



DOI: 10.2478/tperj-2014-0021

## Study regarding the health coefficients for the citizens who practice free time sport activities for the increase of life quality

Liliana DACICA<sup>1</sup>

### Abstract

The paper presents the results of a determinative study regarding the health profits obtained by the citizens of Caras-Severin County involved in the practice of leisure sport through the program sport for all offered. The aspect highlighted is that sport, for all, has beneficial effects on health being contained by all the components of life quality. The aim of the paper is to prove that issuing leisure time sports programs according to the needs of the client population increases the number of practitioners of sport and implicitly it contributes to the maintenance and improvement of the health state. In order to pursue health profits, the physical and psychic well-being of the participants in the sports programs, the observation method, the tests method and the method of recording the health coefficients on a protocol basis were used. The observation was achieved on a sample of 217 subjects which were initially tested, at the beginning of the programs and at the end of the research period. The conclusion was that the main component elements of life quality which can be ameliorated by free time sport activities are: health state; the biologic potential through the evaluation of the anthropometric, functional and physiological coefficients; motor skills; psycho-social relations and social integration. The health state, the biologic potential, motor skills, socialization can be considered dependent variables and through sports activities for all and through the implemented programs a strategic project of continuous development can be elaborated. Leisure sports activities ameliorate life quality of different categories of citizens and social groups.

**Key words:** citizens, health coefficients, free time sport, sports programs, life quality.

### Rezumat

Lucrarea prezintă rezultatele unui studiu de tip constatativ privind profiturile de sănătate obținute de cetățenii din județul Caraș-Severin implicați în practicarea sportului de loisir prin programe sportive oferite. Este subliniat aspectul că sportul pentru toți are efecte benefice asupra sănătății, fiind încadrat în toate componentele calității vieții. Scopul lucrării este de a demonstra că lansarea unor programe sportive de timp liber în funcție de necesitățile populației clientelare crește numărul de practicanți ai mișcării și implicit contribuie la menținerea și îmbunătățirea stării de sănătate. Pentru a urmări profiturile de sănătate și bunăstarea fizică și psihică a participanților la programele sportive metoda observației, metoda testelor și metoda înregistrării pe bază de protocol a indicilor de sănătate au fost folosite. Observația s-a realizat pe un eșantion de 217 de subiecți care au fost testați inițial, la începutul aplicării programelor și final la sfârșitul perioadei de cercetare. Concluzia a fost că principalele elemente componente ale calității vieții care pot fi ameliorate prin activități sportive de timp liber sunt: starea de sănătate; potențialul biologic prin evaluarea indicilor; antropometrici, funcționali și fiziologici; capacitatea motrică; relațiile psihosociale și integrarea socială. Starea de sănătate, potențialul biologic, capacitatea motrică, socializarea vor fi considerate variabile dependente, iar prin activitățile sportului pentru toți și a programelor implementate putându-se elabora un proiect strategic de dezvoltare continuă. Activitățile sportive de timp liber ameliorează calitatea vieții diferitelor categorii de cetățeni și grupuri sociale.

**Cuvinte cheie:** cetățeni, indici de sănătate, sport de timp liber, programe sportive, calitatea vieții.

<sup>1</sup> Professor PhD, "Eftimie Murgu" University, Reșița, Romania, e-mail: lilianadacica@yahoo.com

## Introduction

Time is defined as being “the duration, period, measured in hours, days etc., which corresponds to the development of an action, a phenomenon, an event; the successive course of moments; interval, while, leisure.”(1). The contemporary society in connection to life quality has promoted and developed the concept of leisure time as representing the time period which is developed outside the professional activity. During leisure time, the tendency for modern man is to practice domestic activities, certain sports, to cultivate rest or satisfy other personal hobbies. Life quality “refers both to the global evaluation of life (how good or satisfactory is the life of different people, social groups, collectives), and the evaluation of different conditions or spheres of life” (2).

We must take into account the fact that the formation of modern man supposes his development from the physical, psychic, social, intellectual, ethical and aesthetic points of view, in relation to the requirements of the society and according to his aptitudes, leading to the increase of the standard of living and to social development.

“In a modern society, which tends to become more and more sedentary, sport is a main factor, of international competition, but also a social one.”(3)

A low standard of living does not bring much diversity in spending leisure time. As the recently achieved studies show, the most frequent activities for the young people under 34 years in Central and Eastern Europe are „spending time with friends”, „having a rest”, „watching TV” (4)

Referring to the manner in which the citizens of the Caras-Severin County spend their leisure time, it can be stated that alimentation, sport and tourism are synonymous with the health state, which also represents the first objective of physical education and sport, but also an essential element of the development of the life quality. “The sports consumer’s behaviour is influenced by the factors related to the environment or to the individual and which are in permanent interaction” (5).

