strength was decreased to 3/5. The level of tactile sensitivity present

hypoesthesia at C6 level and distal anesthesia at C11 level. Osteotendinous reflexes were preserved, and Babinski sign was present on the right side. Ashworth Scale of muscle spasticity has a grade 2 for the upper limb; grade 4 for the lower limb. One month after surgery following an acute generalized peritonitis, with multiple large perforations in the sigmoid colon, and acute acalculous cholecystitis, was performed a temporary left iliac anus.

Physical therapy intervention

The patient received physical therapy for 60 to 90 minutes per day on weekdays, and 30 minutes each Saturday, for an average of 7 to 8 total hours of physical therapy each week. The physical therapy intervention was based on proprioceptive neuromuscular facilitation techniques, exercise aimed to improve patient's coordination, balance and ambulation exercises were performed in a quadruped and standing position with helper equipment (baton, ball).

The goals of the early stage of intervention were to maintain sitting position without assistance, standing position for more than 30 minutes and to gain the ability to walk continuously for 1 minute.

After the patient has achieved these aims we introduced in the exercises rehabilitation program the locomotor training included ambulation with walker, stepping over small obstacles, forward, retro and lateral ambulation and exercises to improve the temporal and spatial coordination.

After a couple months of pelvic floor muscle exercises (Kegel) and bladder training at least three times a day, the probe was removed and urinary incontinence has gone.

In the second phase, we used exercises with free weights (1100g and 2500g), to improve the strength of upper and lower body muscles. Walking reeducation included ambulation with increasing weight bearing with unilateral cane, stair climbing one hand support.

Outcomes and Measures

The participant underwent a clinical evaluation that included neurologic examination (manual muscle test), articular testing, functional scale (FIM), Beck Depression Scale and Berg scale. The

outcome parameters were evaluated on 3 occasions: at baseline (initial examination), after four month of rehabilitation (T2 moment), and 1 day after the 8-month intervention finished (T3).

The upper and lower limb key muscles were graded by manual muscle testing on a five-point scale for each limb. Manual Muscle Testing is an easily accessible and reliable method of determining the strength of individual muscles [1].

The active range of motion ROM for shoulder flexion/extension, abduction/adduction, internal and external rotation, elbow flexion/extension, pronation/supination, wrist dorsiflexion/palmar flexion, abduction/adduction, hip flexion/extension, abduction/adduction, knee flexion/extension ankle dorsal/plantar flexion were obtained using a universal goniometer, which has been demonstrated to be a sufficiently reliable tool for measuring upper limb ROM [2]. For all measured values, two trials have been performed and the mean was used in analysis.

The patients' scores on the Functional Independence Measure (FIM) ability was used to assess and measure progress in activity limitations [3]. FIM has 2 scales, 1 including 13 motor items and another with 5 cognition items. The motor items can be further divided into 3 subscales: "self-care" (6 items, scores range from 6 to 42), "sphincter control" (2 items, scores range from 2 to 14) and "mobility" (5 items, scores range from 5 to 35). These 3 motor sub-scales were used in this study.

Because spasticity in a lower limb or upper limb can affect a person's stability and balance during walking, we used the Ashworth scale to measure muscle tone [4]. Sensation was evaluated by the sharp/blunt discrimination test on the foot and shank segments.

The Berg Balance (BBS) was included as an outcome measure of balance capabilities of the patient. The BBS is a clinical measure of balance consisting in 14 tasks with progressing difficulty. Each task is graded on a 5-point ordinal scale and then

summed up to obtain a possible total score ranging from 0 to 56. Scoring was based on the ability to meet certain time or distance requirements, and to perform the items without assistance [5]. The BBS has been used to predict falls in elderly people in previous studies and was able to detect changes in status of patient.

The Beck Depression Inventory (BDI) was used to detect and measure a subject's level of depression. In this case we chose the long form composed from 21 questions, each designed to assess a specific symptom common among people with depression [6].

Results

The patient began rehabilitation therapy within the three months following injury. Rehabilitation treatment included range of motion (ROM) exercises, muscle strengthening, balance training, gait and stair training, training in activities of daily living (ADL) also. Ultrasound, functional electrical stimulation, electrotherapy (i.e. high, medium, and low frequency stimulation), infrared were selectively applied.

The evolution of the subject had a positive trajectory registered noticeable improvements in almost all measured parameters, in the period between assessments.

