

STUDY OF THE INFLUENCE OF EMOTIONAL INTELLIGENCE UPON SPORT PERFORMANCE OF GYMNASTS

NUȚ RAMONA ANCUȚA^{1*}

ABSTRACT. Trainers and parents have always been interested in sport achievement and children's emotional adaptation both inside and outside of the official framework provided by a sport club. However, in the last period, the researchers found out that the child's emotional life has a significant impact on the aforesaid two aspects. Thus, the Emotional Intelligence has become an important area of research in the field of human resources, management, sport and psychology. Goleman (1995) believes that development of the students' emotional aptitudes is as important as the development of their cognitive abilities, therefore the EI concept has the same importance as the well known IQ. Moreover, the latest studies show that the IE predicts in a proportion of 80% the achievements of a person during the lifetime. The topic of this research consists in the study of the importance of *emotional intelligence* for *sport performance of gymnasts*. The research starts from the fact that certain individuals have outstanding results in practice and succeed better in life than others who have a greater (cognitive) IQ.

Key words: *sport performance, emotional intelligence*

REZUMAT. *Studiu cu privire la influența inteligenței emoționale asupra performanței sportive a gimnaștilor.* Antrenorii și părinții au fost mereu interesați de succesul sportiv și de adaptarea emoțională a copiilor, atât în cadrul formal oferit de clubul sportiv cât și în afara acestuia. Însă, doar în ultimul timp, cercetătorii au realizat că viața emoțională a copilului are un impact semnificativ asupra celor două aspecte amintite. Astfel, Inteligența emoțională a devenit un câmp important de cercetări în domeniul resurselor umane, management, sport și psihologie. Goleman (1995) susține că dezvoltarea aptitudinilor emoționale ale elevilor este la fel de vitală ca dezvoltarea abilităților lor cognitive, astfel că IE este un concept la fel de important ca mult mai familiarul IQ. Mai mult, studiile recente au demonstrat faptul că IE prezice aproximativ 80% din succesul unei persoane în viață. Tema acestei cercetări o reprezintă studiul asupra importanței *inteligenței emoționale* în *performanța sportivă* a gimnastelor. Cercetarea pornește de la adevărul cuprins în afirmațiile referitoare la faptul că anumite persoane au rezultate deosebite în practică și reușesc mai bine în viață decât altele, care au un IQ (cognitiv) mai mare.

Cuvinte cheie: *performanță sportivă, inteligență emoțională*

¹ Babeș-Bolyai University, Faculty of Physical Education and Sport, Cluj-Napoca, Romania

* Corresponding Author: nutancuta@yahoo.com

Objective

The objective consists in the study of the relation between emotional intelligence and sport performance of gymnasts.

Hypothesis

Level of the emotional intelligence has influence on the sport performances of gymnasts.

Operational hypotheses

1. The high sport performance is significantly associated to a high level of emotional intelligence;
2. Gymnasts with a high level of emotional intelligence achieve a significantly increased sport performance than the ones with low level of emotional intelligence.

Subjects

We have chosen a random sample of 36 persons, professional gymnasts with ages between 7-12 years.

Variables and experimental design

This study is a non-experimental design (observational) study with 2 variables.

Variables used for evaluation by statistical analysis are independent and unmodified by the researcher, and the dependent variables are considered to be modified by the influence of the independent ones.

The independent variable is the emotional intelligence.

The dependent variable is the sport performance.

For a better evaluation, the study also uses the age variable as an independent variable with the purpose of clarifying the differences taking into consideration this factor.

Method

In what concerns the framework of this study, our intention was not to make a comprehensive and complex research, but rather a study of the two variables. Therefore, we focused on analyzing the questionnaire and observation

charts. No other studies in which these tests were implemented are taken into view and since we don't know the limits of the tests implementation, the research results are fallible.

This research precedes some elaborated studies related to emotional intelligence and sport performance and represents a starting point in this direction.

In order to achieve the proposed objective, we have used the inquiry method based on questionnaire for checking the level of emotional intelligence and the observation method to find out the sport performance of gymnasts.