The sport activity organized in the program sport for all has as main objective the creation of a favourable social and organizational framework supported by all the factors with attributions in sport, for the stimulation and support of practicing physical and

sport activities by a larger number of citizens having in view the maintenance of health and the increase of life quality.

“The lack of physical activity and unhealthy alimentation lead to an excessive weight, favours the appearance of obesity and some chronic diseases, which affect life quality, endanger people’s lives and create problems to the economy and the budget allotted to health.” (6)

The aim of the paper is to prove that issuing some leisure time sport programs according to the needs of the client population increases the number of practitioners of sport and implicitly it contributes to the maintenance and improvement of the health state.

The work assumption is: if for the interested groups some sport projects are made available in order to practice sport for all during their leisure time, we obtain superior health coefficients by lowering the body weight, harmonious physical development, the increase of motor skills, of the well-being, in a word we obtain bio-psycho-social effects.

The development of the leisure activity, by offering some programs of the sport for all, has generated the cultivation of the citizens’ life conception and a conduct regarding the exploitation of the free time budget in autotelic purposes (health, culture, relaxation, compensating the stressing solicitations etc.) (3). The achievement of some special programs for touristic activities combined with the practice of cultural and sport activities: winter sports, nautical sports, equestrian sports, mountain-climbing, motoring, cycling and others have increased the number of participants in the framework of sport for all activities in our county in a short period thus, satisfying the needs of the citizens in general and those of Caras-Severin County especially on age categories (4). For the identification of motivation it is advisable to use Lorge’s scale (3). Thus, a percentage of 69% of the investigated people think that together with the issuing of sport program the number of sport participants has also increased. There is a 15% increase of clients, beneficiaries, as compared to the moment of the start of the program, periodically there are promotion campaigns (7).

The development programs of free time sport on functional fields were (8):

1. A program of enlarging the offers, the achieved services and the participants’ number;

2. An exploitation program of the environment conditions and of the natural-geographical spaces in Caras-Severin County;
3. A program of (financial, material, human) resources development necessary to the activity organization and development;
4. A program to develop the communication with other sport structures and departments;
5. A program headed towards the increase of the competitions number and the participants number: children, adults, old people, disabled people etc.:

- The project Nautical Sports, aqua gym and aqua fitness;
- The project Run for Your Health - cross, jogging;
- The project Sport for Health – free access in the public sport centres;
- The project Mens sana in corpore sano – schools championships;
- The rural project Sport-football;
- The project We also Do Sport – disabled people;
- The project Sport in the neighbourhood – sport games;
- The project Sport for Health – mountain sports.

**Methods:** the method of bibliographic study, the explanation and display method, the conversation method, the method of measurements and tests for gathering data, the statistical method and the graphical method. In order to pursue the health profits and physical and psychic well-being of the participants in the sport programs, we have used the observation method, the tests method and the method of recording the health coefficients on a protocol basis. The observation was achieved on a sample of 217 subjects which were initially tested at the beginning of the programs and at the end of the research period. By doing this, the information became more suggestive and the differences are very clear. By comparing the initial data with the final ones, we have a clear picture of the studied phenomenon.

**Results**

The determinative study was achieved at the level of the population of Caras-Severin County. The unfolding of the free time programs has allowed the inventorying of the available resources for the development of sport activities at county level.

**Table I.** Centraliser of the development programs resources

Resources	2008	2009	2010	2011
Financial planned	276520	305470	310321	312432
Financial spent	231000	264000	272.136	278.354
Time spent	381 h	432h	537h	611h
Profits	5%	7%	10%	15%
Participants Number	29134	31030	32774	35.812
Material base	*	*	*	*

**Sports disciplines and motor activities:** mountain climbing, cycling, mountain motorcycling (enduro), cross, jogging, aerobic, fitness, chess, tennis, table tennis, aqua gym, football tennis, volleyball, minifootball, hiking, ski, speleology, touristic orientation, swimming, street ball, roller blades, baby gym and escalade.

Material base: swimming pool; skating-rink; 5 fitness studios; 35 school sport fields; 27 school gyms; 2 polyvalent centres; 15 stadiums; 6 synthetic fields; 5 tennis courts.

