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DIFFERENCES IN REPETITIVE STRENGTH AND COORDINATION BETWEEN JUDO ATHLETES AND NON-ATHLETES

Abstract

This study was conducted in order to determine the differences in some motor variables between male judo athletes and non-athletes, between 14 and 15 years old. A sample of 40 boys was divided into two subsamples: the sample (A) consisted of 20 judo athletes and sample (B) consisted of 20 students-athletes who attended only the regular Physical Education. Investigation with the aid of T-test, discriminant functions of motor abilities and canonical coefficient correlation showed that the respondents who were engaged in judo sport were statistically significantly different in all 3 repetitive power variables and four variables for checking of the coordination. A statistically significant difference is not found in the test MS3M (slalom with three medicine ball), which justify the complexity of the embodiments of this test. Such differences in benefit of judo athletes were probably a result of training impact and training work.

Key words: judo, non-athletes, repetitive strength, coordination, test

1. INTRODUCTION

Judo as a sport is among those sports of semi structural and acyclic movements with very complex elements that are performed at different stages of the fight. Both the performing success of the given technique and the fight is dependent of many factors and dimensions. Coordination, strength and speed occupies the specification of the motor space in judo sport for younger categories. (Sertic, 1997). Motor skills discriminate successful judoists from less successful ones in a great extend (Franchini, E. et al., 2001.; Krstulovic, S. et al. 2005), so it is therefore necessary to take such an important criterion for selection. Motor possibilities among pupils are primarily the result of the interaction of biological heritage, the legality of growth and development, as well as their adaptation to other types and frequency of physical activity (Svoboda et al., 2005). Each additional forms of involvement in physical activity, despite their regular Physical Education is of great benefit and importance for every young man (Findak, 2002).
The variety and multitude of technical elements, tactics, movements of the whole body and limbs in different directions with variable intensity and varying pace are typical for judo sport. During the judo fights dynamic situation with various changes in the position of both opponents are constantly changing which requires good dynamic stereotypes of movements, combination and throws, but also a good ability for efficiently and quickly performing of reorganization of these dynamic stereotypes. Constantly creation of new programs, offensive, defensive and against offensive actions during combat are necessary. Judo is characterized by a large number of techniques and their complexity, which requires the adoption of enormous amount of information by judo athlete, enabling him to perceive the essential elements of the techniques to be able to predict the intentions of opponents and to react adequately. Functional capabilities in judo athletes, must be extremely emphasized due to the high energy consumption during a fight and relatively long-term activity. Without a well-developed functional activity it is impossible to achieve good results in tournaments and individual championships, where in one day competition in judo athletes fight several times. Modern judo requires that judo fight is performed in a relatively short period, by a very rapid tempo and that it has many tactical and technical elements. Top judo athletes must be versatile, and in their repertoire requires several interventions „specialty” of different groups of techniques, different tactics for each procedure, as well as they need to cope with different opponents. This complex activity of judo athlete during the fight requires also adequate capabilities and characteristics, and the corresponding dimension of psychosomatic status (Stefan Cuk, 2011).

2. METHODS

The sample consists of two samples of respondents, namely: subsample consists(A) of the 20 boys who are actively engaged in the sport of judo (Judo club „Rajko Kusic” Pale), and the subsample (B) consists of 20 pupils 14 to 15 years old who are athletes of Elementary school („Pale”), attending a regular Physical Education.

It's been applied three tests in order to estimate the repetitive force: pushups (FSK), lifting the torso on the Swedish bench (MDTK), squats (CUC). Evaluation of coordination was performed by using five tests: slalom with three medicine balls (MS3M), agility in the air (MOZ), coordination with the bat (MKO), agility on the ground (MAGONT), slalom with legs with two balls (MSN2L).

Measurements among judo athletes and non-athletes were performed at the same time of the day between 2 pm and 6 pm. The room in which the measure was done was big and light enough and comfortable in the sense of warmth. All measurements were conducted by the same person, with the aid of the same tests, with the same measuring instruments (meter, stopwatch). The sequence of measurement for the implementation of motor tests was the same for all respondents. All individual tests were demonstrated before the test itself was performed (if the test is not otherwise specified), without the trial attempt (if the test is not otherwise specified).

The data obtained in this study were processed by T-test for independent samples, using the statistical software package SPSS 20.0.
3. RESULTS AND DISCUSSION RESEARCH

Table 1. The significance of the differences in tests of repetitive strength between judo athletes and non-athletes by the using of T-test.

<table>
<thead>
<tr>
<th></th>
<th>Judo athletes (A) N=20 (Mean)</th>
<th>Non-athletes (B) N=20 (Mean)</th>
<th>T-value</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSK</td>
<td>19.45</td>
<td>7.85</td>
<td>5.79</td>
<td>38</td>
<td>.000*</td>
</tr>
<tr>
<td>MDKT</td>
<td>29.40</td>
<td>22.05</td>
<td>2.48</td>
<td>38</td>
<td>.018*</td>
</tr>
<tr>
<td>CUC</td>
<td>36.15</td>
<td>23.00</td>
<td>2.38</td>
<td>38</td>
<td>.022*</td>
</tr>
</tbody>
</table>

Legend: The number of respondents (N), mean (Mean), a T-test (T-value), degrees of freedom (df), the overall statistical significance (Sig.)

Table 1 shows the results of T-test administered tests for the evaluation of repetitive strength between judo athletes and non-athletes. The analysis of the obtained results can be concluded that there are statistically significant differences between groups for all tests in favor of judo athletes at the level of 95%.

Table 2. The significance of differences in tests of coordination between judo athletes and non-athletes, tested using the T-test.

<table>
<thead>
<tr>
<th></th>
<th>Judo athletes (A) N=20 (Mean)</th>
<th>Non-athletes (B) N=20 (Mean)</th>
<th>T-value</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS3M</td>
<td>36.39</td>
<td>35.78</td>
<td>0.274</td>
<td>38</td>
<td>.786</td>
</tr>
<tr>
<td>MOZ</td>
<td>4.57</td>
<td>6.49</td>
<td>-3.42</td>
<td>38</td>
<td>.001*</td>
</tr>
<tr>
<td>MKO</td>
<td>4.74</td>
<td>6.36</td>
<td>-3.50</td>
<td>38</td>
<td>.001*</td>
</tr>
<tr>
<td>MAGONT</td>
<td>25.72</td>
<td>32.20</td>
<td>-3.39</td>
<td>38</td>
<td>.002*</td>
</tr>
<tr>
<td>MSN2L</td>
<td>35.64</td>
<td>31.11</td>
<td>2.52</td>
<td>38</td>
<td>.016*</td>
</tr>
</tbody>
</table>

Legend: The number of respondents (N), mean (Mean), a T-test (T-value), degrees of freedom (df), the overall statistical significance (Sig.)

Table 2 shows the results of T-test applied for the assessment of coordination between judo athletes and non-athletes. With the analysis of the obtained results it can be concluded that there are statistically significant differences between groups for all tests in favor of judo athletes at the level of 95%, except in the test MS3M (slalom with 3 medicine balls) with the value of Sig. .786, which is not statistically significant.

Table 3. Significance of the isolated discriminant function motor skills

<table>
<thead>
<tr>
<th>Function</th>
<th>Eigenvalue</th>
<th>Wilks’s Lambda</th>
<th>Chi-square</th>
<th>Cannon. R</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.655</td>
<td>.377</td>
<td>33.19</td>
<td>.789</td>
<td>8</td>
<td>.000*</td>
</tr>
</tbody>
</table>

Legend: square coefficient of discrimination (Eigenvalue), canonical correlation coefficient (Cannon. R), the value of Bartlett’s test (Wilks’ Lambda), degrees of freedom (df), the overall statistical significance (Sig.)

In the Table 3 is showed the obtained substantial high discriminant function (Cannon. R = 78%), It indicates the level of the correlation data set where the discriminant analysis was conducted of the results. The aforementioned discriminative power variables was expressed over the Wilks’ Lambda test, which is a medium-high (.377), confirming that the
differences between the groups in the area of used motor tests are statistically significant (Sig. = .000). The results indicate the existence of differences in applied tests between judo athletes and non-athletes.

Table 4. Factor structure of the isolated discriminant function motor skills.

<table>
<thead>
<tr>
<th>Motorical tests</th>
<th>Root 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSK</td>
<td>.731</td>
</tr>
<tr>
<td>MDKT</td>
<td>.313</td>
</tr>
<tr>
<td>CUC</td>
<td>.301</td>
</tr>
<tr>
<td>MS3M</td>
<td>.135</td>
</tr>
<tr>
<td>MOZ</td>
<td>-.432</td>
</tr>
<tr>
<td>MKO</td>
<td>-.442</td>
</tr>
<tr>
<td>MAGONT</td>
<td>-.429</td>
</tr>
<tr>
<td>MSN2L</td>
<td>.319</td>
</tr>
</tbody>
</table>

Table 4 shows the structure of discriminative function variables of motor abilities in the formation of important functions. The greatest impact has a test for evaluating repetitive strength: push-ups (MSK .731) and test for the evaluation of coordination: slalom legs with two balls (MSN2L .319). Other tests are shown in the table. The results showed significantly difference between athletes and non-athletes.

Table 5. Focus groups

<table>
<thead>
<tr>
<th>Students</th>
<th>Root 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Judo athletes (A)</td>
<td>1.252</td>
</tr>
<tr>
<td>Non-athletes (B)</td>
<td>-1.252</td>
</tr>
</tbody>
</table>

Table 5 centroids, which represent the arithmetic mean of the group and indicate that their discrimination is significant. Based on the values of the chapters (Root 1) it is clear that the judo athletes are better in almost all applied tests.

Table 6. Matrix classification

<table>
<thead>
<tr>
<th>1. judo athletes (A); 2. Non-athletes (B)</th>
<th>Predicted Group Membership</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>JUDO ATHLETES (A)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NON-ATHLETES (B)</td>
<td></td>
</tr>
<tr>
<td>Original Count</td>
<td>18</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>18</td>
</tr>
<tr>
<td>%</td>
<td>90,0</td>
<td>10,0</td>
</tr>
<tr>
<td></td>
<td>10,0</td>
<td>90,0</td>
</tr>
</tbody>
</table>

Cross-validated

<table>
<thead>
<tr>
<th>Count</th>
<th>JUDO ATHLETES (A)</th>
<th>NON-ATHLETES (B)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td>%</td>
<td>80,0</td>
<td>20,0</td>
<td>100,0</td>
</tr>
<tr>
<td></td>
<td>20,0</td>
<td>80,0</td>
<td>100,0</td>
</tr>
</tbody>
</table>
From Table 6, it is concluded that training in judo clubs among judo athletes is leading to more improved results of motor tests, compared to non-athletes who are performing Physical Education in schools.

4. CONCLUSION

According to the results obtained from tests for assessment of motor abilities among the boys from 14 to 16 years old, it can be concluded that a judo sport has a considerable effect on the changes in some motor skills among the students athletes who are engaged in judo compared to those non-athletes. (Cicović, 2009; Lulzim, 2011). Based on the applied T-test and analysis that contributed to differentiate respondents of judo athletes from non-athletes, the differences are significant.

The changes were not recorded in the test slalom with three medicine ball that we can justify because of the complexity of performing this test, especially in the stated age. Research (and Drida Bala, 2010) showed that the young judo athletes (11-16 god.) compared to their peers who are not involved in sports are better at the repetitive exercises and with the static strength exercises, running speed and coordination of the whole body. Bearing in mind the fact that a large number of Physical Education teachers attaches very great importance to monitoring the development of motor skills of students (Milanovic, Radisavljevic Pasic, 2010), the results of this research can serve as a kind of a model for improving of Physical Education in school. The idea of improving the teaching of Physical Education with the judo elements and elements from the other fighting sports is not new (Kasum and Cirkovic, 2009), and the results of this study proves this idea.

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School. Anthropological status and physical activity of children and youth (319-324). Novi Sad: Faculty of Sport and Physical Education.


ETHICS OF VALUES IN SPORT MANAGEMENT

Summary

This paper discusses the values as the central integrating factor of personality and important concept in the ethics of sports management. The integrity and dignity of the person appears as an undisputed fact in the three most important ethical direction (utilitarianism, deontology and virtue ethics). These are sufficient reasons for which we can conclude that ethics is essentially related to the behavior of individuals guided by values. We believe that the phenomenon of values in the context of ethics is not enough to be seen only as integrating factor of personality which is reflected in the standards of behavior, motivation and self-actualization. Values represent a powerful integrating factor in the field of sports and organizational structure, which is primarily reflected in setting organizational goals related to leadership and corporate communication.

Key words: values, sports management, motivation, goals, leadership.

1. INTRODUCTION

A value system is a set of values that an individual possesses. This set often also entails a hierarchy of values within it. It is implicit that all values possessed by an individual are most probably complementary, rather than contradictory. Schwartz (1992) supported this idea empirically and discovered that the analyses of relations among 56 values, including Rokeach’s terminal and instrumental values, generate 10 sets of values named value types.

Schwartz also mentioned a set of values (power, achievement, hedonism, stimulation, and self-direction), which represent individual interests, whereas another set of values (benevolence, tradition, and conformity) represent collective interests. The remaining values (universalism and security) are borderline by their nature.

The aforementioned results clearly allude to the fact that values can lead to the specific modes of behaviour. For instance, Rokeach (1973) emphasises values which enable individuals to choose among plenitude of terminal states and instrumental means for achieving the final outcome. Similarly, Shwartz (1992) suggests that certain values can shape our
inclination towards either individualism or collectivism. Therefore, owing to their multiple functions, values have a significant role in our lives.

Rokeach classified the functions of values into three broad categories: standards for the leading activities, plans for resolving conflicts, and their motivational functions.

In contemporary sport management, performance of individuals, groups, and organisations, depend, among other things, on the degree of compatibility of values that different individuals have and exhibit at work. As with competence, different people bring different values to their work. In every corporation, it is understood that not all employees can share the same ethical values; each one of them acts according to their own value system and experience. Nevertheless, some values can be fostered (cf. McDonald & Zepp, 2001:237). However, in management, some values can and must be coordinated by socialisation. This is why in ethics of sport management it makes sense to view values as integrative factors when it comes to an individual, but also actions of individuals and groups in modern organisations.

The term ‘values’ per se has different meanings depending on the context. Generally, value refers to equivalence or worth of things or actions in terms of money or goods (e.g. the value of a sport talent); something that is desirable (e.g. the value of participation in sport); or the belief in what is right (e.g. the profit value should not be emphasised in business).

Values are probably the most complex field of individual variables, which also include competence and personality traits. Nevertheless, “channelling values of an individual is important, since these precise values often influence long-term goals and decisions. Most people are able to tolerate almost anything that is short-term, but when faced with the fact that they are supposed to do anything unappealing that forms a part of their long-term career in a company, they become less tolerant. In these situations, the individual value system becomes much more important in the decision making process” (Branhan, 1991: 244).

The analysis of the level of comfort in an association with specific individuals or groups shows that a part of the comfort (or discomfort) stems from the degree to which beliefs and attitudes among individuals match or do not match. Most people have experienced a certain amount of convergence or divergence among values at their work. In the light of this, people can be satisfied with or more motivated for one particular type of job compared to the others. If it is detected that values (including attitudes and beliefs) have an impact on work, it is necessary to make sure to recruit people who share beliefs and goals with the given company, and to promote the company’s values and goals (cf. Čokorilo, 2011: 166-167).

1. MATERIALS AND METHOD

In this paper, descriptive – analytical-synthetic method was primarily used. By means of this method, theoretical and empirical research from the field of values and ethics of sport management was critically analysed. The integrative function of values in individuals and
sport management was examined. In humanistic psychology, values are defined as an integrative factor of comprehensive, healthy (mature) personality, since they hold together all the traits and competences, which in turn creates a very generalised attitude towards all aspects of life. From this point of view, values represent an important precondition for humanisation of modern organisation in human resources management.

2. RESULTS AND DISCUSSION

2.1. The integrative function of values in personality

The hierarchy of values

As previously mentioned, individuals can have several values in any life stage. It is, however, important to mention that these values do not have the equal significance for all given situations. Rokeach (1973: 6) proved that despite the fact that people adopt certain values as absolute and unchangeable, in the course of their lives, they learn to make a hierarchy of values according to priority and importance of each one of them. “When thinking, talking, or trying to teach somebody about a value of ours, we usually do not think about the other values we have, that is, we consider them absolute. However, when one value is activated at the same time as the others in a given situation, the behavioural outcome will be the result of the relative importance of all values active in the given situation”. In essence, different situations activate different values that people have, while the intensity which they confirm these values with also varies from situation to situation.

Values as standards

In essence, values of an individual set the standards of their behaviour. This way, people support a drug test or not, appreciate or despise a film after watching it, or try to influence other people’s opinion about the salary of government officials. All these behaviours stem from people’s value systems. In other words, values define standards governing human thoughts and actions (cf. Čokorilo, 2008: 229).

Motivational functions of values

Rokeach (1973: 14) proved that “values are in the final analysis the conceptual tools and weapons that people use to maintain and enhance their self-esteem”. Values contribute to maintenance and enhancement of self-esteem by helping an individual to fit into society, overcome threats to their ego and test their own perception and competence in the process of self-actualisation.
Ego-defensive functions of values

When an individual's needs, feelings and actions do not meet the social norms and expectations, they can protect their ego by relying on the values that justify their feelings or behaviour. Therefore, “values are ready-made concepts provided by our culture so that such justifications can proceed smoothly” (Rokeach, 1973: 15-16). For example, when a university athlete cancels the contract with the team, thus putting them in an unfavourable position, the athlete can justify the act by stating that the value of education is more important than the value of sport. The social environment would support such justification.

The self-actualisation function

The content of certain values focuses on personal competence, knowledge, success, and wisdom. This function reflects the individual’s need for understanding the context of events they participate in, in order to remain consistent in their perception and beliefs. To the degree where these values are highly ranked, they also constitute striving of an individual for self-actualisation: “To become everything that one is capable of becoming” (Maslow, 1943: 382). Estimation of one’s own personal competence and experience, along with situational demands, has the influence on the choice of the specific physical activity for participation and the level of contest an individual takes part in. Taking values as the starting point, an individual chooses a particular activity and contest level, which is a step in the process of self-actualisation. According to Rokeach (1973), this testing of one’s own knowledge and competence against personal values and the reality is essential in self-actualisation.

In short, values that individuals have are of great help, since they provide standards for their actions and decision-making, justification for self-esteem maintenance, medium for personality integration, social integration and means of self-actualisation (cf. Čokorilo, 2006: 79).

2.2. The integrative function of values in an organisation

Values in sport organisations

As already mentioned, values impact the overall behaviour, but also life in a sport organisation. Given that values undoubtedly form the basis of perception and behaviour of an individual, it is logical that values which members of a sport organisation have influence the processes in the organisation. On the one hand, compatibility among values of different members in an organisation might lead to the development of a positive organisational culture, commitment of its members and productivity. On the other hand, divergence of values among members might lead to conflict and in turn produce dysfunctional effects. In any case, the bigger the divergence is, the greater the negative consequences are. These facts are of utmost importance to every sport manager and his activities in a sport organisation.
Values, goals of an organisation, and purposes

Since goals are the planned outcomes of strategic planning, they are more or less the specific aim which individuals or sport organisations strive for. A goal can be achieved, and once achieved it is expended. Organisations often avoid considering ultimate goals (the basic idea that management is built around) or formulate unattainable goals in order to avoid facing the question about what to do next. The solution to this problem is not a higher, more distant, or elusive goal. It is rather the purpose, value, or point. Therefore, a purpose is a way of being or functioning, viewed by an individual or organisation as a value per se. The purpose concerns what is good, or valuable, in itself. It does not encompass solely final goals, but also the way of taking actions and the way of being. The purpose creates a framework of values, where certain questions concerning goals and means of attaining them are considered (cf. Pastin, 2001: 102).

Personal values affect processes in an organisation in many different ways. The first critical domain is setting goals of an organisation and the choice of a course of action for attaining the goals. It would be unreasonable to expect all employees and shareholders to participate in setting the goals. Senior administrators and major shareholders set the goals. This powerful coalition also makes decisions about the course of action for attaining the set goals. The second important aspect is that the majority of other members of the organisation (e.g. employees or shareholders) support the set goals and values underlying these goals in order for the organisation to be successful. If there is no such support, the survival of the organisation may become questionable.

Values and business communication

Apart from their impact on the choice of goals and processes, values and discrepancies among them also influence the communication processes among employees. To put it simply, in a communication process, the received messages are never identical to the sent ones, there are distortions (e.g. added content, omitted content, or other modifications) compared to the original. Senders encode their ideas into a verbal or non-verbal form of symbols. Receivers decode the symbolic form in order to obtain the meaning of the message. This may be the way errors occur in encoding and decoding phases. In essence, these errors or distortions are conspicuous in groups whose members have different values (Čokorilo, 2008: 231). Citing Singer (1987), Adler (1990: 57-58) advocated that values can influence the perception as well as the stimuli existing in a message. This way, employees with different values can choose different pieces of information from the environment and as a result have disparate interpretations of the very same encounter. Similarly, in communication, the greater the differences between values of the sender and receiver are, the greater the chance is for them to interpret the situation differently and to assign different meanings to the same words and actions.

Values and leadership

Apart from the aforementioned aspects, we can also include processes of coordination and motivation of members of a group by their leader. Employees’ characteristics are an
important factor in successful leadership. These characteristics include the size of a group of employees, homogeneity, cohesion and stability of the group, as well as experience, maturity, gender, national and religious affiliation of group members. Values that members have influence their perception of the leader to the same degree they influence communicative and attributive processes. Their perception of the leader’s influence and the reasons for it vary according to values that a person has. James, Chen, & Cropanzano (1996) discovered that Taiwanese and American employees differ not only in their cultural values, but also in their views on leadership ideals. Even within one cultural context (e.g. USA or Canadian), effectiveness of a leader depends on the concordance between values of the leader and the group members. When it comes to moral behaviour of employees, the leader setting an example has the biggest influence, therefore his or her behaviour has to be impeccable all the time. Without a good role model on the top of hierarchy of an organisation, moral problems at lower levels are inevitable.