Instruments – measurements

1. For measuring the level of emotional intelligence we used the BarOn and Goleman EI Test, (adapted by Roco 2001, version for children). The questionnaire includes 10 items presenting situations (scenarios) in which any child may find himself/herself at some point. Each item has 4 answer options out of which the child will choose the one that best describes his/her reaction in that particular situation. By adding the points obtained at these ten answers, we can assess the level of emotional intelligence of each child as follows: less than 100 – bellow average; 100-150 – average; more than 150 – over average; 200 – outstanding.

2. In order to measure the sport performance level we have used the observation charts in which we wrote the gymnasts evolution during contest. Data related to the sport performance are represented by the general averages of grades obtained during the contest at the four events.

Procedure

The study was conducted for a period of two months by administering to each gymnast the questionnaire for assessment of EI. To avoid the distortion of test statistical results, the possibility of some errors sources as bellow mentioned, has been excluded:

- loss of subjects – the tested group was formed by randomly chosen subjects;
- selection errors – tests have been administered once to all subjects, in order to avoid the loss of subjects due to their absence;
- the diffusion effect – testing was not previously announced, so that the answers were not prepared or debated before testing by the participants and the testing intention was not interpreted.

The testing took place in a relaxed manner. The questionnaire was administered in the gym before training, and for gymnasts aged 7-8 years the questionnaire was administered to each gymnast by an adult who read the questions and then wrote the answers received.

The study continued with assessment of the sport performance of gymnasts. It was conducted during a contest which covered all the conditions of an important contest (audience, arbiters, specific competitive environment). The performances obtained by gymnasts were assessed by a jury of arbiters, who assigned the grades in accordance with the IFG Code of Points.

Results

Data have been analyzed from the statistical perspective using the SPSS 15 Program, and the graphs have been drawn in Microsoft Excel 2010.

For data statistical analysis and for graphical representations (histograms) we have utilized the SPSS v 15 Package (SPSS Inc., Chicago, USA). Microsoft Excel (Microsoft Office Prof. 2010). The statistical significance threshold was established at $p < 0,05$ (accepted error margin $\alpha=0.05$). Data distribution was checked by using Shapiro-Wilk and Kolmogorov-Smirnov tests. All three variables have normal distribution as we can see in the bellow graphs made in the form of histogram.

Correlations inside the lot were established using the correlation coefficient r (Bravais-Pearson), in addition an appropriate signification test was administered. At the interpretation of correlation coefficients we utilized the empirical rules of Colton.

Univariate regression was used to express the sport performance (PS) in relation with emotional intelligence (IE) (PS – dependent variable, IE – independent variable).

Multivariate regression was used to determine the sport performance depending on the emotional intelligence and age (PS-dependent variable, IE, age – independent variable).

The descriptive statistics for the three variables is presented in the table bellow:

Table 1. Description of data resulted from study

Variable	Minim	Maxim	Total	Mediate	Standard error	Standard deviation	Variation
Age	7	12	318	8,83	0,24	1,42	2,02
Score IE	35	170	3480	96,67	6,87	41,25	1701,43
Score PS	16,5	41,7	1074,2	29,84	1,22	7,311	53,51
IE = emotional intelligence; PS = sport performance							

The distribution of variables is shown in the histograms bellow:

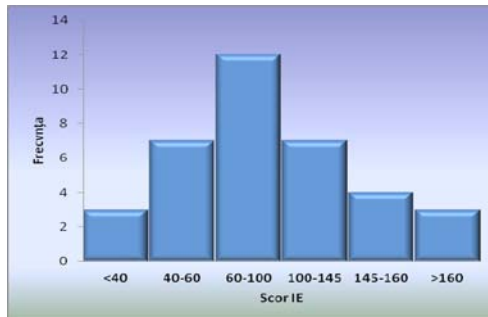


Figure 1. Histogram of emotional intelligence score

From the above histogram results that the highest frequency of the emotional intelligence scores ranged from 60 to 100 (12 gymnasts).