The life quality was appreciated through the prism of the following health coefficients: height (h), weight, cardiac frequency, the Body Mass Index (BMI), Quételet's nutrition index (IQ), alcohol, smoking, sleep, blood pressure and fat tissue.

For each health coefficient we have obtained an average which had a certain standard deviation and by calculating the variability coefficient we have noticed that the lot/sample has a high homogeneity for the parameters: HR (heart rate) effort, number of

sleeping hours/night, height and an average homogeneity for: BP (blood pressure), HR rest while for: weight, the body mass index, the body fat index and IQ (robustness) we have a low homogeneity but regarding the age, the group is heterogeneous.

**Table II.** Centraliser t test for weight  
BILATERAL DEPENDENT t TEST FOR WEIGHT

ASSUMPTIONS		CONSTANTS			RESULTS		
H <sub>0</sub>	H <sub>1</sub>	α	N	df	t critical	t calculated	P
m <sub>1</sub> = m <sub>2</sub>	m <sub>1</sub> ≠ m <sub>2</sub>	0.05	27	26	2.06	7.96	< 0.05

The average weight has decreased with 3.45 kg, the averages being 70.93 kg in the initial test, respectively 67.48 kg in the final test. The distribution of the results around the average is relatively homogeneous in the initial test and also relatively homogeneous in the final test. After the checking of the statistical assumption with the bilateral t test, we observed that the difference of averages is statistically significant, p < 0.05. The

difference of averages in proportion of 95% is contained in the interval of trust (-4.30; -2.60) the Cohen index (1.53) shows us a large towards a very large difference between the averages. We have observed a significant improvement of the results. The assumption of null (H<sub>0</sub>) is rejected and the alternative assumption (H<sub>1</sub>) is accepted. The graphical representation is presented below in diagram 1.

**Table III.** The centraliser of the t test statistics for the body mass index  
BILATERAL DEPENDENT t TEST FOR BODY MASS INDEX

ASSUMPTIONS		CONSTANTS			RESULTS		
H <sub>0</sub>	H <sub>1</sub>	α	N	df	t critical	t calculated	P
m <sub>1</sub> = m <sub>2</sub>	m <sub>1</sub> ≠ m <sub>2</sub>	0.05	27	26	2.06	7.69	< 0.05

We discover that the body mass index has decreased with 1.22 Kg/m<sup>2</sup> in the final test, the averages being equal to 25.12 Kg/m<sup>2</sup> in the initial test, respectively 23.90 Kg/m<sup>2</sup> in the final test. This average value characterizes the group as being normal from the point of view of the body mass. The distribution of results around the average is relatively homogeneous in the initial test and also homogeneous in the final test. By checking the statistical assumption with the bilateral t test, we

observed that the difference of the averages is statistically significant, p < 0.05. The difference between the averages in proportion of 95% is contained in the trust interval (-1.53; -0.91). The Cohen index (1.48) indicates the fact that there is a large towards very large difference between the subjects' averages in the two tests, the achieved progress being obvious. The assumption of null (H<sub>0</sub>) is rejected and the alternative assumption (H<sub>1</sub>) is accepted.

**Table IV.** The centralizer of the t test for Quetelet's index  
BILATERAL DEPENDENT t TEST FOR QUETELET'S INDEX

ASSUMPTIONS		CONSTANTS			RESULTS		
H <sub>0</sub>	H <sub>1</sub>	α	N	df	t critical	t calculated	P
m <sub>1</sub> = m <sub>2</sub>	m <sub>1</sub> ≠ m <sub>2</sub>	0.05	27	26	2.06	7.74	< 0.05

We observe that the average Quetelet index in the final test is lower with 19.85 g/cm than the one obtained in the initial test, the average values being equal to 401.26 g/cm, respectively 421.11 g/cm. This average value places our group in the normal category from the point of view of nutrition and body mass. The distribution of results around the average is relatively homogeneous in the initial testing and also homogeneous in the final testing. At the checking of the statistical assumption with the bilateral t test, we observed that the difference of

the averages is statistically significant,  $p < 0.05$ . The difference between the averages in proportion of 95% is contained in the trust interval (-24.88; -14.82). The Cohen Index (1.49) indicates the fact that there is a large towards very large difference between the subjects' averages in the two tests. We observe a significant improvement of the results. The assumption of null ( $H_0$ ) is rejected and the alternative assumption ( $H_1$ ) is accepted. The graphical representation is presented below in diagram no. 3.