3. CONCLUSION

The previous analysis brings us to the conclusion that there are major differences in value systems among people as individuals but also in subgroups. We can also conclude that values are not always consistent with one another (e.g. individualism with conformity or competitiveness with cooperativeness).

Perspectives or conflicts based on value systems are more common between managers and employees. Brown (1976) suggested that such conflicts stem from different exposures to organisational and management values. Society is the main source of values for all its members, however, being a member at the management level exposes managers to an additional set of values over the course of years, leading to divergence of values, which triggers the emergence of conflicts.

The “value-free” business is a popular theme. However, if we accept the fact that individuals’ values influence their perception and behaviour, it is necessary to accept the fact that values which people in business have also influence their actions.

The belief that values and value systems are important in the analysis of organisations and their management gives the integrative importance to values in management. According to Barney (1986: 657): “Organisational culture typically is defined as a complex set of values, beliefs, assumptions, and symbols that define the way in which a firm conducts its business.” Manager’s values influence his or her decisions, while members’ values influence the reactions to these decisions. Value systems in management set the tone and direction of goals and processes in an organisation. The influence of values is manifested through plans, organisational structure, leadership styles, evaluation of individual’s performance, and organisation’s effectiveness. If employees share organisation’s values, which are the basis of its goals and processes, they would be more motivated to implement the assigned plans and decisions (Čokorilo, 2008: 232).
Therefore, from the point of view of ethics in sport management, values that managers and other employees in an organisation posses have to be in concord at least in the aspects where values direct the organisational process. For instance, it is natural that people in organisations strive for success and pleasure. However, the values underlying striving for success are: success, competitiveness, diligence, delayed pleasure, conformity, and obedience. These values are not consistent with striving for pleasure, if this pleasure is immediate and restricted to the experience of success.

If managers and other people who organise and run a firm differ in the aforementioned values, the conflict is inevitable. Therefore, it is necessary to make the goals of an organisation as well as its fundamental values clear to everybody. What is more, when recruiting clients and volunteers, as well as professionals, managers should try and, if possible, make sure, that they share common organisational values.

4. REFERENCES


JUSTIFICATION OF FUNDING RECREATION IN TOURISM

Summary

The concept of recreation comes from the Latin word ‘recreo’, ‘recreare’, where we can distinguish the prefix 're' meaning “again”, while ‘creare’ means “to shape, to create, to regenerate.” Anthropological meaning of this formulation gives us a coherent definition meaning to restore, to empower, to relax, to revitalize, to regenerate. Tourism is a set of economic and non-economic relationships and developments arising from travel and stay beyond domicile, and consumption of resources typically achieved in the permanent residence place. Tourism in Bosnia and Herzegovina received significant economic and development role through nominating Sarajevo for organization the Winter Olympic Games in 1984. Preparation and organization of the games generated a large number of jobs. Only in the hospitality and tourism industry employment increased by 17.7% in 1984 compared to 1983.

For less than fifty years ago, in the world has registered 25 million foreign tourist arrivals, and in 1970 in international tourism developments were recorded 116 million people. In 1996, according to the World Tourism Organization (UNWTO), in the international tourist traffic were recorded 594 million of tourists, and realized income of foreign currency of US$ 423 billion. During the last two decades, tourism has shown significant growth and becomes a ‘global phenomenon’ with expanding share in the global economy. Up to now, UNWTO has published data for 2014 where were registered 1.135 million foreign tourists, and this represents an increase of 4.4% compared to 2013. Also, in 2014, the growth of 3.7% was recorded in the total tourism revenue, and it amounted to US$ 1.245 billion (euro 937 billion). Adding up the export earnings generated through international passenger transport services, total exports from international tourism were up to US$ 1.5 trillion, or US$ 4 billion a day on average in 2014.

The main hypothesis of this paper is that tourism and recreation in tourism can contribute significantly to overall economic development, the standard of living and well-being, if the country is positioned as a high-quality and attractive tourist destination.

Key words: finance, recreation, tourism, active vacation, hospitality
1. INTRODUCTION


Even today, a large number of researchers from different areas contiguous with tourism deals with defining the concept of tourism. As a starting point will serve us tourism definition of AIECT, an international association of tourism (according to Marković S. and Z. 1970, p. 10): “Tourism is a set of relationships and developments arising from the travel and visitors stay at a place, if such a stay is don’t base permanent residence at the place, and if such a stay is not associated with any other private business.”

According Cicvarić (1980, p. 28) “Tourism is a set of economic and non-economic relationships and developments arising from travel and stay beyond domicile, and consumption of resources achieved in the permanent residence place.” As it can be seen, here is the main starting point at economic and non-economic phenomena and relations, so the tourism is located in the category of consumption of acquired assets.

In contrast, Alfier (1977, p. 15) considers tourism from the standpoint of improving human qualities. For him, it is: “an activity by which man realizes and promotes its human qualities of humaneness, humanity, whether in relationships, whether in the views and comprehension of individuals, in their relation to the world and towards nature.”

Relac (1987, p. 5) bases its definition on humanistic activities among people and between people and nature, which occur during the stay beyond the residence. He concludes: “It follows that tourism is, primarily, humanistic activity where the man hanging out with people, confirms and improves its human qualities. The man confirms that humanization not only towards other people but also towards nature where he carried out his out domicile spare time.”

In the context of tourism, a series of subgroups have been developed, depending on the season, geographic or historical sites, age, health situation and so on. So there are: congress, hunting, fishing, rural, nautical, children, health, mountain, winter tourism…

Gnjato et all. (2005) tourism, as the most complex economic activity is in many ways based on valorization of natural potentials, especially those providing the opportunity for activate vacation or practicing the different sports. Among many functions of tourism, based on valorization of natural potentials, especially climate related ones, as well as hydrologic and generally ecological potential; hereby we stress the function of health improvement and safeguarding.

Hadžikadunić et all. (2002) Tourism in the world and in our country, has developed into an important economic activity, with a notable impact on the overall socio-economic development of the country. In addition to the basic economic functions of tourism, an important role is played by many social functions, such as health, sports, recreational, cultural, educational, social and political functions.

The forerunners of today's tourism appeared in ancient times. In ancient Greece, various pre-tourist phenomena were closest to some today's tourist movements. Here is primarily thought of the Olympic Games. For the time of the Olympic Games, among other things, mass travels are occurring. In those days, most Greeks were in Olympia, where, in addition to sports, took place competitions in poetry, drama and comedy, and appropriate
musical events. Expedition trips were more frequent than the individual ones, and were undertaken in war purposes, or more often, for commercial purposes. To this end, ancient Phoenicians, Carthaginians were traveling, as well as the ancient Greeks, who have had their colonies across the Mediterranean Sea - the center of the ancient world.

In recent years, tourism has covered almost all structures of society and the consequences of tourism spread on the widest economic level, which led to treating tourism as a mass phenomenon, and one kind of planetary phenomena. Tourism is a complex socio-economic phenomenon which can significantly contribute to economic growth and development in Bosnia and Herzegovina, and further contribute to improvement of national competitiveness. Tourism is an important segment of economic activity and has a strong influence on almost all the activities into environment where it develops. For better overall results of tourism activities in the country, tourism should be based, and in large part developed on the basis of domestic resources, because on that way achieves a better net foreign exchange effect and reduces import dependency. Functions of tourism can be considered as the primary (economic) and secondary (non-economic) functions. The effects of those function are interconnected and intertwined by complex socio-economic relations.

The most important economic functions of tourism are:

Conversion function, describes the ability of tourism to convert non-economic resources to economic ones. In that way, tourism engages resources which would not realize any economic effects, if tourism hasn't come.

Inductive function, expresses the role that tourism and tourist spending have in increasing of overall production effects, i.e., quantitative and qualitative trends in total production, which are partly encouraged and focused on tourism requirements.

Multiplicative function defines domino effect of tourism activity on the economy of the country, in almost all economic activities. This function is realized through market expansion, growth of total revenue at the end of through the multiplicative effect on the gross domestic product of the country.

The function of accelerator reflects in tourism potential to develop a specific geographical area or economic sector (branch) faster and more comprehensively than other areas or economic sectors.

Balancing commodity-money relation, as an important economic function of tourism, is achieved through the placement of goods and services to tourists and direct influx of cash into the national economy, which is particularly beneficial effect on the balance of commodity-money flows.

Export function of tourism is realized through the payment of foreign citizens for domestic goods and services. On that way, the income generated by tourism activity is called ‘invisible exports’ or ‘exports on the spot’. Benefits of export through tourism are numerous, from smaller transportation costs, lower advertising costs, to the possibility of placement domestic goods which are not otherwise suitable for export.

Facilitating the development of underdeveloped areas is another feature of tourism that should be taken seriously and insist on the realization of its potential. Economically non-
developed areas just have a greater ecological potential that can be put in economic function through the development of eco-tourism, thus enriching the space for new investments.

*Employment function* is realized through a significant number of new employees in tourism developing areas. Particular importance is that tourism employs a large number of women, low-educated personnel, and gives a possibility of seasonal employment.

The most important non-economic functions are healthcare, entertainment, cultural, social and political function.

The social character of tourism drives people on a journey where they meet their own needs and requirements (rest, recreation, entertainment, etc.) which are not economically motivated. To meet these needs, tourists spend part of their income, i.e. generate tourism spending. The difference between the revenue received from foreign tourists and imports contained in the consumption of foreign tourists represent net financial effect of tourism.

Republika Srpska has respectable resources necessary for mountain tourism development. Several important mountain localities with a plentitude of geo-morphologic, hydrographic, bio-climatic and bio-geographic tourism values indicate it. Intensive development of contemporary mountain tourism is followed by development of tourist infrastructure and supra-structure. XIV Winter Olympic Games took place in Sarajevo and surrounding mountains (Jahorina, Trebevic, Igman, Bjelasnica) at the beginning of 1984. That was a turning point in the development of mountain and winter mountain tourism. After the Olympic Games, Jahorina gained a reputation of an attractive tourist destination and was included into the international tourist movements. The most important mountain localities of Republika Srpska are: Jahorina (Olympic ski center), Vlasic (ski center Srebrenik and Knezevo air spa), Javor (ski center Igriste), Kozara (national park), Zelengora-Maglic-Volujak („Sutjeska“ National park), Borje (sports and recreation center), Borike (air spa and recreation center)...

2. METHOD

The research is based on the use of standard methodological principles that are used in economic and humanities research. Relevant data were collected through the application of statistical methods, comparative methods, and through the application of the historical method, deductive and inductive reasoning, synthesizing the analyzed content and brief critical review. Objectified assessment of the achieved level of development of tourism in BiH is applied. The paper is to draw attention to the untapped resources and potentials of tourism, and especially recreational tourism in BiH, which can make a significant contribution to overall economic growth and development, which further contributes to the improvement of competitiveness and living standards. The World Economic Forum data are used in the purpose of proper presentation and analysis of competitiveness in the tourism sector. This data are based on complex statistical and quantitative methods with the application of the benchmark method. Tourism competitiveness indexes for all of 140 surveyed countries were obtained on the basis of 79 indicators, grouped in fourteen pillars of competitiveness. The same metho-
dology is used for each country, thus allowing the comparison of indicators at the global level, as well as tracking the movement of specific countries indicators over time. This paper presents data for Bosnia and Herzegovina, Austria and Greece, then the data were analyzed by comparative method, deduction, induction and synthesis of analyzed content which led to inference of the set hypotheses.

3. RESULTS

As a leading organization in the field of tourism in the world, UNWTO promotes tourism as a driver of economic growth, inclusive development and environmental sustainability, offering support to the tourism sector in advancing knowledge and quality policies worldwide. UNWTO includes 156 member countries and over 400 educational institutions, tourism associations and local tourism authorities.

According to UNWTO data, international tourism accounts for 30% of the world’s exports of services and 6% of total exports and contribution is similar for both developed and emerging economies. As an export category, it ranks fourth worldwide, after fuels, chemicals and food, but notably ahead of automotive products (UNWTO 2015). Data on world exports by main export categories of are presented on Graph 1.

**Graph 1: World exports by main export categories, 2013. (US$ billions)**


*Retrieved: 04.12.2015*
Having in mind economic potential of RS and BiH, it appears that we cannot significantly involve in the main world trends by export fuel, while the chemicals are highly questionable. Precisely, food exports and significant tourism development should be commitment and orientation of our economy. Here we come to the question which factors hinder the tourism development in BiH and RS, and why this sectors do not record significant economic effects?

The most important researches in the field of global competitiveness, and competitiveness of tourism conduct the World Economic Forum in Davos (WEF). The most important global report in the tourism field is WEF’s "The Travel & Tourism Competitiveness Report" (TTC Report), which includes around 140 countries, ranked by The Travel & Tourism Competitiveness Index (TTCI), which consists of fourteen sub-indexes and 79 different indicators. The Reports are publishing on biannual basis, enabling continuous monitoring and comparison of indicators, thus, on the basis of obtained data, give a quality base for action towards performance improvement in specific country. The latest TTC Report is for 2015, but Bosnia and Herzegovina is excluded from this Report, as well as from The Global Competitiveness Report for that year, because there was a significant discrepancy between data for 2015 and previous five-year trend. Last published report with data available for BiH is the Report for 2013 (WEF 2013), and these data are presented and analyzed in this paper. The TTC Report 2013 does not bring a significant change in the leading countries. Switzerland is best ranked with a score 5.66, followed by Germany and Austria with a score 5.39, after come Spain, the United Kingdom, USA, France and Canada. Greece is the best positioned country in the Balkans at 32nd place, than Croatia at the 35th and Slovenia at the 36th. Bosnia and Herzegovina is ranked at the 90th place out of 140 surveyed countries with a score of 3.8. This is an improvement compared to the 97th place in 2011 and the 107th place in 2009, but it is insufficient progress because BiH is in a worse half of surveyed countries, and at the very bottom of the European countries. Omission from The Report 2015 throws shadow over this relatively positive shift. According to WEF estimates, the tourism sector in BiH realized US$ 386.4 million, i.e. 2.0% of GDP, while the expanded effect of tourism activity in the economy is estimated at US$ 1,398 million, i.e. 7.4% of GDP in 2012. BiH registers 391,900 foreign tourists in 2011, according to the WEF.

Graph 2 gives detailed presentation of the main tourism competitiveness indicators in BiH.
Graph 2 gives detailed insight into advantages and disadvantages of the tourism sector in BiH. The worst evaluated indicators include Air transport infrastructure, Ground transport infrastructure, Cultural resources, and ICT infrastructure. The highest-rated indicators are Safety and security, Availability of quality labor, Health and hygiene, Affinity for travel & tourism. These benefits should be guidelines and incentives to better utilization of existing capacity and creating new opportunities on the basis of these comparative advantages. This paper don’t go into debate on the strategic objectives and wider context of competitiveness, investment and tourism, and all those determinants in domain of state regulations and medium or long-term macroeconomic developments. This paper aims to point out BiH potentials in the field of tourism, in particular recreational tourism, as a segment which shows dynamic growth and which could achieve significant growth and comprehensive contribution to the economic growth and development.

Table 1 presents indicators of the last three pillars of tourism competitiveness (Affinity for travel & tourism, Natural resources and Cultural resources) where BiH has the best, and the worst ratings. Here, we can find potentials for recreational tourism which could
become a leading tourist branch, generating broad positive effects on economy and competitiveness.

*Table 1: Selected indicators of tourism competitiveness in BiH, WEF, 2013.*

<table>
<thead>
<tr>
<th>12th pillar: Affinity for Travel &amp; Tourism</th>
<th>4.8</th>
<th>49</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.01 Tourism openness, % of GDP*</td>
<td>4.5</td>
<td>73</td>
</tr>
<tr>
<td>12.02 Attitude of population toward foreign visitors</td>
<td>6.6</td>
<td>8</td>
</tr>
<tr>
<td>12.03 Extension of business trips recommended</td>
<td>5.9</td>
<td>28</td>
</tr>
<tr>
<td>12.04 Degree of customer orientation</td>
<td>4.5</td>
<td>82</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>13th pillar: Natural resources</th>
<th>2.9</th>
<th>107</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.01 No. of World Heritage natural sites*</td>
<td>0</td>
<td>79</td>
</tr>
<tr>
<td>13.02 Quality of the natural environment</td>
<td>5.5</td>
<td>20</td>
</tr>
<tr>
<td>13.03 Total known species*</td>
<td>378</td>
<td>107</td>
</tr>
<tr>
<td>13.04 Terrestrial biome protection (0-17%)*</td>
<td>0.5</td>
<td>134</td>
</tr>
<tr>
<td>13.05 Marine protected areas, %*</td>
<td>0.8</td>
<td>47</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>14th pillar: Cultural resources</th>
<th>2.1</th>
<th>79</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.01 No. of World Heritage cultural sites*</td>
<td>2</td>
<td>88</td>
</tr>
<tr>
<td>14.02 Sports stadiums, seats/million pop.*</td>
<td>72,431.1</td>
<td>33</td>
</tr>
<tr>
<td>14.03 No. of int'l fairs and exhibitions*</td>
<td>7.0</td>
<td>86</td>
</tr>
<tr>
<td>14.04 Creative industries exports, % of world total*</td>
<td>0.0</td>
<td>69</td>
</tr>
</tbody>
</table>


Indicators of the 12th, 13th and 14th pillar of tourism competitiveness show in detail the strengths and weaknesses of BiH tourist potential. BiH has received the best score (6.6) and rank (8) at indicator ‘Attitude of population toward foreign tourists’, then score (5.5) and rank (20) at indicator ‘Quality of the natural environment’, score (5.9) rank (28) for indicator ‘Extension of business trip recommendation’ and score (72,431) rank (33) for indicator ‘Sports stadiums, seats/million pop’. The worst evaluated fields include ‘Terrestrial biome protection (%)’ and ‘Total known species’. It is clear that biodiversity cannot be significantly influenced, but in long-term, it is possible to protect existing species, especially through terrestrial biome protection, however, that is not the subject of this paper. Here we want to emphasize existing strengths and significant opportunities that could be opened in the tourism sphere if systematically insisted on the recreational tourism development where we have the greatest potential. Aiming competitiveness increase, we could and should change poor score in ‘No. of international fairs and exhibitions’, and especially in ‘Degree of customer

1 WEF ratings are typically in the range 1-7, with the exception of real measurable variables, as it is in this indicator, which shows the actual number of available seats in stadiums per million of population.
orientation’ where BiH ranks 82nd place, while for example, Austria ranks 3rd place (see Table 2).

Here will be presented indicators of the 12th, 13th and 14th pillar of tourism competitiveness of Austria and Greece as comparator countries, with an approximate civilizational heritage, size and population. Austria has better performance of tourism competitiveness, despite the immense cultural and historical wealth, coastline and favorable climate in Greece. This fact points out importance of strategic setting of tourism and potential of recreation in tourism which Austria maximally exploit, while tourism in Greece has rather character of passive vacation. Recreational tourism exhibits better adaptability to seasonal fluctuations and generate more revenue through equipment rental, instructors and additional services. Thus Austria attracted 23 million foreign tourists in 2011, while Greece remained at 16.4 million. The tourism sector in Austria realized US$ 20.35 billion in 2012, i.e. 4.8% of GDP, while the expanded effect of tourism activity in the economy is estimated at US$ 58 billion, i.e. 13.7% of GDP. The tourism sector in Greece realized US$ 16.96 billion in 2012, i.e. 6.7% of GDP, while the expanded effect of tourism activity in the economy is estimated at US$ 42.77 billion, i.e. 16.8% of GDP. Table 2 gives detailed display of indicators of the last three pillars of tourism competitiveness (Affinity for travel & tourism, Natural resources and Cultural resources) which are largely responsible for positioning Austria on the 3rd place and Greece on the 32nd place at TTC Report.

Table 2: Selected indicators of tourism competitiveness in Austria and Greece, WEF, 2013.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Austria</th>
<th>Greece</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affinity for Travel &amp; Tourism</td>
<td>5.5</td>
<td>4.8</td>
</tr>
<tr>
<td>Tourism openness</td>
<td>7.3</td>
<td>6.9</td>
</tr>
<tr>
<td>Attitude of population toward foreign visitors</td>
<td>6.7</td>
<td>6.6</td>
</tr>
<tr>
<td>Extension of business trips recommended</td>
<td>6.4</td>
<td>5.7</td>
</tr>
<tr>
<td>Degree of customer orientation</td>
<td>5.9</td>
<td>4.5</td>
</tr>
<tr>
<td>Natural resources</td>
<td>4.0</td>
<td>4.2</td>
</tr>
<tr>
<td>No. of World Heritage natural sites</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Quality of the natural environment</td>
<td>6.7</td>
<td>6.3</td>
</tr>
<tr>
<td>Total known species</td>
<td>417</td>
<td>475</td>
</tr>
<tr>
<td>Terrestrial biome protection</td>
<td>14.8</td>
<td>16.3</td>
</tr>
<tr>
<td>Marine protected areas</td>
<td>0.7</td>
<td>0.6</td>
</tr>
<tr>
<td>Cultural resources</td>
<td>5.9</td>
<td>4.3</td>
</tr>
<tr>
<td>No. of World Heritage cultural sites</td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td>Sports stadiums, seats/million pop.</td>
<td>71</td>
<td>85</td>
</tr>
<tr>
<td>No. of int’l fairs and exhibitions</td>
<td>251</td>
<td>132</td>
</tr>
<tr>
<td>Creative industries exports, % of world total</td>
<td>1.3</td>
<td>0.2</td>
</tr>
</tbody>
</table>

The analysis of the indicators presented in Table 2 identifies causes of better competitive positioning tourism of Austria in relation to Greece. Austria has a top score (6.7) and rank (1) in indicator ‘Quality of the natural environment’, while Greece rank (31) position. What is this about? Firstly, the existing natural wealth in Greece is not properly placed in the function of tourism and secondly, current trends and demands of modern tourists turn to recreational tourism rather than to conventional seasonal (summer) tourism.

