

Research on personality determinants of athletes' mental exhaustion during the ongoing COVID-19 pandemic

IHOR POPOVYCH¹, IHOR HALIAN², OLENA HALIAN³, PAVLO NOSOV⁴, SERHII ZINCHENKO⁵, VITALII PANOK⁶

¹Kherson State University, Kherson, UKRAINE

^{2,3}Drogobych Ivan Franko State Pedagogical University, Drogobych, UKRAINE

^{4,5}Kherson State Maritime Academy, Kherson, UKRAINE

⁶National Academy of Educational Sciences of Ukraine, Kyiv, UKRAINE

Published online: June 30, 2021

(Accepted for publication June 15, 2021)

DOI:10.7752/jpes.2021.04224

Abstract:

The research presents theoretical substantiation and correlation analysis of the factors causing emotional indifference in athletes with different levels of mastership, participating in individual and team sports (n = 180). **The purpose** is to carry out empirical research on athletes' personality traits helping overcome mental exhaustion and prevent form emotional indifference. **Research methods:** correlation analysis, valid and reliable psycho-diagnostic instruments. The research was conducted during the ongoing COVID-19 pandemic and made it possible to find out a number of regularities. **Results.** The development of mental exhaustion in athletes is determined by a different level of manifestation of personality traits and their correlation in the structure of personality: anxiety, self-esteem, the level of aspirations, locus of control and motivation for achieving success and avoiding failures. The study shows that significant differences between the level of aspirations and self-esteem in the men ($r = .38^{**}$), high anxiety in the men and women correlating with the integral index of mental exhaustion ($r = .28^{**}$; $r = .36^{**}$) mostly contribute to mental strain in many athletes. It finds out that the events of their personal lives become a factor of mental exhaustion provided that external locus of control prevails. This trait is pronounced in the athletes – Masters of team sports ($r = .34^{**}$). The research determines that a low level of mental exhaustion in the athletes engaged in team sports is a consequence of the significance of social support ($r = -.38^{**}$). High requirements for demonstrating success cause mental strain for the male athletes that increases probability of their mental exhaustion. **Conclusions.** The obtained results operationalize the process of solving the problems of professional training for athletes. Understanding the essence of mental exhaustion allows solving the problem of emotional indifference in athletes. Research on the role of emotional intelligence in the structure of athletes' mental exhaustion is considered to be very promising.

Key words: motivation, overmotivation, overtraining, emotional indifference, emotional intelligence.

Introduction

The specificity of sporting activity implies high physical and mental loads on the brink of capabilities of a human body (Bakayev et al., 2018; Cheban et al., 2020a; Strykalenko et al., 2019). It is mainly explained by orientation towards achieving maximally high results, the necessity of continuous improvement of sporting achievements, a lack of time for rehabilitation in the course of a sports season. As a rule, a durable impact of the above mentioned factors causes chronic stress, that may result in emotional indifference after recovering from it. Therefore, the research on personality resources minimizing the emergence of this emotional state is considered to be topical. Emotional indifference is a type of aggressive behavior substituting for different types of active aggression (shouting, fighting, scolding etc.). We propose considering emotional indifference in terms of a reduction in sport motivation, and also overmotivation and mental exhaustion. Each of them is a mechanism of self-preservation, defense reaction to emotional loads experienced by an athlete every day. Such a standpoint is similar to the viewpoints of many scientists on this problem (Weinberg & Gould, 2001; Raedeke & Smith, 2001).

We think that mental exhaustion is a basic component of emotional indifference. For the first time theoretical interest to athletes' mental exhaustion arose in the early 80's of the 20th century (Feigely, 1984; Fender, 1989, Maslach & Jackson, 1984; Smith, 1986). The scientists created a three-component model of mental exhaustion containing: emotional / physical exhaustion, a reduction in the feeling of achievements and underestimation of achievements (Raedeke, 1997).

Currently there is no single viewpoint on defining the term "exhaustion" in sporting activities (Cohn, 1990; Gould et al., 1996; Silva, 1990), since mental exhaustion has a number of similarities to other mental phenomena. For instance, there is a similarity between mental exhaustion and such forms of athletes' disadaptation as strain, overtraining, depression and chronic fatigue syndrome. But strain is a short-term reaction

of an organism to a stressor, and exhaustion is adaptation disorder (Bril, 1984), a long-term consequence of strain. Another similarity emphasized by the researchers is a similarity between exhaustion and depression: exhaustion as a type of depression (Iacovides et al., 2003). We consider depression to be contextually free since it concerns all spheres of life, whereas mental exhaustion is related to work, at least at the beginning (Bakker et al., 2005; Schaufeli & Greenglass, 2001).

The main difference between mental exhaustion and chronic fatigue is their physical and mental character, respectively. The sources of chronic fatigue syndrome are often difficult to identify, whereas the main cause of mental exhaustion is professional activity. The most characteristic feature of the state of mental exhaustion is a behavioral disorder and relationships with the environment. It is not characteristic of chronic fatigue syndrome (Schaufeli & Greenglass, 2001). It is difficult to differentiate between mental exhaustion and overtraining that seem to be relative for many scientists. However, it is believed that its source is an intensive training process, causing fatigue and the source of mental exhaustion is a number of social and psychological factors, for instance, a pressure from a trainer or a lack of events under control (Gould et al., 1996; Raedeke, 1997). At the same time, it is thought that overtraining can be one of the preconditions of mental exhaustion. It also concerns participation in sports competitions, where strain can cause mental and physiological fatigue. It may result in chronic fatigue, trauma, difficulties in self-control, mental exhaustion, a reduction in satisfaction from sporting activities (Gould et al., 1996). We agree with the researchers that perception and control over strain are complex processes depending on an athlete's immediate evaluation of both external factors of the environment and their own personality resources (Smith, 1986).

Recently one more source of mental exhaustion has appeared – uncertainty related to the introduction of quarantine in Ukraine since March, 12, 2020 caused by the virus SARS-CoV-2, affecting social distance and spatial self-regulation of personality (Khmiliar et al., 2020). Training processes often seem vain to athletes because it is impossible to participate in competitions. Therefore, trainers must be fully informed of an athlete's personality resources capable of developing stress resistance and preventing mental exhaustion, depression and the state of emotional indifference. We think that mental exhaustion in athletes can be determined by different manifestations of such personality traits as: self-esteem, the level of aspirations, anxiety, motivation for achieving success, locus of control, differences between self-esteem and the level of aspirations. Taking into account the above mentioned opinions, the research on these personality traits as a factor of mental exhaustion determining emotional indifference in athletes is considered to be topical and important.