Gradually over the next four months, his bilateral upper and lower limb strength improved considerable when comparing with initial moment. Re-evaluation of elbow, wrist, hip, knee ankle muscle performance revealed increased strength of the previously tested. After four month of rehabilitation, manual muscle test grades of 3-/5 were given to the hip and knee flexor, extensor, 4-/5 hip abductor, internal and external rotation strength. For ankle plantar and dorsal flexors, strength had improved to 5-/5. Wrist dorsiflexion strength did not display a consistent progression in strength staying at 2-/5.

At the latest 8-month follow up lower and upper extremity strength had steadily improved, as shown in table 1. However he was still weak in his right and left wrist dorsiflexions (4-/5), hip external rotations and 5-/5 in all other muscle groups.

Table 1. Evaluation of muscle strength of the upper and lower limb at all evaluation moments

Muscle	Right side			Left side		
	T1	T2	T3	T1	T2	T3
Elbow flexions	3-	5-	5-	3-	5-	5-
Elbow extensions	2-	3-	5-	2-	3-	5-
Wrist dorsiflexions	2-	2-	4-	3+	4-	4-
Hip flexions	2-	3-	5-	2-	2-	5-
Hip extensions	2-	3	5-	2-	3-	5-
Hip abductions	2-	4-	5-	2-	3-	5-
Hip internal rotations	3-	4-	5-	3-	4-	5-
Hip external rotations	3-	4-	4-	3	4-	4-
Knee flexions	2-	3-	5-	2-	3-	5-
Knee extensions	2-	3-	5-	2-	3-	5-
Ankle plantar flexions	4-	5-	5-	4-	5-	5-
Ankle dorsalflexions	4-	5-	5-	4-	5-	5-
Ankle inversions	4-	5-	5-	3-	5-	5-
Ankle eversions	4-	5-	5-	3-	5-	5-

Significant increases were observed after the rehabilitation strategy in shoulder range of motion (flexion, abduction, internal and external rotation) excepting the range of motion for elbow and wrist adduction. Goniometric examination of active range of motion of the right and left lower extremity revealed notable differences for all evaluation moments as shown in table 3.

Table 2. Results achieved by the patient during the recovery program, for the 3 stages of the evaluation

Measure	T1	T2	T3
FIM scale	44	90	135
BERG Balance Scale (BBS)	2	7	42
Beck Depression inventory (BDI)	20	16	13

Our patient had an initial score on the Berg Balance Scale of 2/56, which improved to 7/56 at 16 weeks following the training. We could observe a mild increase in balance capabilities, but the patient remained with a high risk of falls. His final BBS score was 42/56 indicated a moderate balance. This change in BBS score coincided with a decrease in fall risk following the intervention (table 3).

Functional Independence Measure (FIM) was used to assess functional abilities. The subject was assessed in the beginning of the study and reassessed after four and eight months. After 16 weeks of rehabilitation, the value of FIM increased to about 46 points. Significant improvement of functional abilities was noted from 90 to 135 points (table 3) during the final investigations. Improvement was shown in motor and cognition items also.

Table 3. The measurements of mobility of the joints

AROM extremity	-upper	Left side			Right side		
		T1	T2	T3	T1	T2	T3
Shoulder flexion		60	180	180	60	180	180
Shoulder abduction		45	170	180	40	170	180
Shoulder adduction		0	0	0	0	0	0
Shoulder internal rotation		45	90	90	45	90	90
Shoulder external rotation		30	90	90	30	90	90
Elbow flexion		120	140	145	120	145	145
Elbow pronation		80	90	90	80	90	90
Elbow supination		80	90	90	80	90	90
Wrist dorsiflexion		60	70	70	60	70	70
Wrist palmar flexion		70	90	90	70	90	90
Wrist abduction		10	40	45	10	40	45
Wrist adduction		15	20	30	15	20	30
Hip flexion		10	40	70	10	40	70
Hip abduction		0	30	45	0	30	40
Hip internal rotation		0	20	35	0	20	35
Hip external rotation		0	30	30	0	30	30
Knee flexion		30	120	120	30	120	120
Ankle plantar flexions		15	40	45	15	40	45
Ankle dorsalflexions		10	20	20	10	20	20

The BDI was administered at baseline and again two times during the therapeutic intervention. His scores went from 20 (that indicated moderate depression) to 16 (indicating mild depression) to 13 (indicating minimal depression) during his rehabilitation.

Proprioception, kinesthesia and graphesthesia were evaluated only at T2 - the second evaluation, the patient having a positive response. To note that our subject had negative sharp-blunt discrimination test results.

Currently (after eight months), the patient is able to perform walking on toes and heels, continuous walk of more than 1 hour and running in place without support.