The biggest difference in scores and ranks between Austria and Greece is observed in indicator ‘Degree of customer orientation’, where Austria is on the 3rd position, and Greece is on the poor 90th position. Difference in ranking of indicators ‘Extension of business trip recommendation’, ‘Attitude of population toward foreign tourists’ and ‘No. of international fairs and exhibitions’ explains how Austria has achieved a tremendous positive difference in the total income of tourism in relation to Greece.

This comparative analysis clearly confirms the hypothesis set at the beginning of this paper that the tourism and recreational tourism significantly contribute to overall economic development, standard of living and welfare, if the country is positioned as a high-quality and attractive tourist destination.

4. DISCUSSION

The tourism potential of Bosnia and Herzegovina has been known since the time of the Austrian occupation in 1878. The former Austro-Hungarians were delighted with natural beauty of BiH, although the Austrian countries had outstanding and diverse nature. Austria covers an area of 83,850 square kilometers (BiH 51,129 square kilometers) with its natural beauties realized large revenues from tourism although it is county. We see on Austria examples how much human factors such as education of the population, culture and work habits, road infrastructure, but also a tendency towards recreating can affect on the tourism activity. This country, though a landlocked, with a markedly developed and diversified tourism offer makes significantly higher revenues of tourism than it make Greece and Croatia in total.

In the professional and scientific literature and in daily practice, ‘sports recreation’ is widely accepted term, which indicates the specific area of physical education, which has its own program, organizational, material and personnel structure.

Mikalački (2005) word recreation comes from the Latin word ‘recreo’ - to re-create, to re-produce, to restore; ‘recreatum’ - to renew, to invigorate, to refresh, to strengthen, to encourage; ‘recreare’- to be born again, to refresh, to get yourself; ‘recreatio’- restoring (strength), healing.

Bilic and Bonacin (2007), the concept of recreation comes from the Latin word ‘recreo, recreare’, where we can distinguish the prefix “re” meaning “again” and “creare” meaning ‘to shape, to create, to regenerate’. Anthropological sense of this formulation gives us a coherent definition that denotes ‘to restore, to equip, to relax, to revitalize and to regenerate’. 
Hadzikadunic et all. (2002) the development of modern tourism starts from the middle of the nineteenth century, usually tied with emergence of the first travel agency established by Thomas Cook. He organized the first major, organized tourist travel, a rail transport for a group of 570 tourists, participants of the Congress in 1841. Thomas Cook (born in Melbourne in 1808), was the first man who dedicated himself to serious organization of not only travel but also accommodation, food and guiding services. A few years later, Cook organized the first combined rail and sea travel to Ireland. In 1851, the father of travel agencies has sold 165,000 tickets of the tour for the exhibition in London, also, in 1845, he sold 400,000 tickets for the International Exhibition in Paris to the Belgians, the Dutch, the Swiss and the Australians.

Przulj (2012) theory of sport and recreation, as a scientific discipline, has the object of its study in sports and recreational facilities, as a specific area of physical education. This area is constituted in scientific programming, organizational, material, human resources and marketing framework and specialized for efficient and rational satisfying specific needs and interests of different categories of people. This scientific discipline is basically aimed at the optimization of psychosomatic status of an individual.

Blagajac, M. (1992) implementation of recreational exercise in the process of work and studies on its effects has a long tradition. Back in 1670, Tissot (Switzerland) published a book entitled “The need for movement of intellectual workers”. The ancient Greeks was also appreciating importance of physical activity for intellectual work (“The peripatetic are thinking when walking”). The first the cases of recreational exercise during working hours in the industrial production was registered in the wagons factory Pullman (USA) in 1883. In 1904 Russian physiologist, Sechenov, discovered the phenomenon of active vacation. After that, Pavlov and other physiologists of labor thoroughly studied the use and the effects of active vacation.

Gnjato et all. (2005) in tourist offer of Republika Srpska tourism on the lakes has a recognizable place based on the various possibilities of tourist offer of natural and artificial lakes, in accordance with their location in different relief, climatic, biogeographic and ecological conditions. Basically, when it comes to tourism, the lakes are more in a function of recreation and different sports. Lakes allow active recreation, especially mountain and river lakes, while artificial lakes provide good conditions for developing sports on the water: nautical sports, fishing, excursions, tourism in transit and more. For the time being, in tourist offer and tourist turnover of Republika Srpska, artificial lakes are still more important than the natural ones. This goes to its suitable location beside the main road communications, a solid tourist and infrastructure, and multiple possibilities of the lakes valuation in all seasons and parts of the year. Natural lakes, especially the mountain lakes, are away from the main communications, they are not accessible, save to the ramblers and mountaineers, adventurers and nature fans, there is no necessary infrastructure there, all important reasons that are not contributing to tourism development of these lakes.

Hadzikadunic et all. (2002) surely, tourism represents the largest social phenomenon of this century. Although it has its own traditions, its development experienced remarkable expansion in the XX century. Every day tourism becomes “a product of mass demand”. In the range of factors which contributed to rapid tourism development, appears another sociological phenomenon “sport”, which, on a broader sense, refers to the area of sports and
recreation that occurs as a necessity of modern man to move as a result of industrialization and urbanization. While classic sports is an incentive to tourism travel in the purpose of observing events, sports recreation is an active human engagement in conducting activities. As such, it becomes more and more an integral part of tourism and its active component. In addition to compensation and correction of the negative consequences of industrialization and urbanization, recreation represents an increasingly important component of modern tourist offer. Through sport recreation, tourist offers become more complete, varied and useful, and sport recreation in tourism obtained special economic significance.

5. CONCLUSION

Tourism is a social and economic phenomenon which together with sport characterized life of our civilization at the end of XX century. A series of selective species are developed in the tourism context - depending on the season, geographic or historical sites, age, health etc. So there are: congress, hunting, fishing, rural, nautical, children, health, mountain, winter…

Word recreation comes from the Latin word ‘recreo’ - re-create, re-produce, renew; ‘recreatum’ - to renew, to invigorate, to refresh, to strengthen, to encourage; ‘recreare’ - to be born again, to refresh, to get yourself; ‘recreatio’- restoring (strength), healing.

Tourism in Bosnia and Herzegovina received significant economic and development role through nominating Sarajevo for organization the Winter Olympic Games in 1984. Preparation and organization of The Games generated a large number of jobs. Only in the hospitality and tourism industry employment increased by 17.7% in 1984 compared to 1983. Republika Srpska has respectable resources necessary for mountain tourism development. Several important mountain localities with a plentitude of geo-morphologic, hydrographic, bio-climatic and bio-geographic tourism values indicate it. Intensive development of contemporary mountain tourism is followed by development of tourist infrastructure and supra-structure. XIV Winter Olympic Games took place in Sarajevo and surrounding mountains (Jahorina, Trebevic, Igman and Bjelasnica) at the beginning of 1984.

During the last two decades, tourism has shown significant growth and becomes a ‘global phenomenon’ with expanding share in the global economy. Up to now, UNWTO has published data for 2014 where were registered 1.135 million foreign tourists, and this represents an increase of 4.4% compared to 2013. Also, in 2014, the growth of 3.7% was recorded in the total tourism revenue, and it amounted to US$ 1.245 billion (euro 937 billion). Adding up the export earnings generated through international passenger transport services, total exports from international tourism were up to US$ 1.5 trillion, or US$ 4 billion a day on average in 2014.

The most important global report in the tourism field is WEF’s "The Travel & Tourism Competitiveness Report". In 2013, Bosnia and Herzegovina is ranked at the 90th place out of 140 surveyed countries with a score of 3.8. The highest-rated indicators are
Safety and security, Availability of quality labor, Health and hygiene, Affinity for travel & tourism. These benefits should be guidelines and incentives to better utilization of existing capacity and creating new opportunities on the basis of these comparative advantages. Looking at individual indicators related to recreation in tourism in BiH, the best score (6.6) and rank (8) has indicator ‘Attitude of population toward foreign tourists’, then score (5.5) and rank (20) at indicator ‘Quality of the natural environment’, score (5.9) rank (28) for indicator ‘Extension of business trip recommendation’ and score (72,431) rank (33) for indicator ‘Sports stadiums, seats/million pop’. The worst evaluated are ‘Terrestrial biome protection (%)’ and ‘Total known species’.

Applying a comparative method, we have analyzed appropriate indicators of Austria and Greece, as a countries with an approximate civilizational heritage, size and population. Austria has better performance of tourism competitiveness, despite the immense cultural and historical wealth, coastline and favorable climate in Greece. This fact points out importance of strategic setting of tourism and potential of recreation in tourism which Austria maximally exploit, while tourism in Greece has rather character of passive vacation. This comparative analysis clearly confirms the hypothesis set at the beginning of this paper that the tourism and recreational tourism significantly contribute to overall economic development, standard of living and welfare, if the country is positioned as a high-quality and attractive tourist destination.

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UDK: 796.012.11
Doi: 10.7251/SIZ0215033P

EFFECTS OF HIGH INTENSITY POWER
IN THE FUNCTION OF THE ADAPTIVE PROCESS

Summary

The sample of respondents consisted of 40 High School male students from East Sarajevo, 16 and 17 ± 6 months old. From such well-defined pattern were formed two subsamples: the first sub-sample consisted of 20 students, aimed for the sport who apart from Physical Education were included also into training process classes in order to develop their explosive power of high intensity in the optional Physical Education, three times a week for 45 minutes, for a period of eight weeks. The control group was composed of 20 students who attended only regular classes of Physical Education three times a week for 45 minutes, for a period of eight weeks. The aim of this study was to determine the effects of explosive strength training with high intensity on the transformation processes of some motor skill dimensions (segmentary speed, explosive and repetitive force). The aim of this study was to determine the influence of Physical Education on the transformation processes of some motor skill dimensions (segmentary speed, explosive and repetitive force). For the assessment of these skills, nine tests of motor skills were applied. The obtained data were analyzed by multivariate analysis of covariance which achieved better results in the treated motor abilities at the end of the experimental procedure, compared to the initial measurement, the experimental group and compared to the control group of respondents.

Key words: students oriented for sports, kinesiology experiment, explosive power, repetitive power, segmentary speed, multivariate analysis of covariance

1. INTRODUCTION

Explosive power and jumping ability is one of the main biomotorical skills in mono-structural, polistructural and complex sports. Genetic conditionality of this dimension is over 80%. The most important factors of explosive forces are nervous and muscular system and their mutual coherence. The muscular system is an important relationship between the red (slow twitch) and white (fast twitch) muscle fibers.
Explosive power size is determined by the possibilities of joint strain of a large number of muscle groups involved in the movement, dependent of the full intramuscular koordination and the most favorable relation compo-nents of speed and power.

One of the basic requirements for the modernization of the process of working with quality athletes is provided by using plyometric exercise in the work with athletes. For the specific training of explosive strength development in the training theory is used the term "plyometric training" and a method of training is called" plyometric methods ". "Plyometrics is a speed-strenght training, a combiantion of strenght and speed" (Durakovic, 2008).

The basic principle in the application of plyometric method is the speed of the change the eccentric and concentric muscle contraction. Plyometric exercises are those in which the muscle stretches eccentrically and immediately thereafter concentrically. Fast eccentric muscle action stimulates the stretch reflex, which increases the force created during concentric contraction.

The use of vertical jumps to assess the explosive strength of legs is present in the professional literature, but also in sports practice, for over several years. In studies of some researchers (CoH, 2003; Bompa, 2006; Cicović, 2008; Pržulj, 2012), it was confirmed that the height of the jump is a valid index of muscle strength regardless of the size of the body. The vertical jump is a struggle with gravity: as greater force acts is on the ground, the higher jump will be performed.

A large number of research has been established that athletes under the influence of adaptive training of explosive power achieve quantitatively greater value motor and functional abilities and technical knowledge at the final measurement (Bala, 1981; Bompa & Gregory, 2009; Babic and CoH, 2010).

The subject of research are motor skills of athletes together with the power of explosive training.

The aim of this study was to determine the effects of explosive strength training with high intensity on the transformation processes of some motor skills dimensions (segmentary speed, explosive and repetitive force). The aim of the research was to determine the influence of Physical Education on the transformation processes of some motor skills dimensions (segmentary speed, explosive and repetitive force).

2. METHOD OF RESEARCH

2.1. The sample

The sample of respondents included 40 High School male students from East Sarajevo, 16 and 17 years old.

The experimental group was made up of 20 students sport oriented, involved in explosive strength training with high intensity on additional classes of Physical Education, three times a week for 45 minutes, for a period of eight weeks.

The control group was made up also of 20 students. Respondents have attended only regular program of Physical Education classes, twice a week for 45 minutes, for a period of eight weeks.
Before the start of the teaching work and after its completion četvoromjesečnog in both groups, applied eight tests for the assessment of motor abilities: explosive power, repetitive power, and segment speed. The tests were selected based on guidelines and recommendations Kurelića et al. (1975).

For the evaluation of explosive power following tests were applied: vertical leap ("Sargent"), standing long jump (MSDM). For the assessment of flexibility following tests were applied: a deep forward bend on the bench (MDPK), twine (MSPA). To estimate the segment speed, following tests were applied: hand tapping (MTAP) and legs wall tapping (MTPZ). To estimate the repetitive strength, the following tests were applied: mixed chin-ups (MMZG) and lifting the hull for 30 sec. (MD30).

The data obtained from the applied tests at the beginning and at the end of two months of teaching students were processed by the method of multivariate analysis of covariance.

The work in the experimental group in the process of the additional Physical Education was based on the application of the following motor exercises to develop explosive high intensity power: the rhythmic jumping (jumping from foot to the rhythm of alternating lifting of legs with different amplitudes movement, throwing a medicine ball from the breasts (throwing is made from the crouch and crouch of the stretching all segments of the body forward and up); leaps from the crouch (lateral, zigzag, back); two foot jumps (over small hurdle and then immediately hopped on the hills of varying heights, skip the lower barriers (both feet and one foot); one-leg jumps with the throwing of medicine ball, throwing a medicine ball over head (of the half squat spread hands and jerk medicine ball back and up) to complete quick jumps up from half squat (the left and right, forward and backward), jumping from foot to foot in and in the path, and then skip low and high in the movement.

The research of the efficiency of regular Physical Education teaching in the control group, was achieved on the basis of implementation of the existing curriculum. The structure of programs teaching students in this group, had a predominantly transformational character of the development of anthropological characteristics and on the increase the level of technical and tactical skills of respondents.

3. RESULTS

Table 1. Multivariate analysis of covariance between the experimental and control groups in the specific motor skills in the final test with the neutralization of the difference in the initial testing

<table>
<thead>
<tr>
<th>Wilks’ Lambda</th>
<th>F</th>
<th>df 1</th>
<th>df 2</th>
<th>P-level</th>
</tr>
</thead>
<tbody>
<tr>
<td>.547</td>
<td>7.58</td>
<td>8</td>
<td>60</td>
<td>.000**</td>
</tr>
</tbody>
</table>

Explanation: values of Bartletov’s test (Wilks’ Lambda), Rao Va aproksimacion Rao’s R significance level (P-Level)

Table 1 shows the multivariate analysis of covariance which determines effects of experimental treatments on the development of motor experimental skills compared to the control group on the final test with the neutralization of the recorded difference in the initial
testing. There is a statistically significant difference in the multivariate level between the experimental and control groups at a significance level greater than .01 (P-level = .000 **), which confirms the value of Wilks' Lambda test (.547) and F-test (7.58). The current difference occurs under the influence of experimental treatment explosive power of high intensity, which has an effective impact on the development of motor skills of the experimental group.

Table 2. Univariate analysis of motor skills variance between the experimental and control groups on the final measurement

<table>
<thead>
<tr>
<th>Tests</th>
<th>Mean (ek)</th>
<th>Means (ko)</th>
<th>F-odnos</th>
<th>Q</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSAR</td>
<td>38.40</td>
<td>30.22</td>
<td>5.87</td>
<td>.000**</td>
</tr>
<tr>
<td>MSDM</td>
<td>221.32</td>
<td>205.18</td>
<td>5.55</td>
<td>.000**</td>
</tr>
<tr>
<td>MDPK</td>
<td>46.72</td>
<td>42.84</td>
<td>1.34</td>
<td>.125</td>
</tr>
<tr>
<td>MŠPA</td>
<td>171.79</td>
<td>164.26</td>
<td>1.46</td>
<td>.215</td>
</tr>
<tr>
<td>MTAP</td>
<td>43.25</td>
<td>34.57</td>
<td>7.82</td>
<td>.000**</td>
</tr>
<tr>
<td>MTAZ</td>
<td>29.26</td>
<td>26.85</td>
<td>1.06</td>
<td>.245</td>
</tr>
<tr>
<td>MMZG</td>
<td>16.27</td>
<td>11.36</td>
<td>6.10</td>
<td>.000**</td>
</tr>
<tr>
<td>MDP30s</td>
<td>21.54</td>
<td>16.35</td>
<td>7.14</td>
<td>.000**</td>
</tr>
</tbody>
</table>

Explanation: the arithmetic mean of the experimental group (Mean (ek)), the arithmetic mean of the control group (Mean (ko)), the value of F-test (F-ratio) and the level of significance.

4. DISCUSSION AND CONCLUSIONS

The study showed that the experimental group compared to the control group achieved statistically significant better results with the aid of which motor ability is evaluated – explosive power of high intensity: vertical leap ("Sargent") and long jump (MSDM). This group also achieved significantly better results in two tests repetitive strength (MMZG) and lifting the body in 30 seconds (MDP30s). From a total of two tests to assess segment speed, only the hand tapping (MTAP) showed statistically significant results. In both tests of the dimensions of flexibility depth reach on (MDPK) and twine (MŠPA) were not evaluated statistically significant results.

Generally speaking, experimental group of respondents who were conducted in two hours per week in regular Physical Education together with three additional hours of explosive strength training, showed more significantly success in their motor abilities (explosive power, repetitive power, and segment speed), than those respondents of the control group who attended just regular classes Physical Education to times per week.

The methods and means used in motoric explosive power exercise in the experimental group increased their capability of faster and more comprehensive motor control, which enabled increased activity of agonist muscle, and thus there was a positive and statistically significant changes of motor abilities.

A larger number of researchers (Bala, 1981; Matveyev, 200; Malacko, 2002 Malacko and Rado 2004 Bompa, 2006; Milan, 2007), agree that the increase in the level of motor
skills and characteristics, the most appropriate if the load work corresponds to biological and psychological body characteristics of participants in sports activities. In addition, the researchers point out that in the selection of the content of training work is important to know the significance of the training exercises or complex of training activities in response of certain motor skills.

Statistically significant better results of motor skills were achieved among experimental group of respondents, compared to the control group. They are incurred as a result of the proper dosage, distribution and control of applied load in accordance with the authentic needs of respondents. In this way, positive changes have occurred in the body and the creation of appropriate adaptation processes in the experimental subjects groups.

5. REFERENCES


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DEVELOPMENT OF DYNAMIC STRENGTH IN ELEMENTARY SCHOOL PUPILS

ABSTRACTS

On a sample of 50 male subjects of elementary schools pupils in Nis aged 12 a study was conducted in order to determine the effect of the application of the circuit forms of work in the physical education curriculum, with the aim to improve the explosive and repetitive strength of the regular PE classes pupils. In addition, the aim was also to determine the differences in the dynamic strength between the pupils in the experimental and control groups. The experiment design was to divide the total sample into two subgroups with 25 subjects assigned to each group. The experimental group attended regular PE classes for a period of 3 months totalling 25 classes. After the shaping exercises the group performed special exercises to develop explosive and repetitive strength using circuit form of work for a period of 10-12 minutes, after which they continued conventional form of work in the main part of the class. The control group (25 subjects) for the same time performed a regular physical education curricular program provided by the Ministry of Education of the Republic of Serbia. Two measurements were made of the dynamic strength at the beginning and in the end of the experiment on the overall sample using a battery of 6 tests (3 for repetitive strength and 3 for explosive strength). The results were statistically processed and presented in 4 tables.

The results analysis showed that the experimental group exhibited statistically significant improvement of dynamic strength as compared to the control group who also improved their dynamic strength, but these results are not statistically significant.

Key words: repetitive strength, explosive strength, analysis of the circuit form of work, an experimental group, a control group.

1. INTRODUCTION

Physical education curriculum largely depends on many factors, especially on the application of the appropriate methods and forms of work, increasing scope and intensity of the load in a class, use of different modalities of sports - training process, which in other words means that teaching process increasingly needs to take on the elements of sports training. Besides, it is important to continuously monitor transformation processes occurring under the influence of this kind of work, especially in the sphere of the motor and functional abilities, because only in this way can one notice positive changes which is of great importance for the
further development of science and educational process as well. That was the research focus of a number of authors including Bangsboo, 1994; Findak, 1995; Matveyev, 2000; Milanović et al, 2003; Antekolović et al, 2003; Stojiljkovic, 2003 and 2006.

The subject of this research is the application of the circuit form of work in physical education teaching, with the aim to improve the dynamic strength of the pupils included in regular PE classes. The main objective was to determine the effects of this kind of work in physical education teaching, the possibility of its continuous use not only in increasing the dynamic strength, but also of other basic complex motor abilities. The aim of this study was to determine the differences in the development of dynamic strength between the subjects of the experimental and control group.