Hypothesis. We assume that athletes will be able to cope with mental exhaustion due to personality traits that cause adequate attitude towards success and failure, evaluation of the control over significant situations in sporting activities and help overcome emotional loads constructively.

Purpose is to conduct empirical research on athletes' personality traits that help overcome mental exhaustion and prevent emotional indifference.

Material and methods

Methodology. Methodological foundations of the empirical research on personality resources for overcoming athletes' mental exhaustion are a complex of successive measures with the use of psycho-diagnostic instruments approved by us and other researchers in sporting events (Blynova et al., 2020; Kozina et al., 2019; Marques et al., 2011; Popovych et al., 2020c), training and learning process (Bolotin & Bakayev, 2017a; 2017b; Popovych et al., 2021b; Prontenko et al., 2017a; 2017b; Strykalenko et al., 2021), educational activity (Kobets et al., 2021; Popovych & Blynova, 2019a; 2019b; Prontenko et al., 2019), other types of human activities dealing with much physical and mental load on the brink of human capabilities (Solovey et al., 2020; Nosov et al., 2020a; 2020b; 2021; Zinchenko et al., 2020). The research is based on methodological foundations concerning the issues of adaptivity, stress resistance and personality self-regulation (Halian et al., 2020; Cheban et al., 2020b). The outlined methodology was approved by the researchers when studying the theory of functional analysis based on adaptive and compensatory capabilities of an individual (Blynova et al., 2019; Broker et al., 1989; Debois & Ledon, 2007; Gustafsson et al., 2007; Fawcett, 2007; Halian, 2019), mental and emotional exhaustion (Burke & Greenglass, 1989; Freudenberger, 1974; Raedeke, 1997; Reich, 1975), athletes' responsibility (Halian, 2019), self-efficacy of future athletes (Cheban et al., 2020c; Popovych et al., 2019b; 2020a; 2020b; 2021c), motivation for professional development of a specialist (Halian, 2018; Popovych et al., 2019a), a resource approach to stress regulation (Blynova & Kruglov, 2019; Bodrov, 2000; Kyslenko et al., 2017; Kuzikova et al., 2020a; 2020b; Popovych et al., 2021a; 2021d), and also when evaluating mental states of expectation in different activities (Popovych et al., 2019c). All the above mentioned experimental and empirical studies contained the element of adaptation, exhaustion, emotions, motivation, regulation and stress resistance.

The topical problem of the study was solved with the method of theoretical analysis and correlation research. We selected a relevant complex of methods according to the research purpose and subject. The methods allowed determining the characteristics (variables) forming the structure of the phenomena under study. Correlation analysis made it possible to establish relationships between the variables of the research subject. Such logics of conducting empirical research was confirmed statistically. It proves that the development of mental exhaustion in athletes correlates with their personality traits.

Participants. 180 athletes of individual and team sports, and also of different levels of mastership (qualification) took part in the research. The sample consisted of the athletes whose level of competition activeness considerably fell during the ongoing COVID-19 pandemic caused by the virus SARS-CoV-2 (sporting events were officially cancelled in Ukraine because of quarantine restrictions since March, 12, 2020). Age limits of the research participants were 14 to 29 years. The average age of the research participants was 21.5 years. Females constituted 45.0% (n = 81) and males – 55.0% (n = 99). They represented team sports 40.56% (n = 73) and individual sports 59.44 (n = 107). The experience in training and competition activities ranged from 8 to 23 years.

Organization of Research. Psycho-diagnostic instruments were used to measure the research parameters in June – December, 2020. Mental exhaustion in the athletes was diagnosed by means of the questionnaire “Athlete Burnout Questionnaire” (Raedeke & Smith, 2001) adapted by E. Grin (2007). The diagnostic construct of the method is represented by three scales of mental exhaustion: a reduction in the feeling of achievement, emotional/physical fatigue, devaluation of achievements. In order to diagnose the level of anxiety in the athletes, we used the method “The Scale of Personality Anxiety” C. Spielberger (1983), adapted by Yu. Hanin (2001). The diagnostic construct of the method is anxiety as a personality trait. The athletes’ locus of control in different life activities was examined with the test-questionnaire “The Level of Subjective Control” E. Bazhin, E. Golyukin and A. Etkind (Bazhin et al., 1984). The main diagnostic construct of the method is the following scales: General internality (GI), General externality (GE), Internality in the area of achievements (IA), Externality in the area of achievement (EA), Internality in the area of failures (IF), Externality in the area of failures (EF). The athletes’ self-esteem was determined with the method of Dembo-Rubinstein modified by A. M. Prikhozhan (2007). The diagnostic construct of the method is the scales that allow measuring self-esteem, the level of aspirations and the value of differences between them by the following indexes: health, temper, respect among peers, appearance, self-confidence, hand skills and intelligence (abilities). Motivation for achievements as aspiration for success or avoiding failures was considered as a personal regulator of mental exhaustion. It was diagnosed with the methods of T. Elers “Motivation for Achieving Success and Avoiding Failures” (Golovey & Rybalko, 2002). The diagnostic construct of the method is intensity of aspiration for success or avoiding failures.

Procedures. The research was carried out by the scheme of an ascertaining experiment. At the ascertaining stage we examined the symptoms of mental exhaustion in the athletes of different sexes engaged in team and individual sports. We also investigated the athletes’ personality traits that can be sources of mental exhaustion. Diagnostic cross sections were performed with the following methods: “The Scale of Personality Anxiety”, “The Test-Questionnaire of the Level of Subjective Control”, “Dembo-Rubinstein Method for Measuring Self-Esteem”, T. Euler’s method “Motivation for Achieving Success and Avoiding Failures”. Mental exhaustion in the athletes was diagnosed with “Athlete Burnout Questionnaire” (Raedeke & Smith, 2001).

The respondents’ voluntary participation in the experiment and confidentiality of the results ensured sincerity and objectivity of the responses. The obtained results were interpreted individually by each method, and then a causal relation between the diagnosed mental phenomena was identified. The depth of correlation between individual characteristics of the phenomenon under study was determined with correlation analysis.

Statistical Analysis. Statistical processing of the empirical data and graphical representation of the results was performed by means of the statistical software “SPSS” v. 26.0 and “MS Excel”. Pearson’s correlation coefficient and Student’s t-test were used.