**Table V.** Centraliser t test for adipose tissue  
T TEST BILATERAL DEPENDENT FOR ADIPOSE TISSUE

ASSUMPTIONS		CONSTANTS			RESULTS		
$H_0$	$H_1$	$\alpha$	N	df	t critical	t calculated	P
$m_1 = m_2$	$m_1 \neq m_2$	0.05	27	26	2.06	4.66	< 0.05

For the adipose tissue the average at the final test is lower with 1.01% than the average obtained in the initial test, the averages being equal to 27.76 %, respectively 28.78 %. The distribution of results around the average is relatively homogeneous in the initial test and also homogeneous in the final test. The checking of the statistical assumption with the bilateral t test has highlighted the fact that the difference of the averages is statistically significant,  $p < 0.05$ . The difference between the averages in proportion of 95% is contained in the trust interval (-1.44; -0.59).. The Cohen Index (1.49) indicates the fact that there is a large towards very large difference between the subjects' averages in the two tests. We observe a positive evolution of the results. The assumption of null ( $H_0$ ) is rejected and the alternative assumption ( $H_1$ ) is accepted. The diagram no. 4 supports our statements.

After the process of checking the results of the statistical assumptions with the help of the dependent bilateral t test the null assumption was rejected for 7 parameters out of 10, the calculated threshold of significance ( $p$ ) being lower than 0.05. The recorded average values for these parameters in the two tests, initial and final, significantly differ from the statistical point of view. The other three parameters for which the difference of the averages corresponding to the two tests is not statistically significant are: height, blood pressure – the diastolic component, sleep. For these parameters, except the

height, there are differences between the averages but they are not significant.

The averages obtained by the subjects in the final test show us a positive evolution as compared to the initial test. We can state that he recorded progress is due to the methods and means proposed and used in the experiment. Having in view the statistical indicators of the distribution, especially the variability coefficient, it results that the distribution of results in the initial test is homogeneous in 60% of the cases and relatively homogeneous in 40% of the cases. The results in the final test have led to a decrease of the variation coefficient as compared to the initial test, fact which means a closeness of the subjects' results, thus, an obvious improvement of the results.

### Conclusion

1. The application of the development programs of the sport for all have determined an effective and efficient exploitation of the material, financial, human, informational, free time budget) resources available at county level (9);
2. Issuing the programs sport for all have generated the cultivation of the citizens' life conception and conduct regarding the exploitation of the free time budget for autotelic purposes (health, culture, relaxation, compensating the stressing solicitations etc);

3. The practical implementation of the development programs of the activities specific for sport for all have increased the number of participants for all the age categories especially for the disciplines of sport games;

4. The achievement of some special programs for physical activities specific for the mountainous areas combined with tourism and cultural activities have involved many citizens;

5. Promotional activities and the free access of the public in the sport centres built from public funds, in the framework of a well-defined program, at the level of Caras-Severin County have attracted many participants.

6. The main component elements of life quality which can be ameliorated by free time sport activities are:

- the health state;
- the biologic potential by the evaluation of coefficients: anthropometric, functional and physiological;
- the motor skills;

- The psycho-social relations and social integration.

### References

1. Dicționar explicativ al limbii române, 2009, p. 1126;
2. Puiu A. (2003) *Management – analize și studii comparative*, Editura Independența Economică, Pitești, p. 27;
3. Colibaba E.D., Dacica L., coord. (2010) *Strategic Development Project for Specific Activities of the Sports for all in Caras-Severin County*, Journal of Social Sciences, p. 326;
4. Colibaba E.D. (2007) *Praxiologie și proiectare curriculară în educație fizică și sport*, Ed. Universitaria, Craiova, p.133;
5. Dacica L. (2012) *Contribuția activităților specifice sportului pentru toți la creșterea calității vieții cetățenilor din județul Caraș-Severin*, ed. Neutrino, Reșița, p. 96;
6. Oprișan V. (2002) *Marketing și comunicare în sport*, p. 47;
7. Hosu I. (coord.) (2002) *Youth issues and challenges in South-Eastern Europe*. Cluj-Napoca: Civitas Foundation for Civil Society, p. 82;
8. Zamfir C. (1993) *Calitatea vieții* in C. Zamfir, L. Vlăsceanu (coord.). *Dicționar de sociologie*, Ed. Babel, București, p.79;
9. *Cartea Albă privind Sportul, Comisia Comunităților Europene*, 2007.