2. MATERIAL AND METHODS

The study was conducted on a sample of 50 male subjects, elementary school pupils in Nis, aged 12 years + - 6 months. The sample was divided into two subsamples: experimental and control group, with the same number of subjects (25 pupils each).

To assess dynamic area a battery of six tests was applied, three of which were used to determine the repetitive strength (squats - MČUČ, pushups - MSKLE and trunk lifting on the Swedish bench-MDTK) and three to determine explosives strength (throwing ball - MBLP, standing triple jump - MTRS and standing long jump - MSDM). (These tests were taken from the research of Kurelić N. et al, published in the monograph "The structure and development of the morphological and motor dimensions of the youth, Belgrade, 1975). Comparison of qualitative differences in the expression of the dynamic strength was carried out by means of the multivariate analysis of variance.

2.1. Experimental program

A circuit work system of polygon type for a few working stations was applied.

At three working stations exercises to develop repetitive strength were performed, and in the other exercises to develop explosive strength. At every working station experimental group subjects performed in advance prepared exercise program with an adequate number of series and repetitions (in accordance with their intraindividual abilities and characteristics). Relaxation intervals between the time series were slightly shorter than normal, due to the limited exercise time of 10-12 minutes. Immediately after the end of the experimental part of the program the main part of the class was implemented as a continuation of the exercise according to the current curriculum with the corrected and abridged teaching unit. Total experiment lasted 25 consecutive classes in the quarterly working cycle. Control group subjects during that time had regular classes without additional contents according to the current PE curricula of the Ministry of Education of the Republic of Serbia.

The experiment consisted of implementing a set of exercises to develop explosive and repetitive strength in the first part of the main part of the class (immediately after the shaping exercises) for 10-12 minutes.

To obtain relevant data two measurements were made of all subjects - both of the experimental and control group, right at the beginning of the experiment (initial measure-
ment) and in the end, after three months of work (final measurement), whereby previously mentioned batteries of tests to assess repetitive and explosive strength were used.

3. RESULTS AND DISSCUSION

Determination of the normal distribution of the explosive and repetitive strength results tests was made by the Kolmogorov-Smirnov procedure, which showed that the results were normally distributed and that data could be further processed in a more complex manner.

Table 1. Significance of the differences between the initial and final measurement of the dynamic strength tests in the latent area in the experimental group.

<table>
<thead>
<tr>
<th>Test</th>
<th>Measurements</th>
<th>N</th>
<th>P-LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>WILKS’S LAMBDA TEST</td>
<td>0.532</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RAO's F-approximation</td>
<td>0.687</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q</td>
<td>0.034</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The obtained values of the significant differences of all arithmetic means for the dynamic strength tests (explosive and repetitive strength) between the initial and final measurement in the experimental group (Table 1), in the latent area indicate that there is a statistically significant difference, given that WILKS'S LAMBDA is 0.532 which by applying RAO's F-approximation of 0.687 gives the significance of the results of Q = 0.034, meaning that during the experimental period a statistically significant difference in the dynamic strength was reached.

Table 2. Significance of the differences between the initial and final measurement of the dynamic strength tests in the manifest area in the experimental group.

<table>
<thead>
<tr>
<th>Tests</th>
<th>Measurements</th>
<th>N</th>
<th>P-LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>MČUČ</td>
<td>IN : FI</td>
<td>25</td>
<td>0.026*</td>
</tr>
<tr>
<td>MSKL</td>
<td>IN : FI</td>
<td>25</td>
<td>0.029*</td>
</tr>
<tr>
<td>MDTK</td>
<td>IN : FI</td>
<td>25</td>
<td>0.040*</td>
</tr>
<tr>
<td>MBLP</td>
<td>IN : FI</td>
<td>25</td>
<td>0.073*</td>
</tr>
<tr>
<td>MTRS</td>
<td>IN : FI</td>
<td>25</td>
<td>0.038*</td>
</tr>
<tr>
<td>MSDM</td>
<td>IN : FI</td>
<td>25</td>
<td>0.034*</td>
</tr>
</tbody>
</table>

The resulting values of the significance coefficient (P-LEVEL) on the level of P <0.005 (Table 2) indicate that at the end of the experiment there was a statistically significant increase in the dynamic strength, except for the ball throwing test. This increase in the dynamic strength is probably due to the influence of the applied methods and means of work in the work stations in a circuit system of operation, which had a positive impact on the transformation and adaptation processes in the experimental group subjects bodies.
Table 3. Significance of the differences between the initial and final measurement of the dynamic strength tests in the latent area in the control group

<table>
<thead>
<tr>
<th>Tests</th>
<th>Measurements</th>
<th>N</th>
<th>P-LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>WILKS’S LAMBDA TEST</td>
<td></td>
<td></td>
<td>0.384</td>
</tr>
<tr>
<td>RAO-s F-approximation</td>
<td></td>
<td></td>
<td>0.432</td>
</tr>
<tr>
<td>Q</td>
<td></td>
<td></td>
<td>0.084</td>
</tr>
</tbody>
</table>

The obtained results (Table 3) in the latent area indicate that in the control group there did not occur, in the course of the experimental period, statistically significant results on the level of the dynamic strength, although there were some improvements of the overall strength development.

Table 3. Significance of the differences between the initial and final measurement of the dynamic strength tests in the manifest area in the control group.

<table>
<thead>
<tr>
<th>Tests</th>
<th>Measurements</th>
<th>N</th>
<th>P-LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>MČUČ</td>
<td>IN : FI</td>
<td>25</td>
<td>0.079</td>
</tr>
<tr>
<td>MSKL</td>
<td>IN : FI</td>
<td>25</td>
<td>0.031</td>
</tr>
<tr>
<td>MDTK</td>
<td>IN : FI</td>
<td>25</td>
<td>0.066</td>
</tr>
<tr>
<td>MBLP</td>
<td>IN : FI</td>
<td>25</td>
<td>0.082</td>
</tr>
<tr>
<td>MTRS</td>
<td>IN : FI</td>
<td>25</td>
<td>0.066</td>
</tr>
<tr>
<td>MSDM</td>
<td>IN : FI</td>
<td>25</td>
<td>0.043</td>
</tr>
</tbody>
</table>

At the individual level results of the coefficients of significance (P-LEVEL) on the level of P <0.05 indicate that at the end of the experimental period there were no statistically significant improvements in the dynamic strength, except in the repetitive strength test - pushups (MSKLE - 0.031). The reason for the lack of influence of the physical education curricula on the dynamic strength in this group of subjects is probably the result of a slightly weaker methodological organization of the teaching process, especially in the implementation of the volume and intensity of work, as well as the application of more modern forms of work in the development of dynamic strength. At first glance, there are some improved results, but they are not statistically significant.

4. CONCLUSION

1) The results obtained by the analysis of variance in the area of the explosive and repetitive strength, both in the latent and in the manifest space, indicate that there was a statistically significant increase in the level of the dynamic strength in the experimental group, which was expected, whereas in the control group subjects there also was some mild increase in the dynamic strength, but the statistical significance emerged only in the segment of the development of the repetitive strength in shoulders and arms, which also was expected, because the subjects of the control group had a regular physical education curricula classes that after all gave certain results.
2) Development of dynamic strength in physical education teaching is possible if one knows the latent anthropological dimensions of the pupils and if one strictly applies special forms of work in order to develop specific motor abilities among which one includes "circuit training".

3) For the development of the dynamic strength very important role is assigned beside the exogenous factors, to the endogenous factors, particularly genetic ones having a major impact on the development of the speed and the explosive strength.

5. REFERENCES

EFFECTS OF PHYSICAL ACTIVITY IN PHYSICAL EDUCATION ON SWIMMING RESULT

Summary

During enrollment at the Faculty of Physical Education and Sport, University of East Sarajevo, in addition to other tests, candidates take a test of swimming in length of 50 meters. It is estimated knowledge and skills attainment in freestyle swimming. In the fourth and fifth semester of the second year, according to the curriculum, students have two hours of theory and two hours of practical swimming classes per week.

The aim of this paper is to determine how much classes and other extra-curricular activities have influenced the results of performance in the 50 meters freestyle swimming, while studying in the first year.

Based on the analysis of collected data at the entrance examinations in school years (2010/2011 and 2012/2013) and the initial measurement at the second year of study (the final measurement), for the same respondents at the study program: physical education, we obtained measures of central tendency of descriptive statistics. The t-test analysis for small dependent samples of subjects reflected a difference in the results of the initial and final measurement. Statistical difference has slight level of significance between initial and final measurements of respondents at 50 meters freestyle swimming.

Conclusion

In terms of the entrance examination and the initial measurement of male population at the second year, the exercises provided from other attended subjects, as well as extra-curricular activities of the students themselves, had no statistically significant effect on the result of performance in swimming on 50 meters freestyle.

Key words: swimming, physical education, exam, result, success
1. INTRODUCTION

During enrollment at the Faculty of Physical Education and Sport, University of East Sarajevo, in addition to other tests, candidates take a test of swimming in length of 50 meters. It is estimated knowledge and skills attainment in freestyle swimming. In the fourth and fifth semester of the second year, according to the curriculum, students have two hours of theory and two hours of practical swimming classes per week.

The aim of this paper is to determine how much classes and other extra-curricular activities have influenced the results of performance in the 50 meters freestyle swimming, while studying in the first year. We’ve analyzed swimming results of the same male population at the entrance examination and the initial measurement at the beginning of the second year of study.

Previous research:

Parfen’s (1978) stands out that front crawl stroke technique is the fastest swimming style. The official competitions in freestyle swimming (where all qualified swimmers apply crawl) carried out at distances of 50, 100, 200, 400, 800, 1500 meters, as well as swimming on the relays 4x100 and 4x200 meters. Crawl is also applied in the mixed relay and at the complex swimming in the overall stages.

As major specific advantage at the crawl style is that swimmer in the water produces uniformly accelerated motion in a horizontal posture.

The position of the body and head. The swimmer’s body takes a horizontal position, angle of attack reaches 4-8° in the long distances swimming, while at the short distances swimming decreases at 0-3°. The angle of attack size depends on the following: swimming compliance, head position, the strength and frequency of the leg work, ability of hand work and also of the body position.

According Nikitski (1981) basic principles of rational swimming techniques appeared: high level of swimming experience, the initial horizontal position of the body in the water, uniformly accelerated motion of the hand at the time of traction and transmission (optimal movement), harmonized rhythm of the hands and legs movement, hands movement at twisted trajectory in the water, expression of pulling force in the hand motion, the formation of such a movement coordination that will ensure the development and maintenance of high-tempo moving hands and more.

Towards Findak (2001) the objectives and tasks of physical and health education on the one hand derive from the objectives and tasks of educational areas, and on the other hand, from the perspective that this area has on the possible and necessary effect of the change in the anthropological status of students. Consequently, the aim of physical and health education areas is to satisfy biopsychosocial motives for movement as an expression of satisfaction of certain human needs which increase adaptive and creative capabilities in modern conditions of life and work.
The content of the program of physical and health education, ie material, is shown according to the following principles:

- In accordance with the objectives and tasks of physical and health education, in particular according to the data for each development period,

- Motoric information in all programs are treated as a means for accomplishing specific tasks, not as a goal of educational work,

- Program basis consists of motoric information that have the status of basic structures of movement,

- The program also includes basic and modified structures of movement that primarily affect the development of the qualities and abilities of students, and the degree of mastering motor tasks in the function of the transformation of these abilities and other dimensions of anthropological status of students,

- The adoption of the basic structure during the physical and health education classes is the basis and precondition for faster overcoming of other facilities and to facilitate the inclusion of students in other organizational forms of work.

On the basis of previous exposure it can be concluded that the program of physical and health education was developed in accordance with the latest scientific achievements and that new scientific knowledge was fully used in the selection of organizational forms of work, their development and defining their contents.

According Vukovic (2006), training of swimming may include primary, secondary, university education and the training of adults. Furthermore, the training of swimming can be done in the pool, both indoor and outdoor, sea, river and lake (implies that water must not be contaminated). Disparity of working methods, as well as a variety of assessment of knowledge, does not support the development of the swimming sport. The number of planned hours it takes for teaching swimming lessons is not the same for all age groups. It should take into account the age of the participants, as well as the optimal number of training hours, moreover, should carry out an initial verification of knowledge and skills in the water, and based on them, group homogenization should be made.

Towards Zaciorski and Kremer (2009), the specificity of adaptation rises with the level of mastering the sport. The higher level of physical condition of athletes results in the better specificity of adaptation. Transfer of training effects is lower in high quality athletes; for beginner athlete almost all exercises are helpful. For people in extreme poor physical shape simple exercises can improve strength, speed, endurance and flexibility. Achievement
beginner cyclists can be improved by squats with weights. Top athletes should apply specific exercises and training to increase the level of competition forms.

According to Jevtic (2011) the reduction of the budget and the number of hours, as well as a large number of unemployed teachers, is one of the images of physical education in many European countries since eighties of last century. This situation, by Naul (Naul, 2003), is associated with the observed phenomenon at social movement, which are reflected in the modern lifestyle, the new parent-child relationships, education and politics, distancing from the school, contemporary activities morals. With this, the previous values and standards in physical education and sport are degraded. The Council of Europe on physical education - sports, as the opportunities it provides and among them stands (Svoboda 1994): meeting and communicate with others; affirmation of different social roles; Learning acceptable social behaviour; guiding individuals towards collective goals (social cohesion); encouraging the development of individuals; create experiences, and develop emotions that are not part of human life outside of sport.

The European Union Report “Sport as a means for social integration” contains highlights to emphasize that there is great width in setting institutional policies of the Member States in the physical education area. In other words, no one in this process do not count on Europe as a single unit. Nevertheless it is possible to notice trends of educational policy in practice (Stegeman, 2004).

The goals and activities of physical education are the subject of trade among theorists (Klein, 2003). Physical education is a theoretical field of conflict within which controversies and compromises are crossing. Status depends on the stability and affirmation of social values through physical education, which are, in some sense, interests of politicians. “The working groups responsible for new programs are conflicting in the field of philosophy of science, and this directly is reflected on the transformation of physical education in the context of the training-learning.” Status of the subject is changed, not as the influence of the profession, but as the influence of politics. Ability to solve concrete problems become a criteria for further development of the discipline and the subject orientation (Radojevic, Jevtic, a and b, 2003). Major has seen the sport as a means of development of fair play, team spirit and socialization. In the US, the objectives of physical education are narrowed and the subject is limited to the practical realization (Kidd, 2004). In France, one of the government was going to oriented physical education towards electoral sports in a single playgame, which would affirm its social character (Davis, Henschen, 2004).

Reform of physical education is at the crossroads between humanism of this discipline and profession, which is opposed to realism of politicians who determine the course of reforms in education (Gilliver, 2004). Naul (Naul, 2003) from the University of Essen, Germany, explains the existing concepts of physical education in Europe through “vector model”. He makes a collective review of existing concepts as various vectors, 4 main and 4 extra, looking for possible balance between the new programs and orientations of physical education in Europe.
According to Markovic, Trivun (2012), Olympic Games represent the crown of a top athlete career. In the 100m freestyle, where competition is great, result and place in the finals depends on a number of details that determine who are qualified for the finals and who has won a medal. Competitive analysis certainly helps us to display and analyse parameters of swimming in the race. This analysis provides an ideal opportunity for correcting errors and suggestions how to remedy shortcomings in the future. It also contributes to the quality setting up competitive strategies. Competitive strategy, or also called tactical preparation for the exhibition, is developed and perfected in the training process. In the course of this process both the coaches and swimmers have opportunity to choose the most effective preparation for participation in the competition. In the 100 meters freestyle, the result was significantly influenced by the overall speed and timing of pure swimming, and by the turn quality, and entrance to the finish line also.

Toward Ayers and Sariscsany (2013), (American College of Sports Medicine–ACSM, 2006) on the website (www.Acsm.org/AM/Template.cfm?Selection=Home) the programming of physical exercise is defined as the process of designing individualized physical activity program with the aim of improving the physical fitness of the individual, reducing the risk of chronic degenerative diseases and the provision of safe exercise. At programming or prescribing exercise, the practitioner must adhere to the FITT guidelines (frequency, intensity, time and type) for proper activity as well as for adequate progress rate. In making program’ decisions will have to be taken into account the following elements such as: health condition of person to whom the practice is prescribed, current physical form, previous experience in training or exercises, physical qualities, objectives in terms of form and so on. FITT guidelines relating to how to apply the basic principles of training in the planning and programming of physical activity. In planning and programming should keep in mind for whom the particular program and plan of physical activity is designed, or whether it is intended for student-athletes, high school student who independently attend certain courses of some form of physical activity (such as aerobics or pilates), or elementary school pupil who is a member of a sport selection. The implementation of selected decisions in specific program is influenced by numerous factors including the program's objectives and outcomes, adjustment of physical activity, readiness and maturity of the person for whom the plan and program is designed and instructor qualifications.

2. RESEARCH METHODS

Kazazovic (2008), stands that initial step in every research (whether that is analysis or report) refers to the identification of research subjects and research problem. The subject and the problem must fit into the behaviour pattern of the studied system. If someone does not have appropriate theoretical model, he cannot have or take adequate sample of respondents,
or sample of variables for this research, adequate methods for data processing and the like. In simple terms, it means that is necessary to have detailed knowledge of the matter so that could be father researched. Subject of studies in kinesiology, or any other science, is not a definition in one or two sentences on primary research subject, but it is the whole complex of research activities which aim to establish some principles. Kinesiology examines various aspects of the efficiency of the motor movement from the point of disposition, forming maximum motor efficiency and study the consequences of all processes that have a motor component, which in general form does not study any other science. Subject of research of our science is the man and his motoric component. Man has the motor skills from an early lifetime (babies with few months of life - remember the research of small baby in swimming), but our research are very interesting in younger and older school age children. Plenty of research has been conducted on the population of school age (primary and secondary schools). From the motoric aspects, interesting are student population, adults and mature persons.

The sample of respondents

The total number of respondents referred to the students of the Faculty of Physical Education and Sport, University of East Sarajevo, male and female, who took the entrance exam (as the initial measure), and later enrolled in the second year of study and swim the same part (as the final measurement).

The sample of variables (measuring instruments)

The sample of variables was presented in stylized form of movement (swimming 50 meters), for women breaststroke, and for men crawl (freestyle). The research results were related to the initial (the entrance examination) and final measurement (the start of the second year). The female population results were related to the breaststroke, while the men's results were related to the crawl (freestyle) swimming.

3. RESULTS WITH DISCUSSION

The research results are shown in the tables which are posted in such a way that establishes a logical sequence interpretation.
The tables display basic descriptive statistical parameters (minimum, maximum and mean) as a measures of central tendency. In addition, research shows differences of the results at the initial and final measurements, by using t-test methodological analysis (on small dependent samples of respondents).


_Table 1_, _women 2010/2011, descriptive statistics of initial and final breaststroke swimming, 50 meters_

<table>
<thead>
<tr>
<th>Valid N</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Std. Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010ZIP</td>
<td>6</td>
<td>75.50</td>
<td>63.75</td>
<td>80.86</td>
</tr>
<tr>
<td>2010ZIP</td>
<td>6</td>
<td>74.93</td>
<td>62.99</td>
<td>80.61</td>
</tr>
</tbody>
</table>

Table 1 shows the following results at the initial measurement: minimum (63.75), maximum (80.86), the mean value (Mean = 75.50) and standard deviation (6.58), while the same population at the final measurements have: minimum (62.99), maximum (80.61), the mean value (Mean = 74.93) and standard deviation (6.54).

_Table 2_, _women 2010/2011, t-test of initial and final breaststroke swimming, 50 meters_

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std. Dv</th>
<th>N</th>
<th>Diff.</th>
<th>Std.Dv</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>75,50</td>
<td>6,58</td>
<td>6</td>
<td>6,53</td>
<td>0.57</td>
<td>2.32</td>
<td>5</td>
<td>0.06</td>
</tr>
</tbody>
</table>

Presented t-test results in the Table 2, show that difference of the initial and final measurement of 50m breaststroke women swimming do not have the statistical significance (t = 2.32) because t value is very low, neither the p value (0.06) shows it.

In this study was not involved 5 women who were at the enrollment exam, but did not pass at the second year of study.
Table 3, men 2010/2011, descriptive statistics of initial and final freestyle (crawl) swimming, 50 meters

<table>
<thead>
<tr>
<th></th>
<th>Valid N</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Std. Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010MIK</td>
<td>50</td>
<td>49.59</td>
<td>35.15</td>
<td>74.61</td>
<td>8.49</td>
</tr>
<tr>
<td>2010MIK</td>
<td>50</td>
<td>49.45</td>
<td>34.87</td>
<td>73.63</td>
<td>8.44</td>
</tr>
</tbody>
</table>

Table 3 shows the following results at the initial measurement: minimum (35.13), maximum (74.61), the mean value (Mean = 49.59) and standard deviation (8.49), while the same population at the final measurements have: minimum (34.37), maximum (73.63), the mean value (Mean = 49.43) and standard deviation (8.44).

Table 4, men 2010/2011, t-test of initial and final freestyle (crawl) swimming, 50 meters

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std. Dv</th>
<th>N</th>
<th>Diff.</th>
<th>Std.Dv</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010 MIK</td>
<td>49.58</td>
<td>8.50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010MIK</td>
<td>49.44</td>
<td>8.44</td>
<td>50</td>
<td>0.14</td>
<td>0.57</td>
<td>1.73</td>
<td>49</td>
<td>0.09</td>
</tr>
</tbody>
</table>

Presented t-test results in the Table 4, show that difference of the initial and final measurement of 50m breaststroke women swimming do not have the statistical significance (t = 1.73) because t value is very low, neither the p value (0.09) shows it.