Results

The obtained results prove mental exhaustion in a large number of the athletes. The results of the descriptive statistics by the indexes and levels of mental exhaustion are presented in Tabl. 1.

Table 1. The initial data on the indexes of the level of manifesting mental exhaustion in the athletes

Scale	Reduction in the feeling of achievement			Emotional/physical exhaustion			Devaluation of achievements		
	Level of manifestation			Level of manifestation			Level of manifestation		
	H	M	L	H	M	L	H	M	L
M*	20.85	14.5	5.45	20.3	10.45	3.9	20.2	10.65	3.95
Me	20.5	14.5	5.0	20.0	10.0	4.0	20.0	10.5	4.0
Mo	20.0	15.0	5.0	20.0	10.0	4.0	20.0	10.0	4.0
SD	1.927	1.357	2.438	2.430	1.849	1.334	2.142	1.663	1.317
A	0.481	.211	.358	.1	.088	-.39	-.146	.242	-.514
E	-.329	-.383	.188	-.556	-.521	-.215	-.608	-.529	.028
Min	18.0	12.0	1.0	16.0	7.0	1.0	16.0	8.0	1.0
Max	25.0	17.0	11.0	25.0	14.0	6.0	24.0	14.0	6.0
Standard values	18-25	12-17	0-11	15-25	7-14	0-6	15-25	7-14	0-6

Note: M* – arithmetic mean; Me – median; Mo – mode; SD – standard deviation; A – asymmetry; E – excess; Min – minimum values; Max – maximum values; levels: H – high; M – medium; L – low.

The obtained results correspond to those obtained by R. Smith (1986). Frequency analysis of the manifestation of mental exhaustion proves a high and a medium level of it in many athletes. Contradictions in the opinions about the dependence of mental exhaustion on the athletes' sex contributed to examining it thoroughly (Tabl. 2).

Table 2. The indexes of the level of manifesting mental exhaustion in the athletes

Indexes of mental exhaustion	Indexes of mental exhaustion (%)				Student's t-test	
	Level	Total sample	Men (n = 99)	Women (n = 81)	t	P
Reduction in the feeling of achievement	H	13.3	14.1	8.6	1.979	P<.05
	M	60.0	63.6	56.8		
	L	26.7	22.3	34.6		
Emotional / physical exhaustion	H	13.9	16.2	9.9	2.596	P<.05
	M	71.7	72.7	75.3		
	L	14.4	11.1	14.8		
Devaluation of achievements	H	14.4	13.1	11.1	1.980	P<.05
	M	66.2	70.7	64.2		
	L	19.4	16.2	24.7		
Integral index of mental exhaustion	H	13.9	17.2	9.9	1.991	P<.05
	M	67.2	68.7	67.9		
	L	18.9	14.1	22.2		

Note: H – high; M – medium; L – low.

The athletes with a high level of manifesting the components of mental exhaustion (from 13.3 to 14.4%) prove that mental exhaustion is an important regulator of athletes' activities. Such symptoms of mental exhaustion as "reduction in the feeling of achievement" and "emotional / physical exhaustion" are more characteristic of the male athletes than of the female athletes. We established that there are more men with a high level of mental exhaustion than women.

The differences in the manifestation of mental exhaustion in the athletes engaged in team and individual sports are given in Tabl. 3.

Table 3. The indexes of the level of manifesting mental exhaustion in the athletes in individual and team sports (n = 180)

Symptoms of mental exhaustion	Level	Frequency of cases (%)		Student's t-test	
		Team sport (n = 73)	Individual sport (n = 107)	t	P
Reduction in the feeling of achievement (RFA)	H	17.8	13.1	2.621	P<.01
	M	21.9	68.2		
	L	60.3	18.7		
Emotional / physical exhaustion (EPHe)	H	9.6	17.8	1.977	P<.05
	M	72.6	47.7		
	L	17.8	34.8		
Devaluation of achievements (DA)	H	13.7	14.0		
	M	68.5	69.2		
	L	17.8	16.8		
Integral index of mental exhaustion (IIME)	H	12.4	19.6		
	M	73.9	63.6		
	L	13.7	16.8		

Note: H – high; M – medium; L – low.

A high level of the index "emotional / physical exhaustion" (P<.05) and a medium level of the index "reduction in the feeling of achievement" (P<.01) were diagnosed in the athletes engaged in individual sports. The athletes engaged in team sports are characterized by a low level of the index "reduction in the feeling of achievement" (P<.05). Such distribution of the empirical data is a consequence of the impact of the factor of social support on the development of mental exhaustion in the group of athletes engaged in individual and team sports.

The correlation of the indexes of mental exhaustion in the athletes of team and individual sports of different qualifications (ranked athletes and athletes – Masters of Sport) is represented in Fig. I.

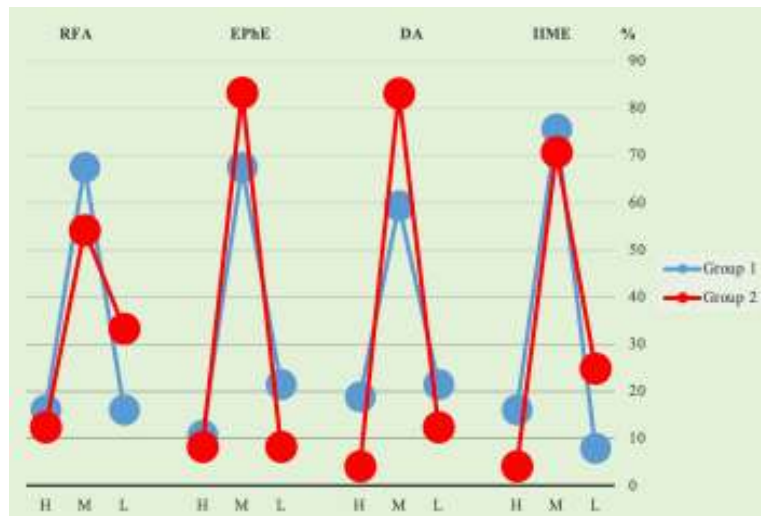


Figure I. The correlation of the indexes of mental exhaustion in the athletes of team sports

Note: Group 1 – ranked athletes; Group 2 – athletes – Masters of Sport; RFA – the scale “Reduction in the feeling of achievement”; EPhE – the scale “Emotional / Physical exhaustion; DA – the scale “Devaluation of achievements”; IIME – the scale “Integral index of mental exhaustion; levels: H – high; M – medium; L – low.