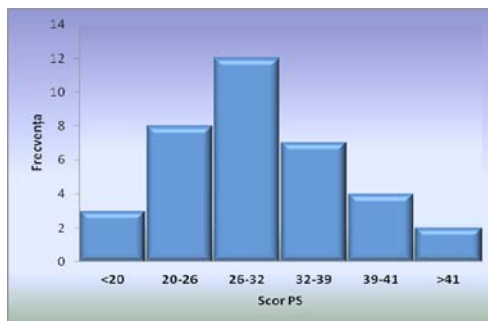


Figure 2. Histogram of sport performance score

The maximum frequency of sport performance scores ranged from 26 to 32 (12 gymnasts).

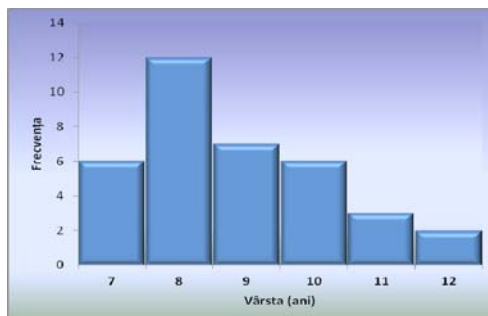


Figure 3. Histogram of Age

The analysis of frequency *sport performance* in relation with *the emotional intelligence* is described in the following tables.

Table 2. The frequencies of sport performance depending on the emotional intelligence

Level emotional intelligence		Level sports performance		
		Low average and low	High average and high	Total
Low	Frequent	16	1	17
	Expect frequent	13.1	3.9	17.0
	% after emotional intelligence level	95,2%	4,8%	100%
	% after sport performance level	57,1%	12,5%	48,8%
	% total	46,5%	2,3%	48,8%
High	Frequent	14	5	19
	Expect frequent	14.9	4.1	19.0
	% after emotional intelligence level	68,2%	31,8%	100%
	% after sport performance level	42,9%	87,5%	51,2%
	% total	34,9%	16,3%	51,2%
Total	Frequent	30	6	36
	Expect frequent	30.0	6.0	36.0
	% after emotional intelligence level	81,4%	18,6%	100%
	% after sport performance level	100%	100%	100%
	% total	81,4%	18,6%	100%

The proportion of those with a low sport performance level and low emotional intelligence level is 46.5% comparing with 34.9% low sport performance level and high emotional intelligence level. This proportion is reversed in case of high sport performance group. The highest frequency in the studied sample appears at the subjects with a low emotional intelligence level and low sport performance level, almost half.

Table 3. School performance – emotional intelligence interdependent relationship

Emotional intelligence - Sport performance	Values	gl	Significance
χ^2 (Pearson)	5.183	1	0.024
No. cases	36		

Test χ^2 test reveals sport performance as being closely related to the emotional intelligence as results from the bellow data and graph.

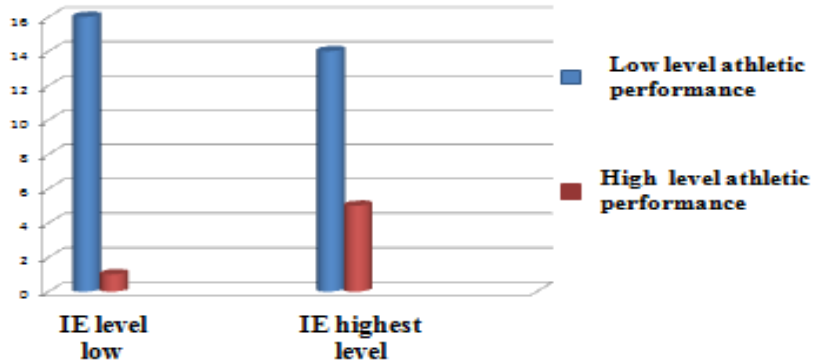


Chart 1. Sport performance – emotional intelligence

This graph presents from the quantitative perspective (number of cases) the proportion of the level of sport performance in two situations (low and high).

More cases with low sport performance level are met in case of low emotional intelligence, comparing with the cases of high emotional intelligence level where less cases of low performance are met and the other way around for a high sport performance level.