In this generation, on the entrance exam, 16 candidates did not participate in the measurement of results in 50 meters freestyle (crawl) swimming.

Generation of 2012/2013 school year.

In this generation there is only one female who swam 50 meters breaststroke, and after has pass at the second year of study. Also, 4 male were not involved in the measurement of results in 50 meters freestyle (crawl) swimming.
Table 5, men 2012/2013, descriptive statistics of initial and final freestyle (crawl) swimming, 50 meters

<table>
<thead>
<tr>
<th></th>
<th>Valid N</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Std. Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012MIK</td>
<td>29</td>
<td>54,03</td>
<td>36,38</td>
<td>81,63</td>
<td>9,79</td>
</tr>
<tr>
<td>2012MIK</td>
<td>29</td>
<td>53,95</td>
<td>36,43</td>
<td>81,36</td>
<td>9,89</td>
</tr>
</tbody>
</table>

Table 5 shows the following results at the initial measurement: minimum (36.38), maximum (81.63), the mean value (Mean = 54.03) and standard deviation (9.79), while the same population at the final measurements have: minimum (36.43), maximum (81.36), the mean value (Mean = 53.05) and standard deviation (9.89).

Table 6, men 2012/2013, t-test of initial and final freestyle (crawl) swimming, 50 meters

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std. Dv.</th>
<th>N</th>
<th>Diff.</th>
<th>Std. Dv</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012 MIK</td>
<td>54,03</td>
<td>9,79</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012MIK</td>
<td>53,95</td>
<td>9,89</td>
<td>29</td>
<td>0.08</td>
<td>0.45</td>
<td>0.95</td>
<td>28</td>
<td>0.35</td>
</tr>
</tbody>
</table>

Presented t-test results in the Table 6, show that difference of the initial and final measurement of 50m freestyle (crawl) men swimming do not have the statistical significance (t = 0.95) because t value is very low, neither the p value (0.35) shows it.

4. DISCUSSION

Towards Kazazović (2008) bronze, silver and gold badge of the Republic Committee for the training of non-swimmers are recognized signs of mastering a certain extent, i.e. criteria of swimming skills. Bronze badge gets everyone who is capable of fulfilling norm in his age category (Table 7). Also, there are norms for all age categories for silver and gold badge (Table 7). At the part of the swimming skills exam for evaluation speed of swimming on 50 meters, and 100 m, swimmer choose swimming technique. Overview of that part of swimming skills can be done in a pool or in improvised space for swimming. It is recomme-
ndered that, where possible, to carry out verification in the pool, because the length is defined, and it is possible to begin to swim with start jump on the head from the starting blocks. However, when the verification is performed on an improvised swimming pool, size of swimming area should be correctly and clearly marked and where possible, ensure beginning of swimming with start jump on the head. At the part of the swimming skills exam relating to the evaluation of the length and duration of swimming (200, 300, 400, 500, 600, 800 meters), swimmer, also, choose speed and swimming technique.

Table 7, Criteria for swimming skills assessing for bronze, silver and gold badge (The table is taken from Kazazović, B. 2008, p 153)

<table>
<thead>
<tr>
<th>Years</th>
<th>50 meters freestyle (crawl) swimming</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>boys</td>
<td>girls</td>
</tr>
<tr>
<td></td>
<td>bronze</td>
<td>silver</td>
</tr>
<tr>
<td>3</td>
<td>2:45</td>
<td>2:35</td>
</tr>
<tr>
<td>5</td>
<td>2:25</td>
<td>2:15</td>
</tr>
<tr>
<td>6</td>
<td>2:15</td>
<td>2:05</td>
</tr>
</tbody>
</table>

Trivun, Grahovac (2011) have made a research on a sample of 43 respondents of the student population at the Faculty of Physical Education and Sport, University of East Sarajevo, school year 2009/10 enrolled in the third year of study, male, age 23 years ± 6 months. They've made a comparison of results in the following parameters: stroke rate variations on the one hand and the variables of swimming in natural conditions at the 120 meters. The variables that made up the stroke frequency during freestyle swimming (front crawl technique) expressed its effective value on the results of male and female sections of the crawl technique during outdoor activities at Tjentiste, with large oscillations caused by natural environment at mountain. The value obtained by multivariate regression resulted F-test 4.49 with level of significance p = 0.04. Thus, this paper provided information about the stroke efficiency on the performance results in freestyle swimming technique at 120 meters. The results of multiple regression, related to the frequency of strokes interrelated with performance results in freestyle swimming technique in natural conditions, is (R = 31), which explains the .098% (R², 098), the common information between the above mentioned variables. Analysis of individual contributions to variable of stroke rate (t) on the resulting performance in swimming, gives a modest contribution, what concludes that the rest of impact belongs to such as: optimal number of strokes, leg work, swim step and other factors that were not the subject of this
paper. The conclusion is that forcing of high frequency of stroke leads to a dynamic stereotype or mobile panic, when movements, although powerful and fast, become less effective. Steadily swimming at the same pace also leads to a dynamic stereotype, so it is recommended swimming with different stroke frequencies during the training process, but always with a sense of water. Dynamic stereotype can occur during swimming at submaximal or maximal speed during training and techniques improvement.

The results shown in tables 1-6 in this study have slight differences measured by t-test, and were related to the initial (in the entrance exam) and final (at the beginning of the second year of study) measurement of 50 meter freestyle swimming for male and 50 breaststroke swimming for female respondents.

The results are within the scope of half a minute to a little more than one minute, so, can be considered that is caused by genetic, not only by insufficient activity in the period from the entrance examination until beginning of the second year of study.

5. CONCLUSION

In a sample of 50 male respondents in the 2010/2011 academic year, and during the entrance examination (initial) and final measurement (enrollment in the second year), a test of skills and swim ability in freestyle (crawl) at 50 meters, the following measures of central tendency was pointed out: results of the initial measurement: minimum (35.13), maximum (74.61), the mean value (Mean = 49.59), and standard deviation (8.49), while the same population at the final measurement has: minimum (34.37), maximum (73.63), the mean value (Mean = 49.43) and standard deviation (8.44). On the same sample, t-test do not have the statistical significance (t = 1.73) because t value is very low, neither the p value (0.09) shows it.

In this generation, on the entrance exam, 16 candidates did not participate in the measurement of results in 50 meters freestyle (crawl) swimming.

Female respondents (6) demonstrated their skills and abilities at 50 meters breaststroke swimming. Descriptive statistical analysis of this test at initial measurements shows: minimum (63.75), maximum (80.86), the mean value (Mean = 75.50) and standard deviation (6.58), while the same population at the final measurements have: minimum (62.99), maximum (80.61), the mean value (Mean = 74.93) and standard deviation (6.54). Results of t-test analyses show that difference of the initial and final measurement of 50m breaststroke women swimming do not have the statistical significance (t = 2.32) because t value is very low, neither the p value (0.06) shows it.

In the generation of 2012/2013 school year, in the same survey 29 respondents have the following results of descriptive analysis: minimum (36.38), maximum (81.63), the mean
value (Mean = 54.03) and standard deviation (9.79) at the initial measurement. The same population at the final measurements show: minimum (36.43), maximum (81.36), the mean value (Mean = 53.05) and standard deviation (9.89). Results of t-test analyses show that difference of the initial and final measurement of 50m freestyle (crawl) men swimming do not have the statistical significance (t = 0.95) because t value is very low, neither the p value (0.35) shows it.

Based on the analysis of collected data at the entrance examinations in school years (2010/2011 and 2012/2013) and the initial measurement at the second year of study (the final measurement), for the same respondents at the study program: physical education, we obtained measures of central tendency of descriptive statistics. The t-test analysis for small dependent samples of subjects reflected a difference in the results of the initial and final measurement. Statistical difference has slight level of significance between initial and final measurements of respondents at 50 meters freestyle swimming.

In terms of the entrance examination and the initial measurement of male population at the second year, the exercises provided from other attended subjects, as well as extracurricular activities of the students themselves, had no statistically significant effect on the result of performance in swimming on 50 meters freestyle.

Similar themes relating to the student population are very little researched, because researching in athlete population enables less dispersion of results, so they are more actual for analyses.

6. REFERENCES:


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translation into English
MSc Jelena Micic
EFFECTS OF RECREATIONAL AEROBICS ON WOMEN’S FUNCTIONAL ABILITIES

Abstract

The research aimed at determining the effects of recreational aerobics on functional abilities of women. The population from which a sample was taken is the one of sedentary women, of chronological age between 35 and 45 years. The assessment of functional ability was tested on the following variables: vital capacity, heart frequency at rest, working pulse, systolic arterial blood pressure, diastolic blood pressure and relative oxygen consumption. The main parameters of descriptive statistics were calculated for all the results, and a T test was applied to determine the differences between the initial and final measurement. The results of research showed that after a three-month application of recreational aerobics statistically significant changes of vital capacity took place (p = 0.000), of heart frequency at rest (p = 0.000), of working pulse (p = 0.020), of systolic arterial blood pressure (p = 0.001), of diastolic blood pressure (p = 0.010) and relative oxygen consumption (p = 0.000). The research established that recreational aerobics program with middle-age women with sedentary jobs may efficiently affect the changes of functional abilities.

Key words: recreation, recreational aerobics, functional abilities

1. INTRODUCTION

The most important programs in sport recreation are those programs that can be used to positively affect the improvement of cardiovascular and respiratory systems (Andrijašević, 2010). In order to reduce the risks of development of cardiovascular diseases, osteoporosis, diabetes, hypertension and other diseases and to ensure normal functioning of all bodies and systems in organism, it is necessary to regularly undertake some physical activity (Mišigoj-Duraković, 1999, Wilmore, J., Costill 1999). Group aerobic programmes that undergo daily transformations with different styles are among the affirmed programs. Group aerobic programs are a form of programmed physical exercise aimed at improving psycho-somatic status. Besides having a general effect, the aerobic programs may be targeted, may have an influ-
ence on cardiovascular and respiratory system (functions), body-shaping (work on the ideal/appropriate body weight) may have an antistress effect, contribute toward social adaptation, socialization and entertainment from which general pleasure is derived, etc. (Blagajac, 1994). Recreational aerobic which is applied in this research represents a set of aerobic exercises, exercises of strengthening and stretching done with an appropriate music. Coaches/trainers who lead such trainings often regulate the intensity of exercising during the training itself by activating different body parts. In that manner, the intensity of exercising is either decreased or increased, resulting in a weaker or stronger influence on individual functions/abilities of certain organic systems (Kostić, 2006). Application of an aerobic model fosters the consumption of calories, improves the activity of cardiovascular system and strengthens the whole body (Perez and Greenwood-Robinson, 2009). Maximum consumption of oxygen is directly related with the frequency, intensity and duration of training (Vengera and Bell, 1986; Gossard, Haskell, Barr Tailor et al., 1986; Takeda, Tanaka and Asamo, 1994). Aerobics programs have positive effects on decrease of hypertension (Hagberg, Montain, Martin et al., 1989) and health improvement. Researches conducted by Thompson, Goodroe, Johnson and Lamberth (1991) in analyzing the changes in VO2max, heart frequency, systolic and diastolic blood pressure under the influence of two aerobic programs (one group dance aerobic, another group dance aerobic with weights) came to a conclusion that the aerobic group with weights had better results. Grant, Corbett, Davies, Aichison, Mutrie, Birn, Henderson and Dargie (2002), having compared the effects of two different models of aerobic exercising (aerobic dance and walking) on the functional abilities and bodily composition of women and established that dance aerobics had better effect on VO2max and maximal pulse compared to the walking program. The designed programs of aerobic exercises with the applied methodology have an influence on the level of working capacity, act preventively and improve health (Mišigoj-Duraković, 1997, Shahana et al, 2010), shape the body, improve body posture, strengthen bones, ankles/wrists and tendon segments of locomotive system (Furjan-Mandić, Kosalec and Vlašić, 2011). The application of different group aerobic programs has shown significant effects in improving functional abilities (Paton, Graves, Pollock et al., 1996; Toraman and Aiceman, 2004; Pantelić, Kostić, Mikalački, Durašković, Čokorilo, 2007; Mandarić, Sibinović, Mikalački and Stojiljković, 2011; Yfanti, 2014). The intensity of exercising of middle-age women should be adjusted to the possibility and goals of research so that they are motivated for continuous exercises (Gillett, Eisenman, 1987; Perez and Greenwood-Robinson, 2009). Researches in the field of functional abilities mostly focus on studying the structure and function of individual organs and organ systems, based on which multiple laws on their functioning have been established (Pantelić, Kostić, Mikalački, Durašković, Čokorilo et al., 2007, Yfanti, 2014). Recreational aerobics is designed for health improvement, improvement of physical appearance, physical abilities and psycho-social characteristics of a person (Stojiljković et al. 2005). Unlike sport, which brings to the forefront the top sport results as a priority, the primary result in aerobic is the issue of health, especially with middle-age women. However, besides the main motive which is health, women are also prone to prefer good looks, at all ages (Mitić, 2001; Stojiljković, 2005). Therefore, with recreational population, the aerobic training is among the most important, with other types of training having a big significance too. The goal of this research is to study the effects of recreational aerobics on changes in functional abilities of women.
2. METHOD OF WORK

Sample of subjects

The population from which a sample for research was taken has been defined as a population of women 35 to 45 years of age. The sample of subjects included the women from the Banja Luka City area. All subjects (38) included in the experiment were part of the recreational aerobics program taking place at the Faculty of Physical Education and Sports in Banja Luka.

Sample of variables

The evaluation of functional abilities was measured with the following variables: vital capacity (FVITKP), heart frequency at rest (FFSRCM), working pulse (FFSRCR), systolic arterial blood pressure (FTASI), diastolic arterial blood pressure (FTADI) and relative oxygen consumption \( \left( FRO_2 \right) \text{max} \). The working pulse was measured immediately after completion of the walking test UKK2km by palpating in the area of carotid artery by counting heart beats in 10 seconds, by multiplying the obtained value by six. Systolic and diastolic artery blood pressure was measured with the device with cuff of “Teleoptic” brand. Calculating the fitness index and determination of maximum oxygen consumption \( (\text{VO}_2\text{max} \ (\text{mL/kg/min)}) \) was done by an indirect method via the formulae derived from UKK2km walking test (Oja, & Tuxworth, 1995).

Description of research

The program of exercise lasted for three months, i.e. 12 weeks. Training took part three times a week in the evening hours. Every training session lasted for 60 minutes and was done according to the basic structure of aerobics class: warmup, the main part of training, cooling down and stretching (Zagorc, Zaletel and Ižanc, 1998). The intensity of exercising was determined by the tempo of music that changed during training (it was different depending on the training part). Warming up (8-10 minutes, music tempo 120-135 u/m, march, step touch, side to side) implies preparing the whole body for the upcoming strain, all to the end of increasing the body temperature and increasing the blood flow in organism (Brick, 1996). The main part of training implies aerobic (A) part and shaping exercises (B part – treating separate muscle groups). Aerobic part (20-30 minutes, tempo 135-155 u/m, the combination of Low impact and High impact steps) contains the activities directed to the development of cardiovascular and respiratory system (Mišigoj-Duraković, M. 1997). In B part of training (10 minutes, tempo 120-135 u/m) exercises were done for strengthening the abdominal wall muscles, the muscles of the back, hands and shoulder area, abductors and adductors and of the gluteal region (Furjan- Mandić, et all., 2011). Cooling down and stretching (5-10 minutes, tempo up to 100 u/m, relaxation and static stretching exercises) in this part of training is primarily aimed at lowering the heart frequency. Gradual passing from the standing to the sedentary and lying position on the stomach and the back is done, while the relaxation and stretching of tired muscles are combined, all with an appropriate music resulting in both mental and psychological relaxation (Kostić, 1999; Nićin, 2003). The program of recreational aerobics is adjusted to the age of the subjects and is designed to include the
exercises and movements that activate the musculature which is not sufficiently engaged during professional work. Trainings are planned by months and are adjusted to the volume and load intensity as well as to the possibilities of the subjects. The optimum strain intensity is dosed according to the limits from 60% to 85% of maximum pulse frequency (Stojiljković, 2005), which means that in the first month the strain ranged between 60–65% of the maximum individual pulse, and in the second month from 65–75%. In the third, last month of the experiment, the strain was in the range 75–85% of the maximum individual pulse. The fitness part of the class (A part) is programmed in a way that the subjects work out in the aerobic area during that part. The strain capacity was measured on the basis of internal indicators (pulse) by palpation on the carotid artery after the assigned block of exercises (during the break between the next set of exercises). Based on the obtained pulse, the intensity of strain was monitored for the accomplished task. Before every activity the subjects knew which should be the value of the pulse during the activity.

**Methods of data processing**

A statistical program SPSS (version 15.0) was used in data processing. The main parameters of descriptive statistics were calculated for each variable: minimum result (Min), maximum result (Max), arithmetic mean (AS), standard deviation (SD), asymmetry of result distribution (Skew), flatness of result distribution (Kurt.). A T test was used to determine the differences between the initial and final measurements (Malacko and Popović, 2001). Significance of conclusion drawing was determined at the level $p<0.05$.

**3. RESULTS**

The main descriptive parameters of the functional abilities on initial and final measurement were presented in Table 1. By inspecting the results in Table 1, on initial measuring, one may conclude that the values of central and dispersive parameters of the variable for the evaluation of the functional abilities show normal distribution of result; therefore, we can say that the group which is included in the experiment is homogenous on initial measuring.

After inspecting the results of functional abilities on final measuring we can also determine normal distribution of the results except for the variable Systolic Blood Pressure (FTASI) which shows somewhat bigger distribution asymmetry (Skjunis, 1,406), as well as the value of kurtosis coefficient (Kurtosis, 3,449). Based on that, we can say that the group mainly kept homogenous results on final measuring.

The results of descriptive statistics presented in Table 1 show the changes of value of tested parameters after three months of recreational aerobics program. Vital capacity increased by 534,20 ml/kg/min., the pulse at rest decreased by 7,25 beats a minute, the working pulse was increased by 7,25 beats a minute, systolic artery blood pressure increased by 5.23 mm Hg, diastolic blood pressure increased by 2.26 mm Hg, relative oxygen consumption increased by 6,41ml/min/kg. All tested variables on initial and final measuring have a normal result distribution, except for the variable systolic blood pressure (FTASI) which, in final measuring shows a somewhat higher distribution asymmetry (Skjunis, 1,406), as well as the value of Kurtosis coefficient (Kurtosis, 3,449).
Table 1. Descriptive statistical parameters of functional variables on initial and final measuring

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>Min.</th>
<th>Max.</th>
<th>AS</th>
<th>SD</th>
<th>Sk.</th>
<th>Kt.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INITIAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FVITKP</td>
<td>38</td>
<td>2000</td>
<td>3800</td>
<td>2876.32</td>
<td>425.177</td>
<td>-.303</td>
<td>-.128</td>
</tr>
<tr>
<td>FFSRCM</td>
<td>38</td>
<td>54</td>
<td>108</td>
<td>83.11</td>
<td>11.696</td>
<td>-.067</td>
<td>.125</td>
</tr>
<tr>
<td>FFSRCP</td>
<td>38</td>
<td>120</td>
<td>210</td>
<td>157.32</td>
<td>22.757</td>
<td>.262</td>
<td>-1.007</td>
</tr>
<tr>
<td>FTASI</td>
<td>38</td>
<td>96</td>
<td>143</td>
<td>118.24</td>
<td>9.851</td>
<td>.408</td>
<td>.654</td>
</tr>
<tr>
<td>FTADI</td>
<td>38</td>
<td>64</td>
<td>84</td>
<td>71.47</td>
<td>5.150</td>
<td>.579</td>
<td>.171</td>
</tr>
<tr>
<td><strong>FINAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FVITKP</td>
<td>38</td>
<td>2500.0</td>
<td>4200.0</td>
<td>3410.526</td>
<td>344.6812</td>
<td>-.495</td>
<td>.971</td>
</tr>
<tr>
<td>FFSRCM</td>
<td>38</td>
<td>62.0</td>
<td>96.0</td>
<td>75.868</td>
<td>7.4984</td>
<td>.420</td>
<td>.360</td>
</tr>
<tr>
<td>FFSRCP</td>
<td>38</td>
<td>132.0</td>
<td>204.0</td>
<td>164.579</td>
<td>13.8244</td>
<td>-.161</td>
<td>1.384</td>
</tr>
<tr>
<td>FTASI</td>
<td>38</td>
<td>104.0</td>
<td>174.0</td>
<td>123.474</td>
<td>10.8322</td>
<td>2.672</td>
<td>12.505</td>
</tr>
<tr>
<td>FTADI</td>
<td>38</td>
<td>64.0</td>
<td>82.0</td>
<td>73.737</td>
<td>3.9503</td>
<td>-.007</td>
<td>.193</td>
</tr>
<tr>
<td><strong>FRVO₂maks.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FVITKP</td>
<td>38</td>
<td>15.7</td>
<td>47.5</td>
<td>32.024</td>
<td>7.5108</td>
<td>.084</td>
<td>-.220</td>
</tr>
<tr>
<td>FFSRCM</td>
<td>38</td>
<td>2500.0</td>
<td>4200.0</td>
<td>3410.526</td>
<td>344.6812</td>
<td>-.495</td>
<td>.971</td>
</tr>
<tr>
<td>FFSRCP</td>
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<td>2.672</td>
<td>12.505</td>
</tr>
<tr>
<td>FTADI</td>
<td>38</td>
<td>64.0</td>
<td>82.0</td>
<td>73.737</td>
<td>3.9503</td>
<td>-.007</td>
<td>.193</td>
</tr>
<tr>
<td>FRVO₂maks.</td>
<td>38</td>
<td>28.9</td>
<td>51.3</td>
<td>38.434</td>
<td>5.6043</td>
<td>.350</td>
<td>-.409</td>
</tr>
</tbody>
</table>

Legend: n – Number of respondents; Min - Minimum; Max - Maximum; AS - Arithmetic mean; SD – Standard deviation; Skew – Result distribution asymmetry; Kurt. – Result distribution flatness; FVITKP – Vital capacity; FFSRCM – Heart frequency at rest; FFSRCP – Working pulse; FTASI – Systolic blood pressure; FTADI – Diastolic heart pressure; FRVO₂maks. – Relative oxygen Consumption; Initial - Initial, Final – Final.