We maintain that in Group 1 (ranked athletes) including the athletes of team sports, there are more respondents with reliably high and medium values of the index “devaluation of achievements” ($P < .05$). All the other differences are statistically unreliable. Among the respondents in Group 2 (the athletes – Masters of sports) there are more respondents with reliably low values of the integral index of mental exhaustion ($P < .05$).

Among the athletes of a higher qualification (Master of Sport, Master of Sport of the International Class) engaged in individual sports there are statistically reliable differences in the index “emotional / physical exhaustion” (72.3% of the cases against 48.0% of the cases when $P < .05$). At the same time there are less athletes with a high level of manifestation of the indexes “reduction in the feeling of achievement” ($P < .05$) and “emotional / physical exhaustion” ($P < .05$) that is shown in Fig. II.

We think that a low level of mental exhaustion in the athletes of a high qualification (Group 2) is related to their high psychological stability. Less stable athletes (Group 1) do not achieve such a high level. Early involvement of ranked athletes in professionalization with a permanent requirement for showing high results increases their mental strain. Independence, risk inclination and purposefulness are characteristic of the young athletes (Group 1). It proves the significance of control and dosage of mental loads for young athletes. The obtained data correspond to the statement of T. Timakova (1993) that acquiring experience in competitions contributes to the development of athletes’ traits reducing mental loads due to an increase in rationality of their behavior (self-control, practicality and closed mind) (Timakova, 1993).

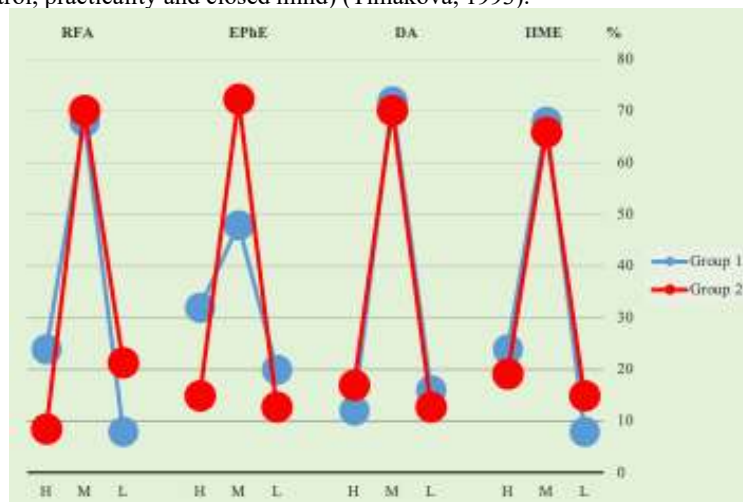


Figure II. The correlation of the indexes of mental exhaustion in the athletes of individual sports

Note: Group 1 – ranked athletes; Group 2 – athletes – Masters of Sport; RFA – the scale “Reduction in the feeling of achievement”; EPhE – the scale “Emotional / physical exhaustion; DA – the scale “Devaluation of achievements”; IIME – the scale “Integral index of mental exhaustion; levels: H – high; M – medium; L – low.

Mental exhaustion in athletes can be caused by some personality traits. They are anxiety, motivation for achieving success, locus of control, self-esteem, the level of aspirations, differences between self-esteem and the

level of aspirations. Tabl. 4 presents the mean values and general indexes of the frequency of manifestation of personality traits in the athletes.

Table 4. The frequency of manifestation of personality traits in the athletes (n = 180)

Personality traits	Mean values of the indexes		The level of manifestation of the indexes (%)			
	M*	SD	VH	H	M	L
Anxiety	39.1	±6.7	1.1	23.9	70.0	5.0
Self-esteem	72.4	±16.4	50.5	26.2	20.0	3.3
Level of aspirations	90.9	±10.7	0.0	71.1	17.8	11.1
Difference between self-esteem and the level of aspirations	19.8	±14.3	21.1	68.9	6.1	3.9
Motivation for achieving success	18.9	±3.2	2.8	70.6	16.7	8.9
Motivation for avoiding failures	14.2	±4.4	1.1	23.9	70.0	5.0

Note: M* – arithmetic mean; SD – square deviation; VH – very high; H – high; M – medium; L – low.

Moderate anxiety, prevalent orientation towards achieving success, high self-esteem, a very high level of aspirations, a big difference between self-esteem and the level of aspirations are characteristic of most athletes. At the same time, we maintain that an unresolved conflict (in 68.9% of the respondents) between excessively high (50.5%) and low (3.3%) self-esteem and aspirations (11.1%) can be a risk factor for mental exhaustion in athletes. The indexes of internality reflect the level of subjective control over any significant positive and negative situations and events. The frequency of manifestation of the indexes of general internality, internality in the area of achievements and failures is given in Fig. 3.



Figure III. The correlation of the frequency of manifestation of pronounced and moderate internality in the athletes (n = 180)

Note: EF – Externality in area of failures; IF – Internality in the area of failures; EA – Externality in the area of achievements; IA – Internality in the area of achievements; GE – General externality; GI – General internality.

The indexes of frequency characteristics of the results of the respondents' locus of control are given in Tabl. 5.

Table 5. The initial data on the indexes of the level of subjective control in the athletes (n = 180)

Initial statistics	Indexes of the level of subjective control					
	General internality		Internality in the area of achievements		Internality in the area of failures	
	PI	MI	PI	MI	PI	MI
M	66.05	28.85	23.9	8.1	23.85	8.05
Me	66.0	29.5	24.0	8.0	23.5	8.0
Mo	62.00	25.00	23.00	8.0	22.00	8.0
SD	9.047	8.171	4.712	2.360	4.923	2.874
A	.1	.012	-.061	.295	.591	.255
E	-.654	-.968	-.626	-.238	.59	1.138
Min	49.0	15.0	15.0	4.0	16.0	2.0
Max	83.0	43.0	32.0	13.0	36.0	15.0
Standard values	58-132	11-57	16-36	-1-10	17-36	2-16

Note: PI – Pronounced internality; MI – Moderate internality; M – arithmetic mean; Me – median; Mo – mode; SD – standard deviation; A – asymmetry; E – excess; Min – minimum values; Max – maximum values.

In order to verify our assumption about the dependence of mental exhaustion on the athletes' personality traits we performed correlation analysis of the indexes by these variables (Tabl. 6).