Correlations between the values of variables *emotional intelligence* and *sport performance* are presented in the table bellow.

Table 4. Bravais-Pearson Correlations related to sport performance

Correlation PS	r	p
Score IE	0,96	<0,001
Age	0,37	0,02

After calculating the correlations, we found out that a very good correlation between sport performance and emotional intelligence exists ($r=0.96$ $p<0.001$ $r^2 =0.91$) (the high level of emotional intelligence is linked to a high level of sport performance). 91% of the variation of sport performance is due to the linear relation with emotional intelligence (figure 4). There is an acceptable correlation between sport performance and age ($r=0.37$ $p=0.02$) (figure 4).

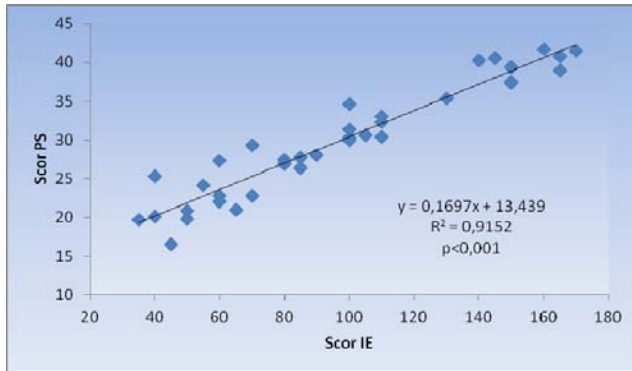


Figure 4. Graphical representation of the correlation between sport performance and emotional intelligence

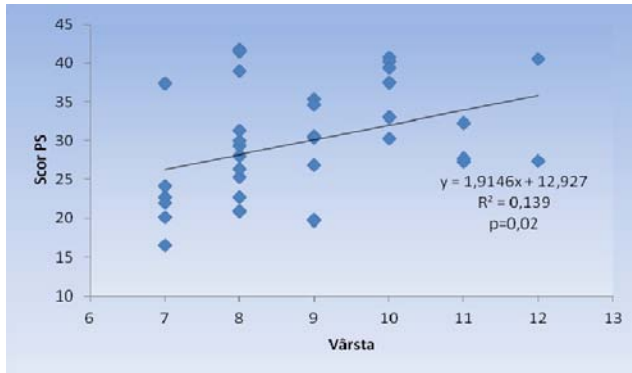


Figure 5. Graphical representation of the correlation between sport performance and age

Next, we present the steps followed in SPSS for obtaining the multidimensional regression (sport performance, emotional intelligence and age).

Table 5. Variables Entered/Removed(b)

Model	Variables Entered	Variables Removed	Method
1	Score IE, Age(a)	.	Enter

a All requested variables entered.

b Dependent variable: Score athletic performance

Table 6. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,962(a)	,925	,921	2,0594

a Predictors: (Constant), Score emotional intelligence, Age

Table 7. ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1732,904	2	866,452	204,292	,000(a)
	Residual	139,961	33	4,241		
	Total	1872,866	35			

a Predictors: (Constant), Score emotional intelligence, Age

b Dependent variable: Score athletic performance

Table 8. Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	9,207	2,195		4,194	,000
	Age	,538	,255	,105	2,106	,043
	Score IE	,164	,009	,926	18,634	,000

a Dependent variable: Score athletic performance

Equation of multivariate regression (obtained from the above table) is:

$$PS=0.164 \times \text{Score IE} + 0.538 \times \text{Age} + 9,207$$

Univariate regression for sport performance and emotional intelligence:

Table 9. Variables Entered/Removed(b)

Model	Variables Entered	Variables Removed	Method
1	Scor IE(a)	.	Enter

a All requested variables entered.

b Dependent variable: Score athletic performance

Table 10. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,957(a)	,915	,913	2,1610

a Predictors: (Constant), Score emotional intelligence

Table 11. ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1714,089	1	1714,089	367,050	,000(a)
	Residual	158,777	34	4,670		
	Total	1872,866	35			

a Predictors: (Constant), Score emotional intelligence

b Dependent variable: Score athletic performance

Table 12. Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	13,439	,929		14,470	,000
	Score IE	,170	,009	,957	19,159	,000

a. Dependent variable: Score athletic performance

Equation of univariate regression (obtained from the above table) is:

$$PS=0.17 \times \text{Score IE} + 13.439$$

Conclusions

During this study we followed the link between the emotional intelligence and sport performance of gymnasts. This study attempts to check the hypothesis according to which the level of emotional intelligence has influence on the sport performance of gymnasts.