T test was applied to determine the changes between the initial and final measurement with subject included in the experiment. Arithmetic means of initial and final measureings (AS in.-fin.), standard deviation between in.-fin. Measureings (SD), Pearson correlation coefficient (r), Student t distribution (T), as well as the probability of error during refuting of hypothesis (p) were applied to establish the changes between the initial and final measureings with the subjects. Based on tested variables for the evaluation of functional abilities one can see that there is a statistically significant difference between the initial and final measureings, in all measured variables. A statistical significant difference at the final compared to the initial measurement is found with the following variables: vital capacity (p = 0,000), working pulse (p = 0,020), pulse at rest (p = 0,000), working pulse (p = 0,020), systolic blood pressure (p = 0,001), diastolic blood pressure (p = 0,10) and relative oxygen consumption. (p = 0,000).

It is obvious that the aerobic stamina is an ability that, due to the lack of movement, may be lost very easily as an inherent property; however, as an acquired ability it may be improved with adequate aerobic training. With growth and development the functions of respiratory and cardiovascular systems increase, i.e. the vital capacity of lungs, frequency of breathing, systolic and minute heart volume. Given the needs of the functions of an adult person, as well as the causes of the sedentary lifestyle on those functions, it is necessary to make an impact with programmed physical exercises. Recreational aerobics, i.e. the program that is applied to the adult population of middle-age women, had a positive influence on all applied variables, however, these acquired abilities, due to the lack of daily physical activities, may progressively decline, especially with sedentary middle-age persons.
Table 2. T–test between the initial and final measuring in variables for the evaluation of functional abilities

<table>
<thead>
<tr>
<th></th>
<th>AS</th>
<th>SD</th>
<th>r</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>FVITKP</td>
<td>initial 2876.316</td>
<td>425.177</td>
<td>0.872</td>
<td>-15.711</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>final 3326.921</td>
<td>648.516</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FFSRCM</td>
<td>initial 83.459</td>
<td>11.649</td>
<td>0.561</td>
<td>4.588</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>final 75.875</td>
<td>7.490</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FFSRCR</td>
<td>initial 157.838</td>
<td>22.839</td>
<td>0.589</td>
<td>-2.434</td>
<td>0.020</td>
</tr>
<tr>
<td></td>
<td>final 158.504</td>
<td>32.880</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FTASI</td>
<td>initial 118.243</td>
<td>9.987</td>
<td>0.604</td>
<td>-3.492</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>final 122.081</td>
<td>19.605</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FTADI</td>
<td>initial 71.405</td>
<td>5.204</td>
<td>0.386</td>
<td>-2.714</td>
<td>0.010</td>
</tr>
<tr>
<td></td>
<td>final 73.514</td>
<td>12.844</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FRVO₂ max</td>
<td>initial 32.000</td>
<td>7.613</td>
<td>0.672</td>
<td>-7.070</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>final 39.346</td>
<td>8.708</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend: M – Arithmetic mean; SD – Standard deviation; SE – Standard error; r – Pearson correlation coefficient; t – Student t distribution; p - Probability; FVITKP – Vital capacity – initial-final; FFSRCM – Pulse at rest initial – final; FFSRCR – Working pulse initial-final; FTASI – Systolic pressure initial - final; FTADI – Diastolic pressure initial - final; FRVO₂ max – Relative oxygen consumption initial – final.

4. DISCUSSION

Based on the obtained results (Table 2), it is obvious that the applied recreational aerobics brought about significant changes in all observed parameters of functional abilities of women. The biggest changes were accomplished in improvement of the vital capacity (increase by 450.60 cm³, p = 0.000). Secondly, the pulse at rest decreased by 8.58 beats in a minute (p = 0.000). Further, relative oxygen consumption increased by 7.34 ml/kg/min. (p = 0.000). The results of this research may be compared with the results of Babijak and Miloševic (1992), who studied the influence of aerobics on morphological, motoric and functional status of women who undertook recreational aerobics. Nine variables in the domain of functional abilities were monitored (heart frequency at rest, vital capacity of lungs, systolic and diastolic blood pressure at rest, systolic and diastolic blood pressure after a strain, maximum oxygen consumption, relative oxygen consumption). Statistically significant changes of functional abilities were noted with the variables pulse at rest and the vital capacity of the lungs.

The influence of different aerobic training with music on the functional status of women was studied by Pantelic et al. (2007). Of functional variables the following was measured: systolic and diastolic artery blood pressure, maximum and relative oxygen consumption. The authors conclude that different forms of organized aerobic recreational activities largely influence the functioning of human organs and organ systems, in the sense of their better functioning during strain or at rest. The biggest differences were noted with the following variables: systolic arterial blood pressure, diastolic arterial blood pressure and the pulse function at rest. The results of research have shown that doing aerobic recreational activities lead to bigger changes of functional status with the persons who have longer recreational history.
Sarika et al. (2010) evaluated the effects of two different exercise programs (aerobic and strength training) on cardiovascular fitness variables, such as blood pressure and heart frequency (HR), metabolic parameters, such as cholesterol (HDL, LDL), triglyceride and anthropometric parameters. Thirty women of age between 35 and 45 years participated in the experimental research. Aerobic training was carried out three times a week with 60-70% of intensity of maximum heart frequency during six weeks. Strength training was also carried out in six weeks, while the pulse and the blood pressure were measured before and after exercising in both experimental groups. The results of research showed statistically significant differences in heart rhythm recovery (Pre-training: 97.40 ± 5.378, post-training: 90.70 ± 4.599, t = 8.066, P <0.001), and in post-diastolic blood pressure (Pre-training: 85 ± 3.265, after training : 86.20 ± 2.820, P <0.001); with aerobic training and systolic blood pressure (pre- and post-training) in both groups (P < 0.001). Based on the results, the author concludes that aerobic training is more useful than strength training in improving the cardiovascular fitness and may be used as a preventive measure with the persons with a risk of development of cardiovascular diseases due to obesity and can prevent the occurrence of related diseases.

The program of recreational aerobics primarily has a general influence on the overall psychosomatic status, on the condition that the methodology which relates to the age and the current possibilities of program users is applied. The intensity of strain during the activity is an essential part of every part of training, including the aerobic part too. In that regard, a coach/instructor must have an extensive experience in running the program. This is especially expected with the population of middle-age and elderly program users. Group training such as aerobics is an acceptable training program for middle-age women. The aerobics program should not be constantly burdened with new choreographies, but the motive for exercising should be sought in mixing different models of aerobics training. The exercise program that was carried out accomplished statistically significant results on changes of functional abilities of women; however, with the middle-age women population, it is equally important for physical exercising to become a “lifestyle”, a habit, that makes them healthy and positive.

5. CONCLUSION

Researching the effects of a three-month recreational aerobics on a sample of middle-age women has shown statistically significant changes in functional abilities. They are visible in an increase of vital capacity, decrease of the pulse at rest and increasing the relative oxygen consumption. Besides, the training process of 12 weeks has had a significant impact on changes of systolic and diastolic blood pressure, as well as of the working pulse. Appropriate/dynamic music that must be adjusted to the age is also an important segment of aerobics. The program content of aerobic does not always have to be a novelty, but it should be modelled in an expert way in terms of a strain posed by one part of training combined with music. Then it gets a „satisfactory“ content which accomplishes effect. Apart from that, for middle-age women, the period of adaptation to physical strain should be gradual, which means that it is longer (at least 12 weeks) and with an optimum interval (every second day). In that way, it is easier for a middle-age woman to adapt and she is more motivated to continue exercising. Physical exercise programs do not have to always focus on the development of functional abilities, although they are the most important in the sense of preservation of health and good
working capacities. Female population, even the one of middle-age, is also very much motivated to be good looking. Therefore, body shape programs, strengthening exercises are necessary, because a middle-age woman enters a period of life where the metabolism is slowed down, due to insufficient physical exercise, and the bone system is weaker as well as the defense mechanism, etc. Thus, in addition to a functional status, good looks, an aerobics training should be combined with the specific stretching exercises that should make the participants in the program satisfied. So far, the effects of different models of aerobics training on different segments of anthropological status have been investigated. This research is also specific by the fact that the experiment was tested on a sample of women of 35 to 45 years of age. This is the so-called „transitional period“ after which a woman enters a period of menopause characterized by a change in hormone balance and which can influence health causing a number of syndromes and clinical disorders. Therefore, this population is recommended to join regular exercising forms, especially aerobics, which can significantly mitigate the symptoms of that age of life (loss of bone mass, cardiovascular diseases and psychoneuroendocrinology disorders).

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IMPORTANCE OF THERAPY OF ELBOW EPICONDYLITIS USING IONOFORESION METHOD

Summary

Epicondylitis lateralis cubiti is a common disorder which affects many professions including athletes (tennis players), therefore it was named after them. In our work we used clinical examination and evaluation of the results of ionoforesis treatment by apparatus DIATECH PLUS and TENS T3 1211. Medicaments Dexomen and Lemod were used as well. The medicaments were used 15 to 20 times during 3 to 4 weeks. Results of the treatment were evaluated by clinical examination. The pain disappeared entirely in 21 patients, and in the 7 other patients disappeared three weeks after terminating therapy, adding NSAIL. All patients continued with their previous obligations, and discomforts disappeared. The authors are of opinion that ionoforesis is a good treatment method whereas usual therapy including rest, cold compress and NSAIL do not work. We didn't notice any complications caused by this treatment method.

Key words: epicondilitis lateralis cubiti, ionoforesis, dexomen, rest, clinical examination.

1. INTRODUCTION

Lateral epicondylitis, is an enthesopathy, also known as „tennis elbow“. It a starting place of extensor of the hand and fingers. /1/ It affects the most frequently and the most intensely musculus extensor carpi radialis brevis and extensor digitorum communis /2/, and it is one of the the most common disorder of the so-called outside of joint rheumatoid arthritis. Therefore, relative terminology is not coordinated yet. The Americans call it „Oversus syndrom“, and the Russions „perenapreienie sustavov“. During the last few years it is rightfully classified as a syndrom of enthesopathy. Considering its divided etiology, perhaps the last name is the best one beacuse, at least, refers to the character of anatomical change and its location. The disorder is common and affects 2.5 % of the world population. /2/ The term tennis elbow is often used, though in our country it doesn't affect more than 5 % of these patients. The term tennis elbow was introduced by Moriss in 1883. In our country it mostly affects craftsmen who use tools holding it firmly and repeating the same movements which burdens the same muscles. These craftsmen are bricklayers, carpenters, blacksmiths, machine tool workers, chisel workers, workers with vibrating tools. (3) You could say it's a professional
disorder including many professionals such as typists, surgeons and athletes. It mostly affects persons 40 to 50 years of age with prevalence rate at 10% and incidence at 1% (4). It is more often in tennis player, therefore it is named after them.

Gruchow i Palleier (5) found Epicondylitis in tennis players under the age of 40 rates 24.8%, and 57.4% in tennis players above the age of 40. Etiology is mostly unique. It is a damage of the starting point of previously mentioned muscles, in other words, myotendinous muscle structures caused by repeated simultaneous movements under burden, especially with forced pronation. Starting points of muscles and fascii are extremely strained. The extreme continuous strain decreases blood flow in strained area and nerves endings are overly irritated. It increases the existing strain caused by ischemia which by further burden causes the rupture of fibers and necrosis of endings. This also causes hypertovascularisation, in other words, the growth of granulation tissue as a reparative process. If the strain continues, so will the necrosis and reparation through inadequate connective tissue.

The authors found while performing a surgery during several treatments found, besides granulation tissue, the mass which was quite thick and gelationous. (6) It is certain that the substrate progresses from ischemia to necrosis if intense strain continuous. The diagnosis is being made mostly clinically in orthopedic and physiotherapeutic clinics. The first sign is the occasional pain in the beginning, if neglected it becomes permanent and it makes impossible everyday life and work. It's located on the area of epicondylitis humeri lateralis in radiohumeral area, and above the head of the radius. (2) It increases with the hand dorsiflexion under the burden. The pain is easily caused palpatory in the previously mentioned places. In long-lasting discomforts there is muscular hypertrophy whose strength is reduced. Experienced doctors do not need additional diagnostics. Sometimes the elbow radiography is being done in order to exclude other changes. Though, sometimes the periost knobs are found on humeri from the strating point of muscles or above epicondylus heterotropic ossification usually in a form of a haze or clearly chronical states. The treatment is principally conservative, it is simple and could be done at home. It consists of resting, cold compress and use of nonsteroidal anti-inflammatory drugs. If the treatment is disciplined and lasts long enough, at least for six weeks, it will bring to healing in almost all cases. In case if these procedures are not effective, the corticosteroids could be applied, two or three injections the most, one per week. The disorder is divided into three phases from the therapeutic point of view:

1. Acute reversible moderate pain which subsides when NSAIL is applied,

2. The pain lasts longer and does not subsides neither when NSAIL is applied nor during the rest. This phase corresponds to proliferation of granulation tissue which affects tendon's thickness. The conservative treatment will be successful in this case too provided it lasts long enough,

3. Pathological process affects the entire tendon's thickness, causes the rapture of the muscles' starting point and hypertrophy and hypofunction. The pain during palpation is strong, and with sonograph the rapture could be found or the image of the tendon's intensity could be changed.

Phase 1 consists of rest and ice compresses, three times per 20 minutes. Daily NSAIL. In phase 2, besides previously mentioned therapy, we apply corticosteroids with anaesthetics, locally, no more than three times, once a week. The pain often subsides very soon. However, it is necessary to pay attention not to use the elbow excessively, even though there is no pain. There is no evidence that that corticosteroids improve healing, they just decrease inflammation around necrotic tissue. (6)
Some think that they make anatomic changes worse, spreading the necrosis area, so they could also be the reason of the rapture appearance. In phase 3, surgical therapy is induced because there is no any other way to reconstruct broken continence of the tissue. It shouldn’t be done in the period of six months before the disorder appeared. The authors found in small number of surgeries a necrotic tissue in a form of a gelatinous mass in the muscles’ starting point. By removing it, the pain subsides, and possible reconstruction of tendons brings to at least temporary healing. (6)

2. RESEARCH MATERIAL

In two years and a half (from March 2013 to August 2015) in Center for Basic Rehabilitation of Healthcare Center in Trebinje, 28 patients with previously mentioned diagnosis were treated. The diagnosis is given by orthopedist and physical therapist, based on anamnesis and clinical signs. Radiography of the elbow is being done only in order to exclude other causes of discomforts (arthrosis, traumas). The average age of the patients was 53, who were from 22 to 70 years old. It is more than it’s registered in literature. (4) Most of the patients were employed, and the most common professions included craftsmen, administrative officers who work with computers, typists, but housewives as well. Only three patients were athletes, what is nevertheless more than other authors’ information show. (5) There were 15 women and 13 men.

Before the ionoferesis therapy, the rest and cold compresses were included. That lasted for six weeks. If the discomforts continued to appear, depo Medrol was applied to the painful spot. In these cases, discomforts eased very quickly.

After that, we started with ionoferesis therapy with DITECH PLUS electronic design and TENS TS 1212.

As to medicaments, we used amp Dexomen and Lemod. Individual therapeutic treatment took one hour. Complete therapy took three to four weeks, five times a week, so in total there were 15 to 20 therapies.

We didn’t notice any complications. All patients were back to work after this therapy, in case they were employed. Seven patients had some more discomforts for three weeks, but they disappeared with NSAIL therapy.

3. COMMENT

Treatment of epicondylitis is polymorph. It makes it difficult to estimate the values of individual treatments.

The average age of our patients is older than in other published authors. (4,5). The total age of our patients was probably influenced by female administrative officers who work with computers, so as the fact that population in total is getting older. We had three housewives and two musicians among patients. Treated athletes completely recovered and continued with training and competitions. Epidemiology of this disorder will probably change along with change of professions of population. Ionoferesis therapy as described above showed to be very successful. It cannot be estimated the importance of resting in this case, which is usually included in this kind of treatment. (8,9).
However, we think that ionoferesis is very significant and effective treatment method, having in mind the fact we didn’t have any complications with our patients.

4. REFERENCES

IMPACT OF COMPLEX MOTOR EXERCISE TO CEREBRAL PALSY PATIENTS

Summary

Cerebral palsy (CP) is a permanent disorder affecting body posture and movement in various areas of children’s health status. Four original scientific papers have been the subject of research in this paper. All the above mentioned papers have answered the requirements concerning the subject matter and the aim of this paper. Aim of this paper is to establish impact of programming to CP patients. Method used was the selection of papers issued from 2003 to 2011. We drew the conclusion that physical activities of CP patients are at very low level due to the specific nature of the medical condition itself. Regular, professionally guided and persistent programmed agents and procedures with CP patients result in significant improvements. Various issues, especially in the adolescent age, may be addressed if problems uprising from the condition are addressed at early stage, in early childhood. Improvement can be expected in higher motivation, better functioning, greater physical stability, balance, coordination and other significant factors.

Key words: cerebral palsy, physical activity, motor disorder, lesion

1. INTRODUCTION

Cerebral palsy (CP) is a term which explains a group of syndromes of motor disorder of non-progressive nature which are a consequence of lesion or brain anomaly in early stages of development (Dormans et al., 2000). The condition is primarily connected to changes in posture and movement but it is also followed by additional numerous secondary issues which greatly affect health status and quality of life (Koman et al., 2004). There are certain components of CP patients’ health status which can be positively affected by physical activity (Heimer & Duraković, 1999).

Research has shown that people with CP must maintain higher level of physical preparedness than healthy population in order to postpone deterioration of functional ability of organism connected to aging and consequences of primary damage to the organism (Rimmer, 2001). Planned physical activity aimed at increasing functional ability at early age lead to increase in oxygen intake and therefore improvement in stamina of the CP patients (Shinohara, Suzuki, Oba, Kawasumi, et al., 2002). Programmed exercise aimed at strengthening the
Muscles of lower extremities result in extraordinary improvement in CP patients’ condition and achieved results are lasting a long time (Blundell, Shepherd, Dean, et al., 2003). Such and similar programmes, using extra weight over specific time intervals lead to gaining better strength of lower extremities of CP patients (Unger, Faure, Frieg, 2006) as well as the increase of muscle tonus which provides better mobility of children with CP and which might have positive impact to leg muscles (Lee & Chon, 2013). Advantages for people who maintain their physical functions a higher level and who fight the problems caused by CP are numerous CP (Rimmer, 2007).

Proportion of improvement which can be achieved by people who perform certain forms of self-guided programmes for strength development and muscle engagement, compared to people who spend time in regular daily activities, is evident in fact that it is possible to achieve inhibited results in six weeks with CP patients. Such effects remain positive after strength trainings in the future (Dodd, Taylor, Graham, 2004).

Recent developments in the field of technology and methods for aiding, especially CP patients, are using games of ‘virtual reality’ which has the aim to engage as many body parts as possible into movement and lead to strengthening specific muscles and amplitude of movement which is desirable in such condition (Li, 2007).

Regular, team planned and programmed physical activity can have significant impact to changes of morphological, muscle, motor and cardio-vascular functions of healthy fitness of children with CP (Klajić et al., 2007). For better understanding, we provided classification and main causes of the disease in Table 1.

<table>
<thead>
<tr>
<th>Motoric syndrome</th>
<th>Neuropathology</th>
<th>Main causes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spastic diplegia</strong></td>
<td>Perventricular leucomalacia</td>
<td>Prematurity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ischemia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>infection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>endocrine/metabolic causes</td>
</tr>
<tr>
<td><strong>Spastic tetraplegia</strong></td>
<td>PVL multicystic encefalopathy</td>
<td>Ischemia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>infection</td>
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<tr>
<td></td>
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<td>endocrine/metabolic causes.</td>
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<tr>
<td></td>
<td></td>
<td>genetic</td>
</tr>
<tr>
<td><strong>Hemiplegia</strong></td>
<td>Brain infarction</td>
<td>coagulation disorder</td>
</tr>
<tr>
<td></td>
<td></td>
<td>infection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>genetic</td>
</tr>
<tr>
<td><strong>Extrapyramidal (aletoid/dyskinetic)</strong></td>
<td>Basal ganglia Putamen Kernicterus Talamus</td>
<td>Asphyxiation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>mitochondrial disorder</td>
</tr>
<tr>
<td></td>
<td></td>
<td>genetic</td>
</tr>
</tbody>
</table>

### 2. Method

Research data for the purpose of this research was collected via electronic databases PubMed, Scholar Google and DOAJ. Search of publications was limited to period from 2003 to 2011. In database search key words used were: cerebral palsy, physical activity, motor
disorders, and lesions. Research titles, abstracts and entire papers found were then read and analyzed. In order to accept any of the found research for further analysis it had to answer two criteria, firstly that it is dealing with CP and secondly that it was performed in the above mentioned time frame. All the research which answered the criteria was then analyzed and presented according to following parameters: reference (first letter of the author and year, year the paper was published), sample with age and number of participants, programme of physical exercise, programme duration and research results.

3. RESEARCH RESULTS

Procedure of collecting, analysis and elimination of obtained papers is presented in Table 2. There were 264 papers identified according to key words. Number of research which was eliminated immediately according to title, doubling and issuing date (before 2003) was 243 and 21 was subject to further analysis. In the further analysis of the remaining 21 papers 17 were eliminated according to multiple criteria: abstract, because they were systematic research, non-existence of control group in the research. Remaining four papers answered the criteria which are publications from 2003 to 2011 and participants who are CP patients.