Table 6. The coefficients of correlation between the indexes of mental exhaustion and the athletes' personality traits

Personality traits	Indexes of mental exhaustion							
	Reduction in the feeling achievement		of Emotional exhaustion		/physical Devaluation achievements		of Integral index of mental exhaustion	
	M	W	M	W	M	W	M	W
Anxiety	.11	.23*	.27**	.41**	.23*	.09	.28**	.36**
Motivation for achieving success	-.28**	-.20	-.05	.06	-.13	-.16	-.21*	-.16
Motivation for avoiding failures	.11	.13	-.18	.13	.08	.02	-.01	.12
Self-esteem	-.41**	-.36**	-.04	-.12	-.11	.01	-.22*	-.16
Level of aspirations	-.13	-.24*	-.13	-.06	.04	.08	-.08	-.13
Differences between self-esteem and the level of aspirations	.38**	.10	-.04	-.09	.15	.03	-.16	.11
General internality	-.16	-.27*	-.25*	-.11	-.08	-.05	-.20*	-.16
Internality in the area of failures	.12	.07	-.09	.08	.04	-.07	.03	.03
Internality in the area of achievements	-.22*	-.15	.28**	-.18	-.05	.19	-.21*	-.26*

Note: M – men; W – women; * – significance is reliable at the level $p < .05$; ** – significance is reliable at the level $p < .01$.

The main regulators of mental exhaustion in the athletes are motivation for avoiding failures, self-esteem and the difference between self-esteem and the level of aspirations. We prove that the higher the athletes' self-esteem, the lower their motivation for avoiding failures and the less difference between their self-esteem and the level of aspirations are, the less possibility of their mental exhaustion is. High anxiety and a big difference between their self-esteem and the level of aspirations might be the causes for mental exhaustion in the sample of the male athletes. In the female sample, the athletes with high anxiety, inadequate self-esteem and the level of aspirations, with general externality and externality in the area of achievements are more inclined to mental exhaustion.

The results given below prove that manifestation of mental exhaustion depends on the sports the athletes are engaged in (team or individual) (Tabl. 7).

Table 7. The coefficients of correlation between the indexes of mental exhaustion and personality traits in the athletes of individual and team sports

Personality traits	Indexes of mental exhaustion							
	Reduction in the feeling achievement		of Emotional exhaustion		/physical Devaluation achievements		of Integral index of mental exhaustion	
	Sports		Sports		Sports		Sports	
	IS	TS	IS	TS	IS	TS	IS	TS
Anxiety	.27**	.17	.35**	.19	.07	.39**	.26**	.41**
Motivation for achieving success	-.29**	-.21	.07	-.13	-.13	-.16	-.10	-.38**
Motivation for avoiding failures	.03	.16	.28**	-.16	.045	.07	.11	.07
Self-esteem	-.44**	-.37**	-.06	-.03	-.16	-.05	-.27**	-.11
Level of aspirations	-.32**	-.11	-.17	-.08	-.17	.04	.29**	-.06
Difference between self-esteem and the level of aspirations	.33**	.17	-.04	-.04	.06	.03	.17	.09
General internality	-.06	.08	-.03	-.05	.05	.06	-.03	.03
Internality in the area of failures	.07	.34**	.02	-.02	.09	.06	.07	.14
Internality in the area of achievements	.03	.06	-.06	-.11	.11	.02	.04	.03

Note: IS – individual sports; TS – team sports; * – significance is reliable at the level $p < .05$; ** – significance is reliable at the level $p < .01$.

High personality anxiety, high motivation for avoiding failures, unrealistic self-esteem and the level of aspirations, a big difference between self-esteem and the level of aspirations contribute to the development of mental exhaustion in the group of athletes engaged in individual sports ($p < .01$). The athletes engaged in team sports have less reliable correlations between the indexes of mental exhaustion and personality traits. According to the obtained results, high anxiety, low self-esteem, motivation for achieving success, high internality in the area of failures ($p < .01$) contribute to mental exhaustion.

Discussion

Theoretical analysis of the studies (Debois & Ledon, 2007; Gustafsson, 2007; Fawcett, 2007) on the issues of mental exhaustion in athletes proves their probing character. However, without a practical solution to this problem, it is impossible to solve such an important practical problem as preventing mental exhaustion and assisting athletes to overcome it. It concerns athletes of different qualifications and efficiency. Other studies (Timakova, 1993; Pisarek & Debek, 2004) show that mental exhaustion is more characteristic of amateur athletes in comparison with athletes of high qualifications. This statement is appropriate since athletes of high qualifications undergo a tough selection process, and, probably, only those athletes are chosen who are highly resistant to mental overstrain. Additionally, they accumulate behavioral experience and strategies allowing them to avoid mental overstrain.

The level of mental exhaustion also depends on athletes' motivation. It corresponds to the research of T. Raedeke (1997) who discovered that mental exhaustion is experienced by those athletes who go in for sports out of obligation and not for pleasure. In addition, a reduction in the feeling of control over significant life activities and situations in athletes – Masters of Sport contributes to mental exhaustion. It can be caused by the specificity of their way of life. Experts say that sporting activities for highly qualified athletes turn from a type of activities into a special life style related to certain restrictions necessary for keeping fit (Spector, 1992). It results in the feeling of impossibility to go off those life rails. It increases when sports become a source of maintaining families' well-being that encourages to develop a sporting career, in spite of decreasing motivation. Theorists in mental exhaustion consider a lack of control over a life situation to be one of the causes for its emergence.

It is known that athletes engaged in team sports have less exhaustion by the criterion "reduction in the feeling of achievement" and "emotional / physical exhaustion". It is a result of considerable social support from teammates that allows them to divide responsibility for the results of training and competition activities. The development of the index "reduction in the feeling of achievement" in the athletes, engaged in individual sports, is a consequence of relying on their own abilities and personal responsibility for failures in sport. It also explains a high value of the index "emotional / physical exhaustion" in most athletes engaged in individual sports. However, external events are one of the factors of mental exhaustion. A more important factor contributing to an increase or reduction in the development of mental exhaustion is athletes' personality traits (Shalar et al., 2019).

The indexes of mental exhaustion in the athletes of high qualification have a significant correlation not only with the indexes of self-esteem, but also with the indexes of anxiety, motivation for achievements and locus of control. The obtained results confirm the research results of T. Raedeke and A. Smith (2001) about a positive correlation between mental exhaustion and stress, anxiety and demotivation.