Discussion

Most patients with incomplete spinal cord injuries need both medical and rehabilitation treatments. Rehabilitation and access to daily physical activity and training are extremely important. Maximizing the independence in daily activities and providing optimal

reintegration in society are the important goals of rehabilitations in those cases.

The purpose of this case report is to describe and report outcomes of a conservative rehabilitation program with a locomotor training component in an adult with an incomplete Spinal Cord Injuries (myelic fracture).

Physical therapy intervention described in this case report focused on proprioceptive neuromuscular facilitation techniques with a view to optimising motor performance and rehabilitation and different types of exercises aimed at improve patient's coordination, balance and ambulation and to increase functioning and improve levels of activity. Kegel exercises and bladder training was used for treat urinary incontinence.

The patient completed the rehabilitation program with no complications and there were no adverse events registered after our rehabilitation.

The data shows an important difference in all parameters measured (muscle strength, ROM, balance, gait, functional skills and

level of depression) comparing all the three stages of evaluation, where the intermediate and final evaluation provided better results compared with the initial one. Following the rehabilitation program, the patient demonstrated improvements in his independent over-ground ambulation, as revealed by increases in gait speed and endurance between initial, intermediate and final examinations. His independence in ADL also improved at the end of the study compared with that he can do before the intervention.

These findings generally agree with others that have shown how physical therapy can improve qualitative report of improved outcomes in SCI patients treated under physiatrist supervision [7,8,9].

Despite the outcomes presented in this case study, care must be taken in establishing cause and effect based on a single patient.

Conclusions

The presented case showed that, individualized physical rehabilitation program was effective in improving functional rehabilitation outcomes including ambulation ability, balance and ADL independence in a person with cervical spine injury (an incomplete SCI).

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A NEW ANGLE OF LOOKING AT HUMAN JUMPING ABILITIES

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Abstract: The aim of this study was determining the jumping ability on more measured parameters than before. It was assumed that the jumping ability will be described better when it will be determined not only by the height of elevation of the body center of gravity during the “vertical jump” test but by the ratio of the maximum height elevation of the body center of gravity and relative maximum power generated by the athletes during the test as well. The study was conducted using dynamometric platform of 30 men and 30 women aged 20 - 23 years. There was measured values of elevation of body center of gravity, values of strength, energy, generated power and weight of the subjects. Each trial was repeated five times at regular intervals. During the study was found that persons with relatively low elevation of the body center of gravity h_{max} , both men and women, have the jumping ability index s relatively high. It indicates that for people with low values of elevation of the body center of gravity and simultaneously with relatively high values of jumping ability index there is a possibility to increase their jumping ability by the way of strength training and movement techniques. Research indicates that there were very small differences between values of jumping ability indexes s for man and women in opposition to jumping ability values based on measurements of the elevation of the body center of gravity h_{max} . The proposed method of determining jumping ability using jumping ability index and eliminating the influence of human body weight and power of lower limbs, seems to be more objective particularly for young boys and girls. It seems that this new method containing calculation of jumping ability index should be assumed as an important compliment to determine jumping ability in the way of measurements of the elevation of the body center of gravity h_{max} . It also seems that jumping ability index may determine the human “inherent” jumping ability.

Key words: biomechanics, motor abilities, jumping ability index

Introduction

Existing literature does not specify the exact location of jumping ability in the structure of human abilities. Examples are papers by Bartosiewicz and Wit (1985), Brehmer (1973), Demel and Skład (1974), Denisiuk (1961), Dolja (1971), Gundlach (1970), Joseliani (1961), Raczek (1987), Rotkiewicz (1964), Starosta (1978, 1995), Starosta and Radzińska (1998), Szopa (1989), Ulatowski (1981), Ulmer and Gabriel (1997), Ważny (1975, 1989), Zaciorski (1970).

By many authors jumping ability is regarded as a complex motor ability depends on strength, speed, technique and movement coordination. See papers by Belej et al., (1993), Bobbert and Schenau (1988), Diaczko (1975), Kasa and

Moravec (1993), and Radzińska and Starosta (2002), Starosta (2000, 2010). Almost all the links work now determine the jumping ability through the determination of the overall elevation of the body center of gravity during the test “vertical jump” using dynamometric platform.

This approach allows the determination of jumping ability as a human motor ability in a particular place and time. It does not allow the prediction of jumping ability in ontogenesis and does not give rise to use tests in the selection of young people interested in sport and qualify them to practice certain sports, both individual and team. The reason is that jumping ability is largely genetically determined, and the scope of its changes through the use of

training funds is limited primarily to muscle strength training and teaching techniques for the jump.