Table 2. Procedure of collection, analysis and elimination of obtained papers

<table>
<thead>
<tr>
<th>Electronic database search results: 264 papers</th>
</tr>
</thead>
<tbody>
<tr>
<td>243 papers eliminated:</td>
</tr>
<tr>
<td>- According to title</td>
</tr>
<tr>
<td>- Being double papers</td>
</tr>
<tr>
<td>- Papers published before 2003</td>
</tr>
<tr>
<td>21 paper subject to further analysis according to abstract and body text</td>
</tr>
<tr>
<td>17 papers eliminated according to following criteria:</td>
</tr>
<tr>
<td>- abstract</td>
</tr>
<tr>
<td>- research overview</td>
</tr>
<tr>
<td>- inadequate topic</td>
</tr>
<tr>
<td>4 papers answered all the criteria</td>
</tr>
</tbody>
</table>
In Table 2 is presented the protocol for obtaining papers which answer the criteria.

### Table 3. Overview of papers

<table>
<thead>
<tr>
<th>Reference</th>
<th>Population</th>
<th>Group</th>
<th>Treatment</th>
<th>Protocol</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andersson et al. (2003)</td>
<td>People with SD. Part of population with aids, part in wheel chair.</td>
<td>EG (n=10 m/f, age 23-44), CG (n=7 m/f, age 25-47).</td>
<td>EG – programme of progressive strength training (speed of walking, speed of standing up, OMSUC). CG-SDA</td>
<td>EG – twice a week in 10 weeks, CG-SDA</td>
<td>Improvement in all the variables, impact on MS and ability to walk.</td>
</tr>
<tr>
<td>Unger et al. (2006)</td>
<td>School age children who are spastic CP patients</td>
<td>EG (n=21 d/d1, age13-21.),CG (n=10 d/d1,age 13-21 ).</td>
<td>EG – individually designed programmes, 8-12 exercises in 28 stations (3D analysis of walking, questionnaire) CG-SDA</td>
<td>EG – once or twice a week, 8 weeks, 40-60 minutes. CG-SDA</td>
<td>EG-significantly different from KG. speed, rhythm, length of steps not significantly changed.</td>
</tr>
<tr>
<td>Eek et al. (2008)</td>
<td>Children with bilateral spastic CP.</td>
<td>n=55, age 5-15, middle age 10,7 years.</td>
<td>Ratio of muscle strength and walking (eight muscle groups in legs by myometer)</td>
<td>Measuring standing, walking, running, jumping.</td>
<td>Differences in muscle strength and MS. Muscle weakness influences the walk.</td>
</tr>
<tr>
<td>Sandlundab et al. (2011)</td>
<td>Children with CP.</td>
<td>n=14 , age 6-16 .</td>
<td>MA and movement according to test mABC-2, test of motor knowledge BO, test of one minute walking and according to ETPS2.</td>
<td>Treatment at home lasting 4 weeks</td>
<td>Motivation and PI improved. Motor movement improved. Useful method for rehabilitation.</td>
</tr>
</tbody>
</table>

**SD**-spastic dysplegia; **EG**-experimental group; **CG**-control group; **n**-number of participants; **SDA**-standard daily activity; **OMSUC**-evaluation of overall motor ability; **CP**-cerebral palsy; **3D**-Three dimensional; **BO**-Bruininks-Oseretsky test; **ETPS2**-EyeToy for PlayStation 2; **d/d1**-boys and girls; **m/f**-male and female; **MA**-motor activities; **MS**-muscle strength; **PI**-practical interpretation извођење.

### 4. DISCUSSION

Table 3 presents the overview of papers dealing with programmes of exercise for people with cerebral palsy. In the table are results of application of specific exercise programme as well as the methods used in work with the patients. Analysis of the data shows that various exercise programmes have mostly positive results in rehabilitation of patients with CP.

In the first row is data about the research conducted on the sample of 17 participants, 10 participants in the experimental group were aged 23-44 and 7 participants in the control group were aged 25-47 and they had spastic dysplegia. A number of participants was using walking aids whereas a part of group was using wheel chair for a prolonged period of time. Experimental group was under influence of programmed progressive strength training and under treatment twice a week for 10 weeks. They have improved walking speed, speed of getting up and overall motor abilities. Improvement and increase of muscle strength results in significant improvement in walking abilities for CP patients.
The second row presents research results of the research conducted on the sample of 31 school age children with spastic CP. Experimental group consisted of 21 participant and control group consisted of 10 participants. They were all aged 13-21. Program lasted for 8 weeks, twice a week lasting 40-60 minutes and it was designed individually for each participant who performed eight to twelve exercises on 28 pages offered stations of circular exercise method. Effects were measured by 3D overview of child’s walk before and after experiment and a questionnaire. Effects compared to control group were positive, both in experimental results and the questionnaire where perception was significantly increased. Speed, rhythm and length of steps were not significantly changed.

The third row of the table presents research data for the sample of 55 participants aged 5-15 with bilateral spastic CP.

Ratio of muscle strength and walk was measured according to eight groups of leg muscles tested by manual myometer. Segments taken into consideration were: standing, walking, running, jumping. It was determined that muscular weakness influences walking.

Final, fourth row of the table presents research data on 14 participants with CP, aged 6-16. Aim was to research the possibilities of interactive game use as a motor activity for children with CP. Treatment lasted for four weeks. Children’s motor abilities were significantly improved as well as the motivation due to the use of such contemporary manner of rehabilitation. Interactive game has proven to be a great choice. Specific motor effects have to be additionally subjected to research.

Total number of participants in this systematic overview was 117. Fourth row in the table had the smallest number of participants, 14, whereas the third had the largest, 55.

Rehabilitation programmes are mainly focused on establishing body functioning starting with muscle tonus and their strength, controlled energy consumption and other relevant issues we have mentioned in this research. Programme of progressive strength training which lasted for 10 weeks with training frequency twice a week had the best results in this research.

Paper presented in the third row dealt only with the ratio of strength and walking ability estimate for children with CP, whereas the paper in the first row had the longest programme duration-10 weeks.

5. CONCLUSION

CP is permanent disorder of posture and movement which reflects on many aspects of child’s health status. Rehabilitation programmes are mainly focused on the body functioning starting with muscle tonus, controlled energy consumption, strength and other relevant issues mentioned in the research. Regular, professionally guided and persistent programme activities with the patients with CP give good results.

It is evident that treatments for strength development of the extremities are not sufficiently used and therefore we need to draw more attention to introduction of new and innovative concepts in that area. Only with the cooperation with the parents, CP patients and experts in creation of programmes for rehabilitation of CP patients shall we come to more positive and useful results which certainly present positive direction for the rest of their lives.
6. REFERENCES


Summary;

The game is voluntary. Free selected and enjoyable activity that takes place without any external necessity aimed at verifying the individual and collective capabilities. Execution requires persistence, patience and initiative to form the contact personality. Game is necessary for the health of the child and his physical development. One creates joyfully. Good mood, increases the activity of teaching children's body and meets the need of the child to move. The process of rehabilitation of the child easier to bear with game. Game has not only psychological but also pedagogical significance. Different games have different effects on the child to further his developments. So to games in which the forces running, effort, swimming, skiing and similar activities are developing lungs, the muscles that hold the skeleton upright, the muscles of the limbs and same. Some games are intended to strengthen the circulatory system, while others develop skills and kordinination movement. I sense that the child will practice correct deformity contributes to healthy growing up. If together educators and parents accept child and develop a system of exercises that will help correcting or alleviating the deformity can not expect the child to develop the habit of regular exercise independent.

Key words: game, corrective exercises, children, preschool, primary school age

1. INTRODUCTION

The game is as old as human society. Childhood and youth have always been met game. They the kind of behavior in specific conditions, characteristic for the period childhood. Game satisfies the need for movement and activity for exercise and activity, characteristic of the organism that develops and enables venting of children's mischievousness.

Play is spontaneous. Freely chosen and enjoyable activity that takes place without any external necessity aimed at verifying the individual and collective capabilities.
Children play to develop their abilities but through the game to achievement. They play to meet the internal need for activity that is at stake and usually directed toward some aim. In play child is harmonizing different activities to achieve the objective for which overcomes various obstacles. For every game important that the child is participating in it and with feeling. Feelings are not only an engine in various games but they also share in all stages of child motivation. To helps the child to persevere in the game if he's already tired.

Play discipline children and adapts them to the execution of the rules, because children are generally happy to submit to the rules of the game itself and keep an eye on their execution.

Execution requires persistence, patience and initiative to form the contact personality. Game is necessary for the health of the child and his physical development. They creates joyfully.

Good mood, increases the activity of teaching children's body and meets the need of the child to move. The game is equally important for the intellectual and aesthetic development of the child's age child game sets aim. To order to achieve this goal must remember what we know game content and rethink how to obtain what is think.

Play gives children the fullness of life for which it longs. Presents not replaceable arena for the study of the child because the same is reflected not only the individual lines and abilities, but also the dominant moods, likes and aspirations of the whole child, the child gets collectivity. Throw game experiences, develop ideas, ingenuity and the skills that would later allow you to smoothly adopt a logical concept of number and other mathematical operation.

The same time that preschool children spend on the various forms of the game and is not lost because it enables versatile development for successful education and development of luck and active personality.

If children with deformities in time we find and if you teach them to work for the correction of each deformity if you enable them to be psychologically and socially cope with the problem, we will help them to grow up in order to avoid the pitfalls that lead them to delikvenčiju. Korection physical deformity children preschool and school age is a preco-condition for healthy adulthood.

Teachers in kindergarten and primary teachers with the necessary help of health workers and with the appropriate organization of educational work a good portion of the deformity can be prevented and thus participate in the proper formation of the child's body.

2. GAME AND ITS IMPORTANCE IN REMEDIAL GYMNASTICS

The game is the most important activity for the child, often more important than the meal and sleep. Game can be defined as an active endeavor of one or more persons restricted rules of the game date, time and more or less clear aim. For unlike games played activities are not limited by strict rules, stability and strict attachment to a thematic objective, these activities are one or more persons thematically oriented under unstable rules and rally coordinated thematic orientation towards the aim of which was not determined.
Children can devote all their game. They practice game in any place with no time. So is very important that teachers and parents closely monitor game play activities the child in order to avoid overloading certain muscle groups, endangering the ligament or other physiological problems during a long duration of the game or excessive intensity. Children which have physical deformity are very private reject the company of peers because their peers have built a proper attitude towards disability.

Children do not know how to hide and sometimes mocking and insulting attributes for children with deformities tend to be unpleased. So that the importance of the game even more, because it does not allow us to withdraw into himself what is the basis for an interactive relationship with same children. Child rehabilitation process easier submitted with igra. Igra has not only psychological but also pedagogical meanings.

Child in the game feels like a member of a feeling of belonging but also social support to the collective, and thus be easier to fulfill and all school. The corrective gymnastics tj. game adopted child spontaneously and culture sports. Child are taught how to use sport for their health but also design your own body learns to revel in the sport and that it is perceived as pleasant and useful activity. Child regularly works corrective exercise gymnastics has all the prerequisites to easily develops complex system of exercises for the whole body, a system that is useful for health people. Big is unlikely that such a child to choose a proper sport that will be addressed in the future.

3. MEENINGS EARLY CORRECTING DEFORMITIES

We can not expect small children to understand the importance of daily gymnastics for the elimination of physical deformity, but we expect to welcome more games in which are embedded exercises for correcting physical disorders. Children do not know what's kyphosis, lordosis, or scoliosis, I do not know what it means flat feet but will gladly accept any fun, games and entertainment, but with an exercise that corrects this deformity. U anatomy and corrective gymnastics theory we know that exercise should be performed in order to correct the spinal column or flat feet or in literature, we have very few materials that link these exercises with the game, adjusting to preschool or school age.

The Company may not be happy if you are not happy its individuals, is now achieved only at the individual level, just over an individual. Hence and the importance of correcting physical disorders that have a moral and economic the importance of. Moral significance is that it achieves the principle of solidarity, mutual support, according to which community should help each individual to achieve their optimum capacity and thus occupy an appropriate place in society. Big importance and role of all who work with children to participate properly in detecting deformity. Earlier we can detect deformities in children's development it will have more chances to deformities straighten. Teachers can identify very early child development disorder but us this diagnosis is much less true if you do not have an adequate therapy. Best results are obtained if the appropriate therapeutic exercises connected with the game that corresponds to the age of the child.
4. APPLICATION GAMES IN REMEDIAL GYMNASTICS

In order to properly apply the game and play activities in corrective exercises must take into account a number of assumptions, such as:

- Selection Games
- Prepares children to play
- Designed games
- Game with exercise
- Completion Games.

The choice of the game is primarily related to the objective that we have in remedial gymnastics, is correct or mitigate deformity. If we want to make the correct choice of games we need to keep in mind: psychological abilities, material conditions in which the game will be achieved, play activities, or compatibility with a given exercise and other activities of the child.

The psychological characteristics of the child determines the choice of games on multiple grounds. For younger children, it is necessary to adjust the timing and rules igre. Weather game can not last long and the rules need to be as simple and children completely jasna. Young children play for themselves and the rules are respected because they derive personal benefit personally enjoy the game.

Preparing children for the game has multiple aspects. The child should be clear how the game flows should then be psychologically prepared for possible effort game brings with sobom. Terms of physical preparation of the child for the game it is necessary to adequately dressed and put on her to have suitable equipment for special and specific movements.

The design of the game is very complicated. When invent a game for children should provide the following: The content of games, game rules and tasks game. Content game refers to what the game contains as a primary activity, as the essence of the action to be unwind. Rules of games are always aligned and children must adopt in order to comply flow game. Easy way of adopting the rules is demonstration or trial operation of a game.

If well designed, games a powerful effect on the child's persistence in the collective exercises to develop his imagination and sociability, its positive emocion. Good designed game introduces children to the rules of social behavior, developing in them tolerance and democratia. To designing games are two possible access: one-that children are aware that one of the goals of the game deformity correction and others that children unwittingly play a role so that we can achieve the objectives of corrective gymnastics.

Teacher will opt for one of access. The best way through role. If action is justified to children consciously played the role to help his friend in corrective exercises, then the teacher will clearly emphasize the importance of the role and I assign roles of grupe. The known that all children want to play a major ulogu. In this case, the teacher will explain why precisely the role of the administration so rasporedju. Ako role of a child who treat secondary corrective exercise, the teacher can verbally reinforce its importance may be noted that because the game takes place or that the game could not be realized without the role.

If you prefer another approach to Games in which children unconsciously mediate activities of corrective gymnastics then the division of roles will go by the teacher to give
individuals or let group members to ssama division of roles and will take into account whether the goals of corrective gymnastics.

The change of games with the exercise must flow so that it creates a positive impact that we want to accomplish corrective exercise. Children will be happy to forget that the basic goal of the game deformity correction. They will opt to play as fancy. Teacher should control the intensity of the game as its duration in order to avoid the adverse effects of the game: overuse of muscles. If the game takes place outside the teacher's control then it is possible that only a parent monitor their efficiency, then a teacher and parent are in the role of coordinator and supervisor game. Teacher need to take care of the aesthetic aspect of these aktivnosti. One hand it is about the aesthetics of movement performance as well as the actions that the game takes place on the other side of it is the aesthetics that we exercises to achieve the aesthetic outcome of the game.

End of game may not be out of control of teacher. Children often like to play lasts too long because it is important that the teacher controls the duration game. Instead of violent interruption of the game the teacher is available to substitute one game after another.

5. GAME AND EXERCISES TO CORRECT POSTURE OF THE BODY

Different games have different effects on the child to further his development. So to games in which the forces running, effort, swimming, skiing and similar activities are developing lungs, the muscles that hold the skeleton upright, the muscles of the limbs and same. Some games are intended to strengthen the circulatory system, while others develop skills and koordsinacija pokreta. Some game will be intended to strengthen the balance, some easier to navigate in space, or motor skills, etc., and some games will primarily have socialization and emotionally stability child. Every combination of games and corrective exercise aims to enhance the effect of corrective exercises, to help alleviate or eliminate deformities in children.

5.1. Game and exercise to correct scoliosis

Exercises 1.: „Dolphin swim on dry land“

A child needs to lie down on his stomach, arms stretched alongside the body, palms facing the gore. Head and upper body should be raised to higher, then lower to the starting position.

Exercise 2: „In summer, my dove“

The child stood up and leaned forward upper body to 90 decrease. Than, spread his arms in mimic bird flight.

Exercise 3: „Drunk T“

This exercise is performed with three persons. As prop used rod length from 1 m to 1.5. first position is at odds upright posture with a stick on his shoulders from behind and hand on the nape withdrawn by stick. Body is tight and straight. When children take position
exerciser leaning sideways with a stick behind the neck over the back side as partners can not until you make partner reserves the leg that he does not freak out of poda. Treba to remain in this position with a rate of five to ten seconds on the back of partners, after which it first partner by the hand and pulls her back up to the starting position

5.2. Game and exercises for the correction of kyphosis

*Exercise 1. „Sok flying-with a cane“*

The child lies on his stomach stretches his hands down her body with his hands on up. Teacher him in the arm put stick. Head should raise as much in the air and hands with a baton at the same time.

*Exercise 2nd: „Seesaw“*

Two children standing leaning back in back. One child prekloni your arms around your partner at the elbow, and then lifted off the ground leaning forward, then another child raises prvo. Exercise is repeated several times.

*Exercise 3: „Push in water“*

The exercise is carried out in water up to half a knee on the beach, in the sea, river or shallow part pool. First position is in the raised push-ups or lying body facing the water with his hands resting on the bottom, hands and body taut over water. Second support running so that children put in the position of the raised push-up halfway up the knees, so that they and the body is above water. Than children are doing push-ups so as to indulge in the water and dive into the water push-ups in order to sink the whole body for a second time.

5.3. Game and exercises for the correction of lordosis.

*Exercises 1.: „Run in the air“*

A child needs to lie down on your back, legs lifted up and running in the air until not feeling fatigue, then get some rest and continues running in the air, run up, but now her hands hips and body rises to the position of candles.

*Exercise 2nd: „Push me pushing you“*

This exercise serves to strengthen the back muscles and legs. Two of children sitting on the floor leaning back on one other. Aim to each other throw you back and to pass on his field. This exercise can be done in two groups, such as a back light set lumber.

*Exercise third: „Race earthworms“*

Children lie down on your back, put your hands behind your head with interlaced fingers. Aim that the movement in the left and right move opposite of wall. This mimics the movement worms. Win she worm that first reaches the opposite wall. Ova exercise strengthens the back muscles, especially those directly along the spinal column.
6. PSYCHOLOGICAL HEALTHY ADULTHOOD

Healthy growth of the child entails a number of aspects, and this is primarily about:

- Physical health
- Healthy fit
- Psychological environment for healthy growth
- Proper nutrition
- Proper hygiene
- Adequate habits such as exercise, shift work and rest, and the like.

*Physical health* implies the proper growth and development of the extremities, spine and whole organism. Medicine, sport and corrective exercises allow the child at an early age helps in healthy growing up.

A child with the conditions for growth under normal physical health will be deprived of social trauma and embarrassment among. Teachers and parents who know how to recognize irregularities in the physiological constitution of the child can intervene to time seeking help from doctors and physiotherapists.

*Psychological environment* - For healthy growth implies a stable family relationships, social acceptance in the peer collective child's basic requirements for success in school and the other conditions that enable active involvement of the child in society. Family relations child look much more drastic than the they are. This an even greater problem for children who have visible handicap.

Social acceptance is especially important for children who have the disorder in the development and needs special corrective tretman. Ima situation where corrective treatment can only succeed if it includes peer group and this is especially true for the application of games and playing activities.

*Dietary* rules implies that the child takes quality food in a quantity schedule that ensures normal functioning. Fatest or thinness may threaten the vital functions of the body, can affect the growth of the child. A healthy diet is especially important for children who have a handicap to development because the lack of vitamins, fats and proteins drastically held in the muscles and muscle disease most strongly associated with certain disorders in the developing world.

*Hygiene* is with us in many families at a satisfactory nivou. U hygiene includes maintaining bedding, clothing and footwear by children. The same so clean air in the room where the child sleeps or resident is an important prerequisite hygiene healthy adulthood.

I sense that the child will practice correct deformity contributes to healthy grow up. If together educators and parents accept child and develop a system of exercises that will help correcting or alleviating the deformity can not expect the child to develop the habit of regular exercise independent.
It is known that people who exercise regularly have better health, better physical condition, you usually do not have problems with their weight.

7. CONCLUSION

Given that remedial gymnastics uses the same agent as well as in physical education, and it is a movement, physical exercise, gymnastics understandable as teachers and class teachers the ones who daily deal with these issues.

Children prefer to play. It is known that exercise corrective gymnastics for children often boring and monotonous. Because the merger game and corrective gymnastics are providing a very important choice that motivation is a very important prerequisite for successful work in corrective gymnastics. Harder part of this work is to connect various gymnastic exercises with games.

The special role in the game for the physical development of children, and serves as an outlet for excess energy which, if it accumulates in the child makes him nervous. In all aspects of physical education plays a significant role, and together with the Corrective exercise is the basis for the normal development of preschool and schoolchildren.

Human setting is that every person should have the right to life, protection, love, belonging, work and freedom. Best reflected in the community compared to children with disorders of growth and development. Therefore, the obligation of each community to ensure equal rights for all children and thus the conditions for a healthy and normal life.