It proves that the athletes involve their personality resources to overcome mental exhaustion. At the same time these correlations reflect the specificity of the most probable sources of mental strain in highly qualified athletes determining the development of mental exhaustion. According to the studies of B. Karolchak-Bernatskaya (1983) athletes of high qualification are characterized by an increase in anxiety, caused by the necessity to maintain a high level of achievements under conditions of severe competition. Motivation for achievements in highly qualified athletes can determine rather strained psychological background of sporting activities (Beckford et al., 2016), since motivation for achievements is more significant for them in comparison with other components of sport motivation (Weinberg & Gould, 2001).

In our opinion, the differences between male and female athletes should be considered in the light of gender stereotypes. Obviously, men manage their emotions better and are more purposeful whereas women are more emotional and have less control over their emotions.

Correlation analysis of the relationship between mental exhaustion and the athletes' personality traits proves the necessity to consider personality traits to be a resource for overcoming mental exhaustion or a risk factor for its development. Moderate anxiety, high self-esteem, the dominance of aspiration for achieving success over aspiration for avoiding failures indicate to the availability of sufficient resources to overcome mental exhaustion in the research participants. At the same time the athletes engaged in team sports have less statistically significant correlations between the indexes of mental exhaustion and personality traits.

Conclusions

1. Everyday activities of athletes with different qualifications are accompanied by physical and emotional loads causing the development of mental exhaustion. We established that internal factors of mental exhaustion in the athletes are their personality traits: anxiety, self-esteem, the level of aspirations, locus of control, motivation for achievements and avoiding failures.

2. A rather high index of the difference between the level of aspirations and self-esteem should be considered as a real source of mental strain for many athletes. We determined that significant differences between the level of aspirations and self-esteem in the male athletes ($r = .38^{**}$), high anxiety in the male and female athletes, correlating with the integral index of mental exhaustion ($r = .28^{**}$; $r = .36^{**}$) mostly contribute to the emergence of mental strain in many athletes.

3. We found out that the events of personal lives become a factor of mental exhaustion provided that external locus of control prevails. This feature is pronounced in the athletes engaged in team sports ($r = .34^{**}$). We determined that a low level of emotional exhaustion in the athletes engaged in team sports is a consequence of the significance of social support ($r = -.38^{**}$).

4. A low level of mental exhaustion was characteristic of most research participants engaged in team sports in comparison with the athletes in individual sports. It is a consequence of the significance of social support for them. High requirements for demonstration of support cause mental strain for male athletes increasing probability of mental exhaustion.

5. We maintain that the obtained results of the research on mental exhaustion as a factor of the emergence of emotional indifference in athletes with different qualifications engaged in different sports operationalize the process of solving problems of athletes' professional training. It is obvious that the use of the results obtained during the ongoing COVID-19 pandemic will contribute to efficient organization of the training process for athletes preparing for competitions.

6. Research on the role of emotional intelligence in the structure of athletes' mental exhaustion is considered to be promising from a scientific standpoint.

Conflict of Interest. The authors declare that there is no conflict of interest.

References:

- Bakayev, V. V., Bolotin, A. E., & You, C. (2018). Reaction of vegetative nervous system to loads in female long-distance runners with different fitness level. *Journal of Human Sport and Exercise*, 13(2), 245-252. DOI: 10.14198/jhse.2018.13.Proc2.09
- Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2005). The crossover of burnout and work engagement among working couples. *Human Relations*, 58(5), 661-689.
- Bazhin, E. F., Golykin, E. A., & Etkind, A. M. (1984). A method for studying the level of subjective control. *Psychological Journal*, 5(3), 152-162.
- Beckford, T. S., Poudevigne, M., Irving, R. R., & Golden, K. D. (2016). Mental Toughness and Coping Skills in Male Sprinters. *Journal of Human Sport and Exercise*, 11(3), 338-347. DOI: 10.14198/jhse.2016.113.01
- Blynova, O., Kruglov, K., Semenov, O., Los, O., & Popovych, I. (2020). Psychological safety of the learning environment in sports school as a factor of achievement motivation development in young athletes. *Journal of Physical Education and Sport*, 20(1), 14-23. DOI: 10.7752/jpes.2020.01002
- Blynova, O., & Kruglov, K. (2019). The value of social capital for the psychological well-being of employees. *Insight: the psychological dimensions of society*, 1, 72-78. DOI: 10.32999/2663-970X/2019-1-11
- Blynova, O. Ye., Popovych, I. S., Bokshan, H. I., Tsilmak, O. M., & Zavatska, N. Ye. (2019). Social and Psychological Factors of Migration Readiness of Ukrainian Students. *Revista ESPACIOS*, 40(36), 4.
- Bodrov, V. (2000). The role of personality traits in the development of psychological stress. In: Kulikov, L. (Ed.). *Mental states: an anthology*, 135-157.
- Bolotin, A., & Bakayev, V. (2017a). Pedagogical conditions necessary for effective speed-strength training of young football players (15-17 years old). *Journal of Human Sport and Exercise*, 12(2), 405-413. DOI: 10.14198/jhse.2017.122.17
- Bolotin, A., & Bakayev, V. (2017b). Pedagogical conditions required to improve the speed-strength training of young football players. *Journal of Physical Education and Sport*, 17(2), 95, 638-642. DOI: 10.7752/jpes.2017.02095
- Brill, P. L. (1984). The need for an operational definition of burnout. *Family & Community Health*, 6, 12-24.
- Broker, W., Brenner, H. D., & Wurgler, S. (1989). Vulnerability-linked deficiencies, psychopathology and coping behavior of schizophrenics and their relatives. *British Journal Psychiatry*, 155(5), 128-135.
- Burke, R. J., & Greenglass E. R. (1989). Sex differences in psychological burnout in teachers. *Psychological Reports*, 65(1), 55-63. DOI: 10.2466/pr0.1989.65.1.55
- Cheban, Yu. V., Chebykin O. Ya., Plokhikh V. V., & Massanov A. V. (2020a). Emotional factor of competitive self-mobilization of professional rowers. *Insight: the psychological dimensions of society*, 3, 28-43. DOI: 10.32999/2663-970X/2020-3-2
- Cheban, Yu., Chebykin, O., Plokhikh, V., & Massanov, A. (2020b). Mental resources for the self-mobilization of rowing athletes. *Journal of Physical Education and Sport*, 20(3), 1580-1589. DOI: 10.7752/jpes.2020.03216
- Cheban, Yu., Chebykin, O., Plokhikh, V., & Massanov, A. (2020c). Emotional and volitional potential of self-mobilization in the organization of time perspective activity of highly qualified rowing athletes. *Journal of Physical Education and Sport*, 20(Supplement issue 6), 3128-3137. DOI: 10.7752/jpes.2020.s6424