The paper assumes that a more objective assessment of jumping ability, especially for comparative purposes, should ensure the elimination of the impact forces generated during the jump and the weight of the player on the measurement results during the test. It was assumed that this objective will be achieved if the jumping ability will be determined not by the height of elevation of the body center of gravity during the test "vertical jump" but by the ratio of the maximum height elevation of the body center of gravity and relative maximum power generated by the athletes during the test. It is therefore proposed by the jumping ability index s from the equation

$$s = h_{\max} / P_{w\max},$$

where:

s – jumping ability index,

h_{\max} – height of elevation of the body center of gravity

$P_{w\max}$ – relative maximum power,

$P_{w\max} = P_{\max} / m$, where:

m – body mass.

Method

The aim of this study was to assess the validity of the assumption and to determine the jumping ability index for a selected group of young men and woman. The second aim was to estimate the relationship between jumping ability index introduced and maximum value of elevation of the body center of gravity. Finally it was decided to compare the jumping ability index calculated for men and women.

The study was conducted using dynamometric platform equipped with the computer processing of data for groups of 30 men and 30 women aged 20 - 23 years, not practicing sport. As a test, the vertical jump on the dynamometric platform was assumed. It was calculated the maximum height elevation of the body center of gravity, maximum power generated during jump, and jumping ability index. Each trial was repeated five times at regular intervals. For analysis and comparisons of selected test it was assumed the results and calculations of the first and last series of jumps.

Results

During preliminary studies it was noted that for those with relatively low elevation of the body center of gravity h_{\max} , both women and men, jumping ability index was often high, while for those with large values of h , it is was low. Table 1 illustrates an example.

Table 1. Comparison of selected parameters describing jumping ability for two men and two women

Subject	m	P_{max}	h_{max}	s
	kg	W	cm	cm.kg/W
man 1	82	3603	60,3	1,37
man 2	80	1508	28,7	1,52
woman 1	70	1941	34,9	1,26
woman 2	63	932	19,8	1,34

The questions thus arises, which method is correct and which incorrect. Or maybe both are correct?

In the following Table 2 we can find the comparison of parameters measured and calculated. The calculated mean values as well as highest and lowest values are shown. In Tables 3, 4 and 5 are presented the highest values of the body center of gravity elevation, jumping ability indexes

and maximum power obtained during the research and corresponding parameters. Tables 6-9 contains the same statement relating to research conducted with a group of women.

Table 2. Comparison of parameters describing the vertical jump of men detailing the calculated and measured values of average maximum and minimum values.

Value	m	P_{max}	h_{max}	s
	kg	W	cm	cm.kg/W
Mean	79	2549	40,6	1,27
maximum	102	3525	63,8	1,61
minimum	73	1669	29,6	0,93

Table 3. Parameters describing the vertical jump of the man with the largest value of elevation of the body center of gravity.

h_{max}	s	P_{max}	m
cm	cm.kg/W	W	kg
63,8	1,44	3125	72

Table 4. Parameters describing the vertical jump of the man with the largest value of jumping ability index.

s	h_{max}	P_{max}	m
cm.kg/W	cm	W	kg
1,61	54,4	3446	102

Table 5. Parameters describing the vertical jump of the man with the largest value of power.

P_{max}	h_{max}	s	m
W	cm	cm.kg/W	kg
3525	59,4	1,38	82

Table 6. Comparison of parameters describing the vertical jump of women detailing the calculated and measured values of average maximum and minimum values.

Value	m	P_{max}	h_{max}	s
	kg	W	cm	cm.kg/W
Mean	63	1535	30,5	1,25
maximum	80	2343	52,8	1,55
minimum	46	837	17,6	0,91

Table 7. Parameters describing the vertical jump of the woman with the largest value of elevation of the body center of gravity

h_{max}	s	P_{max}	m
cm	cm.kg/W	W	kg
52,8	1,3	2223	55

Table 8. Parameters describing the vertical jump of the woman with the largest value of jumping index.

s	h_{max}	P_{max}	m
cm.kg/W	cm	W	kg
1,55	29,0	1140	61

Table 9. Parameters describing the vertical jump of the woman with the largest value of power.

P_{max}	h_{max}	s	m
W	cm	cm.kg/W	kg
2343	32,1	1,1	82

Table 10 summarizes the arithmetic mean values describing the “vertical jump” test in the group of men and women and the percentage difference between the results for men and for women. As expected the maximum power P_{max} generated during the test was lower in women (40%) as well as h_{max} (25%). Importantly, however, the average values of inherent jumping indexes for males and females were almost the same (with a difference of less than 2%). This indicates that sexual dimorphism does not affect, or have very little impact on the level of jumping ability index.