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THE EFFECTS OF SPECIFIC PHYSICAL PREPARATION ON THE DEVELOPMENT OF EXPLOSIVE AND REPETITIVE STRENGTH IN YOUNG SKIERS

Abstract

The aim of this research was to determine the effects of training for specific physical preparation on transformation of motor and functional abilities in young skiers. The sample of participants consisted of 28 participants, primary school pupils (members of the Ski center "Stara Planina" from Knjaževac), aged 13 and 14. Motor abilities were defined by dimensions of repetitive strength: trunk lifting on the Swedish bench (MDTK), squats (MCUČ) and push-ups (MSKLE) and explosive strength: standing long jump (MSDM), standing triple jump (MTRS) and tossing a ball (MBLP). Functional abilities were evaluated by tests: Vital lung capacity (FVKPL), Margaria test (FMARG) and Puls frequency after the load (FFPOP). Analysis of variance were calculated at multivariate (MANOVA) and univariate (ANOVA) level. It was determined that at the end of the experimental period under the influence of specific specific physical preparation, there was a statistically significant increase of motor and functional abilities in young skiers at multivariate level.

Key words: explosive and repetitive strength, functional abilities, multivariate and univariate analysis of variance, young skiers.

1. INTRODUCTION

Skiing as sport requires great physical and mental efforts of skiers, demanding exceptional agility, coordination, strength and stamina, because in competitive skiing, winners are determined by a hundredth of a second. Skiing is not just lowering down the slope but also includes turning, climbing, walking and falling, during which different groups of muscles participate and which skier must functionally control, regardless of the achieved speed.

Motor abilities are of special importance for achieving significant results in skiing and represent dimensions which are under control of the mechanism of energy regulation: explosive and repetitive strength, basic bodily strength and maximum force of attempted movements (Krsmanovic and Lukman 1993). Among other motor abilities, speed of alternative movements...
and speed of simple movements are important. Accuracy, balance, coordination and flexibility have considerably less impact on the result in skiing.

Explosive power is an ability that allows athletes to achieve maximum acceleration of their own body, an object or a partner. This dimension has a dominant role in rapid changes of direction in skiing, during transition from one leg to another with appropriate reflection. Genetic determination of explosive power in 80%, so by training process its increase (except in the period of early school age), can be a little influenced, especially by the following motor exercises: riding on rough terrain, terrain jumps and leap techniques (Krsmanovic 2006).

Repetitive strength is an ability of enduring work, when it is necessary to master certain external load up to 75 % of maximum. If it is about mastering external loads (weight or partner), it is absolute strength, and if an athlete repeatedly masters their own body weight (chin-ups, push-ups) it is relative repetitive strength.

Some researchers (Bompa, 2006, Duraković, 2008) have repeatedly found positive correlation between morphological characteristics and functional abilities and results of explosive and repetitive strength that are realized in training process with young athletes.

Training work is characterized by organized exercises for development of anthropological characteristics and motor knowledge achievement and by constant adaption of work contents, methods, loads and recoveries to the current state of abilities and characteristics, for the achievement of optimum reaction of organism (Krsmanović, 2009).

In this paper, the problem was investigation of the efficiency of specific physical preparation, as process of motoric exercises aimed to development of anthropological characteristics in young skiers.

The aim of the research was to determine statistically significant changes of motor and functional abilities in the final relation in comparison to the initial measurement in participants.

2. METHOD

The sample of participants was composed of 32 young skiers, aged 12 and 13, who were active participants in training process in skier's center "Stara Planina" in Knjaževac.

Motor abilities were evaluated by tests of repetitive strength (trunk lifting on the Swedish bench - MDTK, squats - MČUČ and push-ups - MSKLE) and tests of explosive power (standing long jump - MSDM, standing triple jump - MTRS and tossing a ball - MBLP). Tests of motor abilities were taken from the research of Kurelić and associates, 1975.

For the evaluation of functional abilities, the following tests were applied: Vital lung capacity (FVKPL), Margaria test (FMARG) and pulse frequency after the load (FPPO). Functional tests in this study were taken according to the research of Heimer & Medved, 1997;

During the experimental period which lasted four weeks, participants exercised three times a week per three hours.

The following exercises were aplied: Side step test (exercise that improves lateral acceleration and agility due to the strengthening of adductor and abducts muscles, and there-
fore, it is crucial exercise for coordination); Lateral trunk flexion (exercise for strengthening the muscles of lateral sides of trunk because it increases the range of motion in the hips); Depth jumps (exercise for development of explosive and repetitive strength, especially significant at the start of skiing); Trunk extension (exercise for strengthening the muscles of the lower back, while skiing on curving terrain).

To determine quantitative differences of motor and functional abilities of participants between two measurements, analysis of variance at multivariate (MANOVA) and univariate level (ANOVA) was applied. The obtained data were processed by means of the statistical package Statistika 7.0.

3. RESULTS

Table 1. Multivariate analysis of variance of motor abilities of participants

<table>
<thead>
<tr>
<th>Variables</th>
<th>Measurement</th>
<th>N</th>
<th>Mean</th>
<th>F-relation</th>
<th>P-level</th>
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<td>12.45</td>
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<td>MDTK</td>
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<td>MTRS</td>
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<td>32</td>
<td>515.27</td>
<td>1.75</td>
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<td>FI</td>
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<td>543.46</td>
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<td>MBLP</td>
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<td>32</td>
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<td>3.84</td>
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<td>FI</td>
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<td>36.35</td>
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</table>

Legend: initial measurement (IN); final measurements; arithmetic mean (Mean); F-test coefficient (F-relation); the level of significance (P-level)

The results of multivariate analysis of variance, shown in table 1, indicate that in motor abilities, there are statistically significant differences between initial and final measurement, because Wilks' Lambda is .136, what by means of Rao’s F -approximation of 12.25 gives the significance of differences at the level of significance Q = .000. Accordingly, in applied system of motor abilities of the participants were determined significant differences.

Table 2. Univariate analysis of variance of motor abilities of participants

<table>
<thead>
<tr>
<th>Variables</th>
<th>Measurement</th>
<th>N</th>
<th>Mean</th>
<th>F-relation</th>
<th>P-level</th>
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<td>MTRS</td>
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<td>3.84</td>
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<td>FI</td>
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<td>36.35</td>
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</table>

Legend: initial measurement (IN); final measurements; arithmetic mean (Mean); F-test coefficient (F-relation); the level of significance (P-level)
In table 2, univariate analysis of variance of motor abilities tests is shown, calculated by comparing results of arithmetic means of the initial and final measurements. Based on the coefficients of F-test (F-relations) and their significance (P Level), it can be noticed that statistically significant difference exists in all tests: lifting troops on the Swedish bench (MDTK 000 **), push-ups MSKL (.031 *), standing long jump (MSDM .000 **) and tossing a ball (MBLP .043 *), except in test standing triple jump (MTRS .134).

**Table 3. Multivariate analysis of variance of functional abilities of participants**

<table>
<thead>
<tr>
<th>Wilks’ Lambda</th>
<th>Rao’s R</th>
<th>Q</th>
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<tr>
<td>.182</td>
<td>17.24</td>
<td>.000**</td>
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</table>

Legend: Bertlet test values (Wilks’ Lambda) Rao's F -approximation (Rao's F) and the level of significance (Q)

The results of multivariate analysis of variance, shown in table 3, indicate that in functional abilities there were statistically significant differences, because the Wilks’ Lambda coefficient is .182, which by Rao's F-approximation coefficient (17.24) gives a significant difference at the level Q = .000. Accordingly, in the applied system of functional abilities of the participants statistically significant differences are determined.

**Table 4. Univariate analysis of variance of functional abilities of participants**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Measurement</th>
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<th>F-relation</th>
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<td>FI</td>
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<td>.041*</td>
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<td>FI</td>
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<td>3.56</td>
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<td></td>
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<tr>
<td>FPPOP</td>
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<td>.000**</td>
</tr>
<tr>
<td></td>
<td>FI</td>
<td>32</td>
<td>166</td>
<td></td>
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Legend: initial measurement (IN); final measurements; arithmetic mean (Mean); F-test coefficient (F-relation); the level of significance (P-level)

In table 4, univariate analysis of variance of functional abilities tests is shown, obtained by comparison of the arithmetic means of the results obtained at the initial measurement with the results obtained at the final measurement. Based on the coefficients of F-relations and their significance (P Level), it can be concluded that there were statistically significant
differences in functional abilities between the experimental and control groups in Margaria tests: the Pulse frequency after the load (FPPO .000) and Vital lung capacity ( FVKP .000).

4. DISCUSSION AND CONCLUSION

The results of multivariate analysis of variance on the multivariate level (Tables 1 and 2), showed that it came to adaptive changes and statistically significant improvement of motor abilities in young skiers (Q = .000 **).

It probably occurred because the contents of applied exercises of specific physical training were intensified the activity of agonist muscles and strength of the whole body, as well as because the applied loads (volume and intensity) were close to the boundaries of functional abilities.

In training process of specific preparation, special attention was devoted to intensity and volume of loads as well as to the duration of rest phases, processes of energy recovering, during which energy is recovered the physiological changes occur, caused by process of exercises.

A large number of authors (Lanc, 1988, Heimar, 1989, Kršmanović, 2008; Joksimović, 2010) support this approach to work, which, in young skiers, enables significant formation of motor basis on which, later, complex motor abilities can be comprehensively developed, which facilitates the transition to the phase of specialization.

The obtained results of multivariate analysis of variance (Tables 3 and 4) have shown statistically significant improvement of functional abilities (Q = .000 **) in young skiers.

It can be assumed that adaptive processes of functional abilities, among other things, represent consequences of the application of selected specific means of physical exercises of explosive and repetitive character, for functional abilities improvement of phospho-creatine and glycolytic energy mechanisms and for increase of efficiency of neural structures in specific conditions of oxygen debt.

Optimal changes of work and rest interval in the training process with participants, according to some authors (Kurelić et al., Kršmanović, 2006), contribute to the increase of working capacity in relation to the initial level and enable development of functional abilities. Increase of these abilities is then based on positive functional reaction of organism, and it allows further enhancing and development of training status.

A great number of researchers whose object of interest was development of functional abilities of athletes (Jukić, 1998, Heimar, 1997; Duraković, 2008), supports such conception of functional preparations in young skiers.

The results obtained in this study confirm that programs of specific physical preparation with young skiers are generally designed with large intensity of physical activities and they contributed to enhancing of both motor and functional abilities.
5. REFERENCES


THE ROLE OF THE FAMILY IN SCHOOL SPORTS

Summary:

Parents have the right and duty to care for the personality, rights and interests of their minor children. These rights, or rather the duty, called collectively parental rights belong to parents, father and mother both together. Empirical studies of parental influence on children’s behavior in sport confirmed that the impact of significant and substantial. Parents are crucial in making the original decision on the initiation of sporting activities. In particular, this study sought to determine the main characteristics of socio-economic status of young athletes and their impact on participation in sport and expectations of sport.

Key words: parents, schools, sports, children

1. INTRODUCTION

Parents have the right and duty to care for the personality, rights and interests of their minor children. These rights, or rather the duty, called collectively parental rights belong to parents, father and mother both together. Parents carry out childcare or his duties by mutual agreement. Parental rights in our legal system is mostly a collection of the duties of parents to their children.

Parents are obliged to care for the personality, rights and interests of their minor children that parents are made in order to raise children in useful and conscious citizens of our country and for securing the family as the basic cell of society. Parents therefore have no power to their children, but have only duties for the benefit of children. Parents perform their duties under the supervision of the community, because marriage and family under the protection of the community, and minors are under the special protection of the community. Parental right is a personal right of parents. This means that the rights and duties towards children are the sole parents. Parents can not waive their parental responsibilities the same although they may be limited or expropriated.

In this context in the work we will focus on this in any way parents affecting children, the way children observe parents as role models and the extent to which parents influence
children's participation in school sports. On the way to motivate children to join school sports facilities aimed at the same as a physical education to the integral development of personality with specific content. In this case, the exercise and movement.

2. PARENTS AND SPORT

Empirical studies of parental influence on children's behavior in sport confirmed that the impact of significant and substantial. Parents are crucial in making the original decision on the initiation of sporting activities. For physically more vivid parents it is likely to have physically active children, which is part of the biological similarity in the interaction with social learning. Parental activity and beliefs about the sport were significantly associated with participation in the sport and to the attractiveness of the sport for their children. Parental full stereotypes can significantly affect the likelihood that they will be a child play sports. The influence of parents on the experience of their own competence in sport is not irrelevant even in old age.

In explaining parental influence on children playing sports Eccles and Harold are applied motivational process model. Process theories assume that by some activities come into function expectation that this activity is traced to a particular target, and as a function of the attractiveness of this goal.

As has been that parents transmit values and beliefs to their children, Eccles and Harold presumed that the values and beliefs related to the sport transmitted from parents to children, and that this is the main driver of children's sports activities. Parental reinforcement sporting activities will certainly maintain motivation, no role models and social learning under this theory is not necessary.

In this way it is possible to explain the positive parental influence and in cases where parents are talentless and unable to practice sports, but believe that sport is a good and useful and that it their children to be successful.

Parental beliefs related to sport are predominantly positive and mostly related to the positive impact of sport on health and abilities of their children, then the preferred socialization of children in sport and to experience the sport as safe activities in which children avoid violence, alcohol and drugs.

The ways in which parents are involved in their children's sports activities and Woolgar Power recognized the three basic forms. The first is parental support, which can manifest itself as emotional support (for example, a child under stress), information (for example, giving advice), or as concrete assistance (financial, transport and the like).

Other forms of participation of parents in sports as social learning and operant counseling. Reflected in modeling, where a parent by their behavior in sport provides a model child and the child's behavior a reinforcer. The third form of interaction are parental expectations of children's achievement in sport, harmless only when they are in accordance with the child's real possibilities, but detrimental to the motivation if they are too low or too high.
Parental involvement in children's sports activities sometimes produces negative effects. Parents can be a source of stress, often due to unrealistic expectations, or seeking success at any cost. Following their children in sporting situations, some parents are losing control over their own behavior, and even in children's sports registered violent incidents. Higher quality of parental involvement in children's sport is trying to achieve programs that involve parents in an organized and where trained to provide better support to your child. Bosnar (2003).

3. FAMILY AND SCHOOL SPORT

Sport, sports items, sports games and gymnastics, are one of the most successful methods for maintaining and improving health and mental equilibrium adults, and especially children and younger. This discipline applied in order to:

- Undertake preventive measures to improve the physical and functional abilities, and thus the overall health of individuals.
- Undertake specific prophylactic measures for protection where there is a risk of the occurrence of diseases, physical deformity or disability.
- Undertake measures for complete rehabilitation and re-socialization of those in whom the disease has already caused damage, deformation or disability.

The term „move means to live“ suggests that, in addition to traditional methods of physical treatment, rehabilitation constitute the basis of modern methods of active pokreta. Movement is confirmed by the words of the great Russian physiologist Sechenov „that the whole of our activities ultimately comes down and realized through directed towards motor activity“.

Properly selected and expertly applied games and sports games have a significant therapeutic and preventive effect. Through them, it can act naoktklanjanje milder forms of physical deformities, as well as restoring and repairing damaged functions. In addition, they realized a favorable psychological help dejstvo. One process of adaptation and social reintegration. Through the recognition and validation of their own values, one next to the emotional and entertainment components, and extremely creative component, as support the raising and training of the remaining capacity men.Game and sports games as a means of prevention, correction and rehabilitation should be seen in the context of their bio-medical, psychological, meanings. There biological and sociological-health value is reflected in the function of developing neuro-muscular mechanisms in healthy, undamaged parts of the body, so to compensate for the lost function of injury or damage.

Its influence on the locomotor apparatus they have great importance because they contribute to the improvement of strength, elasticity, coordination of movement, balance and general strengthening of the whole organism.

They abound in a variety of gestures that can engage primarily upper or lower extremities, and as such, can adadirati and apply depending on the capabilities and needs of specific engagement or limb segments. Games represent a significant therapeutic method that
increases achieved by general or special mobility of the body, using them to develop the skill and agility, in conditions that needed longer of non-use.

Given that sports game as the basic object used to manipulate the ball with which the participants, according to pre-arranged, the established rules in a particular area, in cooperation with other participants, it is necessary that all perform a certain speed in a certain rhythm, which all contribute to repair and sharpening remaining function. This is achieved and repair functions that are due to injury, deformity or disease reduced.

Games, with well-organized and controlled dosages, can contribute to a better acceptance of self-image, tzv. tjelesne scheme, which is the first prerequisite of the overall rehabilitation.

It is well known that sports game, because of its inventiveness, stimulates the activity of the spirit, determination, competitive spirit. Sports games with such psychological influences are important for people with certain physical retardation because with them just disturbed mental values.

Through sports game impaired health manifest and confirm their functions. In physical condition that she selected and adapted to the nature, extent and the current condition of the patient, it becomes a very useful tool psycho-physical adaptation and self-affirmation.

In contact with other students, patients measured their skills in relation to the other, it has a certain effect on the expression of personal, emocionalne balance, development of will and desire for complete social integration.

Patient in sports games in contact with other participants expands social-the psychological feelings of rivalry, competence, personal and collective superiority over games encourage and expand the scale of human free. On their participation in sports and fighting game, in order to achieve better results, draws attention to the environment. Attention to the kind of guarantees that the environment taking care of him, to count on him and his remaining strength and ability, and that he was still a full member of the community and that it is not abandoned and forgotten.

Sports Games of which are commonly used basketball, volleyball, handball and football can be used as an excellent tool for the general strengthening of the body, or for making special effects on certain segments of the apparatus movement. There application must be sensitive to the gender, age, physical status, current physical and functional status of an individual, or to the aim to achieve. In sports games abound in a variety of developments, and each of them contains some specific movements with greater involvement of certain segments, which can be used for preventive and corrective work, correcting the negative consequences of non-use, raising physical and functional abilities.

For sports and engagement of the child's parents, ie family, may affect different ways. These impacts Gregori is classified into 4 categories. The first step is that the child is verbal and / or nonverbal interest in the sport and it is turned on. Parents usually point out the positive role of sport, its undoubted contribution to healthy mental and physical development and make some concrete efforts to start a child on the activity. The next step would be the inclusion of parents in the very activity of children (family walks, ipoznavanje children with certain sports, join a game ball or help in that).
Significant influence is the shape in parental involvement and the ability to provide children access to facilities and equipment required for sports activities. And finally, but not less important factor, is the manifestation of confidence in their children and their abilities and thereby strengthen and encourage their self-esteem.

It should be noted that the form of the active life of the parents, a lifestyle in which sport has an important place, is a good example and model for the behavior of their children. However, studies have shown that the positive effects of the parents, as well as sports models, the preference of children to engage in sports are not automatic.

Some researchers have found that playing sports parent is not in itself a sufficient incentive for their children to get involved in sport. On the contrary the role of sport model for children is much more important parental support, as well as support and incentives of other members of their immediate and extended family. Similar conclusions There are other authors (Brustad, 1996; Kimiecik & Horn, 1998; Eccles & Harold, 1996 - by Daniel, 2005). They confirm that the positive attitude of parents towards sport and sporting success, and estimate that in this area, their child can be successful, it has a greater impact on the child and his involvement in the sport from the parental sports.

No less important than the role of encouraging sports participation is the role of parents in the process of training I takmićenja, and further continuous and successful sports. Considering the role of parents and coaches in the sport of children and youth and Quin Groupe point out that the role of parents belonging to the emotional, educational and financial support while coach belongs to the professional part of the preparation of the child.

It should not be forgotten that the coach, with the exception of education belongs to important educational role and, especially in the formation of moral character, sportsmanship, as well as the formation of other positive characteristics, attitudes, values and beliefs of young people. Research conducted on 120 Romanian athletes aged 8-10 years showed that 82% of encouragement for sports comes from the family, as well as support for their persistence in sport (74%).

Their data show that there are sports for which parents are interested (tennis, fencing) I in them, they are invested financially much more than the kids interested. Research shows that in this age of sports greatest support parents financially and morally, no matter what it is a society in which the financial moćporodice generally small. Inspired by these and similar studies by the fact that our society is in the process of transition and major changes in the country where less attention is paid to sport in general, and especially in the sport of young people, we wanted to determine the role of family influence in the determination of children in sport and providing emotional In support their pursuit of material selected sports activities.

In doing so, we are fully aware of the fact that the contemporary family in Serbia, as the only remotely reliable support every individual’s, has undergone dramatic changes for the worse. Due to the recent wars, ruthless privatization, loss of fixed income and secure employment there has been a material and spiritual destruction of the family and its dramatic impoverishment. At the same time, freeing the cargo to its earlier commitments, of which one was I investing in sport in order to be accessible to all social categories, social communities of them switched to the family.
What is the role of the family in the modern sport of young people, whether it is still crucial in the provision of basic preconditions necessary for the children interested and involved in sport to recognize its positive impact and experience it as a crucial activity for vormiranje their self-esteem, moral character, orientation and the achievement of personal affirmation?

In particular, this study sought to determine the main characteristics of socio-economic status of young athletes and their impact on participation in sport and expectations of sport.

What is the impact of the educational and professional status of their parents' attitude towards their children's sport, or the degree of financial and emotional support for their sports activities?

The question of the connection between the family and sports, the significance of family above all parents deciding for a certain sport, and in the process to continue to address the same and all in order to create favorable social climate in which its positive effects will be evaluated, recognized and encouraged.

4. CONCLUSION

From all the aforementioned, we can conclude that the role of parents is crucial and important in choosing a physical activity as well as the participation in school sports. Children in parents see the role models, and parents formed dej u personality. As our great enlightener Dositej Obradovic said: "The young soul is subject to a soft wax," and parents shape children's personality through the school sports as a means by which children are socialized, fantasize, and looks forward to mourn, they learn to respect the rules, others i life. The goals of school sports is impossible to achieve without the joint action of parents and teachers.

5. REFERENCE:

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