- Cohn, P. J. (1990). An exploratory study on sources of stress and athlete burnout in youth golf. *Sport Psychologist*, 4(2), 95-106.
- Debois, N. & Ledon A. (2007). Coping with facilitative and restricting factors during long successful career in Top sport. *12th European Congress of Sport Psychology. Sport and Exercise psychology: Bridges between disciplines and cultures*. Halkidiki, Greece, 254.
- Fawcett, T. (2007). An idiographic approach to understanding “severe” athlete burnout – an individual case study of an elite boxer. *12th European Congress of Sport Psychology. Sport and Exercise psychology: Bridges between disciplines and cultures*. Halkidiki, Greece, 255.
- Feigely, D. A. (1984). Psychological burnout in high-level athletes. *The Physician and Sports medicine*, 12, 109-119.
- Fender, L. K. (1989). Athlete burnout: potential for research and intervention strategies. *Sport Psychologist*, 3(1), 63-71.
- Freudenberger H. J. (1974). Staff Burnout. *Journal of Social Issues*, 30, 159-165. DOI: 10.1111/j.1540-4560.1974.tb00706.x
- Golovey, L. A., & Rybalko, E. F. (2002). Workshop on developmental psychology. St. Petersburg: Rech.
- Gould, D., Udry, E., Tuffey, S., & Loehr, J. (1996). Burnout in competitive junior tennis players: I. A quantitative psychological assessment. *The Sport Psychologist*, 10, 322-340.
- Grin, E. I. (2007). Adaptation of Athlete Burnout Questionnaire and Coping Function Questionnaire: Study Guide. Krasnodar: KGUFKST.
- Gustafsson, H. (2007). Burnout in Competitive and Elite Athletes. Unpublished Doctoral Dissertation, Örebro: Örebro University.
- Halian, A., Halian, I., Burlakova, I., Shevchenko, R., Lappo, V., Zhigarenko, I., & Popovych, I. (2020). Emotional Intelligence in the Structure of Adaptation Process of Future Healthcare Professionals. *Revista Inclusiones*, 7(3), 447-460.
- Halian, I. M. (2018). Motivational and value determinants of professional development of future physical education teachers. *Science and education*, 3, 36-42. DOI: 10.24195/2414-4665-2018-3-5
- Halian, I. M. (2019). Personal determinants of responsibility of future educators. *Insight: the psychological dimensions of society*, 1, 15-21. DOI: 10.32999/2663-970X/2019-1-2
- Hanin, Yu. L. (2001). Stress and anxiety in sports, international journal of scientific articles. Moscow: Physical Education and Sport.
- Iacovides, A., Fountoulakis, K. N., Kaprinis, St., & Kaprinis, G. (2003). The relationship between job stress, burnout and clinical depression. *Journal of Affective Disorder*, 75, 209-221.
- Karolchak-Bernatskaya, B. (1983). Unconventional interpretation of anxiety and stress situations. *Stress and Anxiety in Sports*, 12, 42-56.
- Khmiliar, O., Popovych, I., Hrys, A., Pavliuk, M., Zavatska, N., Lytvynenko, O., & Blynova, O. (2020). Spatial Regulation of Personality Behavior in the Conditions of Progression of the COVID-19 Pandemic. *Revista Inclusiones*, 7(Especial), 289-306.
- Kobets, V., Liubchenko, V., Popovych, I., & Koval, S. (2021). Institutional Aspects of Integrated Quality Assurance of Study Programs at HEI Using ICT. *CEUR Workshop Proceedings*, 2833, 83-92.
- Kozina, Z., Cretu, M., Safronov, D., Gryn, I., Shkrebtiy, Yu., Shepelenko, T., & Tanko, A. (2019). Dynamics of psychophysiological functions and indicators of physical and technical readiness in young football players aged 12-13 and 15-16 years during a 3-month training process. *Physiotherapy Quarterly*, 27(3), 20-27. DOI: 10.5114/pq.2019.86464
- Kuzikova, S., Kuzikov, B., Shcherbak, T., Blynova, O., Vavryniv, O., Khmiliar, O., & Popovych, I. (2020a). Research of predisposition to risk of participants of extreme sports. *Revista Inclusiones*, 7(Especial), 43-58.
- Kuzikova, S., Shcherbak, T., Popovych, I., Blynova, O., & Skyba, O. (2020b). Psychological features of subjective vitality and hardiness of representatives of parachute sports. *International Journal of Applied Exercise Physiology*, 9(9), 172-177.
- Kyslenko, D., Prontenko, K., Bondarenko, V., Iukhno, Iu., Radzievskii, R., Prontenko, V., & Kizyun, O. (2017). Development of the physical qualities of future specialists in protective activities due to the use of the kettlebell sport during studies. *Journal of Physical Education and Sport*, 17(2), 789-794. DOI: 10.7752/jpes.2017.02120
- Maslach, C., & Jackson, S. E. (1984). Patterns of burnout among a national sample of public contact workers. *Journal of Health and Human Resources Administration*, 7, 189-212.
- Marques, M. C., Pereira, F., Marinho, D. A., Reis, M., Cretu, M., & Tillaar, R. V. (2011). A comparison of ball velocity in different kicking positions with dominant and non-dominant leg in junior soccer players. *Journal of Physical Education and Sport*, 11(2), 159-166.
- Nosov, P., Ben, A., Zinchenko, S., Popovych, I., Mateichuk, V., & Nosova, H. (2020a). Formal approaches to identify cadet fatigue factors by means of marine navigation simulators. *CEUR Workshop Proceedings*, 2732, 823-838.