Table 10. Arithmetic mean values describing the parameters of “vertical jump” in group of men and women and the percentage difference between the results for men and women.

Sex	m	P_{max}	h_{max}	S
	kg	W	cm	cm.kg/W
Men	79	2549	40,6	1,27
Women	63	1535	30,5	1,25
Percentage difference of value m, Pmax, hmax and s for man and woman				
%	20	40	25	1,6

Conclusions

Analysis of the resulting data indicates that the assumed way of assessing jumping ability, by determining jumping ability index and eliminating the influence of human body weight and power of lower limbs and trunk on the evaluation of jumping is proper and can be particularly useful in predicting the results of future athletes in the disciplines in which the level of jumping ability plays an important role. While the overall elevation height of the body center of gravity h_{max} correctly describes the jumping ability in a particular moment, the jumping ability index s especially at adolescents should be very useful in creating jumping abilities, which

can be further shaped by the strength training and movement techniques to achieve the best possible result.

The proposed method signalizes very small differences between values of jumping ability index s for man and women as opposed to values of jumping ability calculated on the base of elevation height of the body center of gravity h_{max} . It indicates that presented method may be better than previous one because may indicate the “inherent” jumping ability. It seems however that this new method containing calculation of jumping ability index should be assumed as an important compliment for determining jumping ability in the way of

measurements of the elevation of the body center of gravity h_{max} .

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Editorial**Statement regarding the evaluation of neuro-motor development****Mihaela Zăvăleanu******Faculty of Physical Education and Sports, University of Craiova, Romania****Corresponding author e-mail address: mihaelazavaleanu@gmail.com**

What can be the winning therapeutically approach of a difficulty/disability in the child development and growth area? This is the question that guides the work of researchers from this field.

Many researchers and clinicians claim the need to improve the methodology and means to evaluate the motor performance for the child with Cerebral Palsy (CP), also to have prognostic and consistent therapeutic possibilities that can be reliable on for those that work in the field of CP.

In the therapy area, the specialists made sometimes many efforts, sometimes certain experimental therapies being applied along the classic ones. The motor learning theories, the understanding of normal development of the human brain, the development and evolution of a child with brain lesions under the rehabilitation therapy must be underline be the evaluation in order to recognized changes and needs.

The rehabilitation processes sustains, help, increase, particularise the opportunity windows that exist normally in the stages of human brain development. Brain plasticity is particularly evident at the beginning of life when late adult the structures of the brain are forming. [1]. Plasticity is defined as the brain's capacity to be shaped by experience, its capacity to learn and remember and ability to reorganise and recover after injury. [2]. Especially for CP and neuromotor disabilities, is desire to sustain this most fertile periods of the brain by specific intervention, the periods know to have the major plasticity in order to obtain the maximum for the patient.

All the therapeutic process has a common principle: the early identification of a problem for an early intervention for a maximum function and a complete health status. Also, the response to the changes after therapy of the brain is important to the therapist, can sometimes change the objectives of therapy. Current issues in

child neuromotor development during the first years of life establish the fact that the evaluation is the first step of the therapy.

There are specific evaluation approaches to motor function that can be used to assess and describe the degree of functional motor impairment in cerebral palsy area. In Romania does not exist yet a statistic registry of CP cases and also is not available a real quantification of need for those individuals. The availability for therapeutically guides for this disease it will be welcomed in the help of the patient and family and in the help of our society in the end.

The work and elaboration of SED-PCI scale was supported by the strategic grant POSDR/89/1.5/S/61968, Project ID 61968 (2009), co-financed by the European Social Fund within the Sectorial Operational Program Human Resources Development 2007-2013. Proposed SED-PCI scale [3] assesses the child's neuromotor impairment, in order to simplify the evaluation process, the early prophylactic identification of developmental problem for the child also, quantify of the brain growth and development. The scale has the main characteristic the fact that it can be used not only be the specialist but also by the parents of the child, because the family is and must be an important factor in the discovery and therapy process, and can be integrated also in the evaluation with the help of this scale.

Due to the differences regarding the rehabilitation and therapeutically accessibilities in different area of our country, with notable differences between the rural and urban area, this scale can be a bridge between, a binder who want to unify the proper start for therapy, to help clinicians in evaluation, with already know rules of this, for the child with neuromotor problems.

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