After data analysis and interpretation made with the purpose of studying the relation between *emotional intelligence and sport performance* by using:

- the *emotional intelligence – sport performance* interdependent relationship
- the influence of *emotional intelligence* on *sport performance*, in what concern the hypotheses of this study, the following conclusions can be established.

The emotional intelligence and sport performance of the gymnasts in the studied sample are in interdependent relationship. Emotional intelligence is closely linked to the sport performance as results from the above data.

The gymnasts with a high level of emotional intelligence have a significantly greater performance than the ones with a low level of emotional intelligence.

This analysis confirms the hypothesis according to which the level of emotional intelligence has influence upon the sport performance of gymnasts.

The development of emotional intelligence in gymnasts' preparation facilitates the improvement of intellectual aptitudes and creativity which in time lead to professional achievements. By means of personal capacity of identification and management of individual emotions in relation with the (target) purposes, the gymnasts (who acquired knowledge) can reach favourable results and increase their sport performance.

Application of certain methods and changes of the conditions and relations in the school, family and group environment may lead along with other necessary factors to an increased school performance of students.

It is necessary to confer more attention to the emotional development. Our purpose as trainers is not only to provide practical knowledge for athletes but to help them to develop their survival abilities in order to successfully face life in the contemporary world.

REFERENCES

- Bar-On, R., (2000). *Emotional and social intelligence: Insights from the Emotional Quotient Inventory*. In R. Bar-On & J. D. A. Parker (eds.), *The Handbook of Emotional Intelligence* (pp. 363–388), Jossey - Bass, San Francisco.
- Bar-On, R., (1997). *Emotional Intelligence Inventory (EQ-i): Technical manual*, Multi-Health Systems, Toronto.
- Elias, Maurice J.; Tobias, Steven E.; Friedlander Brian S., (2002). *Inteligența emoțională în educația copiilor*, Ed. Curtea Veche, București.
- Gardner, H., (1993). *Multiple Intelligence*, Basic Books, New York.
- Goleman, D., (2001). *Emotional intelligence: Perspectives on a theory of performance*, In press.
- Hein, S., (1996). *EQ for Everybody: A Practical Guide to emotional Intelligence*, New York.
- Lazarus, R., (1991). *Emotion and adaptation*, Oxford University Press, New York.

- Matthews, G., (2002). *Emotional Intelligence science and myth*, The MIT Press, Cambridge, Massachusetts.
- Mayer, J. D., Salovey, P., Caruso; D. R., & Sitarenios, G., (2001). *Emotional intelligence as a Standard Intelligence, Emotion*, vol. 1.
- Mayor, J.D., Salovey, P., (1997). *Emotional Development and Emotional Intelligence*, (www.egi.org.).
- Roco, M., (2004). *Creativitate și inteligență emoțională*, Ed. Polirom, Iași.
- Salovey, P., Mayer, J.D., (1990). *Emotional Intelligence in Imagination, Cognition and Personality*, 9.
- Segal, J., (1999). *Dezvoltarea Inteligenței Emoționale*, Ed. Teora, București.
- Yun Dai, D., Sternberg, R.J., (2004). *Motivation, Emotion, and Cognition (Integrative Perspectives on Intellectual Functioning and Development)*, Lawrence Erlbaum Associates, Publishers, Mahwah, New Jersey.
- Yvonne Stys & Shelley L. Brown, (2004). *A Review of the Emotional Intelligence*, Research Branch, Canada.
- Zeider, M., Matthews, G., (2000). *Personality and Intelligence*. In R.J. Sternberg (ed.), *Handbook of Human Intelligence* (2nd edition), New York.