- Nosov, P., Zinchenko, S., Ben, A., Prokopchuk, Y., Mamenko, P., Popovych, I., Moiseienko, V., Kruglyj, D. (2021). Navigation safety control system development through navigator action prediction by Data mining means. *Eastern-European Journal of Enterprise Technologies*, 2(9(110)), 55–68. DOI: 10.15587/1729-4061.2021.229237
- Nosov, P., Zinchenko, S., Popovych, I., Safonov, M., Palamarchuk, I., & Blakh, V. (2020b). Decision support during the vessel control at the time of negative manifestation of human factor. *CEUR Workshop Proceedings*, 2608, 12-26.
- Pisarek, A., & Debek, I. (2004). Anxiety, optimism, stress sensitivity and stress-coping among dressage riders, Sport science through the ages: 2004 Pre-Olympic congress. URL: <http://cev.org.br/biblioteca/anxiety-optimism-stress-sensitivity-and-stress-coping-among-dressage-riders/>
- Popovych, I., Blynova, O., Aleksieieva, M., Nosov, P., Zavatska, N., & Smyrnova, O. (2019a). Research of Relationship between the Social Expectations and Professional Training of Lyceum Students studying in the Field of Shipbuilding. *Revista ESPACIOS*, 40(33), 21.
- Popovych, I. S., Blynova, O. Ye., Bokshan, H. I., Nosov, P. S., Kovalchuk, Z. Ya., Piletska, L. S., & Berbentsev, V. I. (2019b). The Research of the Mental States of Expecting a Victory in Men Mini-football Teams. *Journal of Physical Education and Sport*, 19(4), 2343-2351. DOI: 10.7752/jpes.2019.04355
- Popovych, I., Blynova, O., Kuzikova, S., Shcherbak, T., Lappo, V., & Bilous, R. (2021a). Empirical research of vitality of representatives of parachuting and yoga practice: a comparative analysis. *Journal of Physical Education and Sport*, 21(1), 218-226. DOI: 10.7752/jpes.2021.01029
- Popovych, I., Blynova, O., Nosov, P., Zinchenko, S., & Kononenko, O. (2021b). Psychological factors of competitiveness of the women's youth handball team. *Journal of Physical Education and Sport*, 21(1), 227-235. DOI: 10.7752/jpes.2021.01030
- Popovych, I., Blynova, O., Savchuk O., & Halian, I. (2020a). Self-efficacy of future athletes with different levels of psychological safety. *Journal of Physical Education and Sport*, 20(5), 2718-2724. DOI: 10.7752/jpes.2020.05370
- Popovych, I., Blynova, O., Savchuk, O., Zasenka, V., & Prokhorenko, L. (2020b). Expectations of a winning result in women's handball team: comparison of different age groups. *Journal of Physical Education and Sport*, 20(5), 2709-2717. DOI: 10.7752/jpes.2020.05369
- Popovych, I., Pavliuk, M., Hrys, A., Sydorenko, O., Fedorenko, A., & Khanetska, T. (2021c). Pre-game expected mental states in men's mini-football teams: a comparative analysis. *Journal of Physical Education and Sport*, 21(2): 772-782. DOI: 10.7752/jpes.2021.02096
- Popovych, I., Shevchenko, A., Galvez, L. M., Klenina, K. (2021d). Research of the relationship between social desirability and value orientations of adolescents. *Revista Notas Históricas y Geográficas*, 26, 241-268.
- Popovych, I. S., & Blynova, O. Ye. (2019a). Research on the Correlation between Psychological Content Parameters of Social Expectations and the Indexes of Study Progress of Future Physical Education Teachers. *Journal of Physical Education and Sport*, 19(3), 847-853.
- Popovych, I. S., & Blynova, O. Ye. (2019b). The Structure, Variables and Interdependence of the Factors of Mental States of Expectations in Students' Academic and Professional Activities. *The New Educational Review*, 55(1), 293-306. DOI: 10.15804/tner.2019.55.1.24
- Popovych, I. S., Zavatskyi, V. Yu., Geyko, Ie. V., Halian, O. I., Zavatskyi, Yu. A., & Radul, I. H. (2019c). Research on the Structure, Variables and Interdependence of the Factors of Tourists' Mental States of Expectation for Leisure in Ukraine. *Revista ESPACIOS*, 40(37), page 22.
- Popovych, I., Zavatskyi, V., Tsiuniak, O., Nosov, P., Zinchenko, S., Mateichuk, V., Zavatskyi, Yu., & Blynova, O. (2020c). Research on the Types of Pre-game Expectations in the Athletes of Sports Games. *Journal of Physical Education and Sport*, 20(1), 43-52. DOI: 10.7752/jpes.2020.01006
- Prikhozhan, A. M. (2007). *Psychology of Anxiety*. St. Petersburg: Piter.
- Prontenko, K., Bloschynskiy, I., Griban, G., Zhukovskiy, Ye., Yavorska, T., Tkachenko, P., Dzenzeliuk, D., Dovgan, N., Bezpaliy, S., Andreychuk, V. (2019). Formation of readiness of future physical culture teachers for professional activity. *Universal Journal of Educational Research*, 7(9), 1860-1868. DOI: 10.13189/ujer.2019.070903.
- Prontenko, K., Prontenko, V., Bondarenko, V., Bezpaliy, S., Bykova, G., Zeleniuk, O., & Dvoretzky, V. (2017a). Improvement of the physical state of cadets from higher educational establishments in the Ukrainian Armed Forces due to the use of the kettlebell sport. *Journal of Physical Education and Sport*, 17(1), 447-451. DOI: 10.7752/jpes.2017.01067
- Prontenko, K., Griban, G., Prontenko, V., Bezpaliy, S., Bykova, G., Zeleniuk, O., & Dvoretzky, V. (2017b). Level and Dynamics of Functional Preparedness Indexes of Kettlebell Sportsmen. *Journal of Physical Education and Sport*, 17(2), 712-716. DOI: 10.7752/jpes.2017.02107
- Raedeke, T. D., & Smith, A. L. (2001). Development and Preliminary Validation of an Athlete Burnout Measure. *Journal of Sport & Exercise Psychology*, 23, 281-306.
- Raedeke, T. D. (1997). Is athlete burnout more than just stress? A sport commitment perspective. *Journal of Sport & Exercise Psychology*, 19, 396-417.

- Reich, W. (1975). The spectrum concept of schizophrenia. *Archives General Psychiatry*, 32(4), 489-498.
- Schaufeli, W., & Greenglass, E. (2001). Introduction to special issue on burnout and health. *Psychology and Health*, 16, 501-510.
- Shalar, O., Huzar, V., Strykalenko, Y., Yuskiv, S., Homenko, V., & Novokshanova, A. (2019). Psychopedagogical aspects of interaction between personality traits and physical qualities of the young gymnasts of the variety and circus studio. *Journal of Physical Education and Sport*, 19(Supplement issue 6), 2283-2288. DOI: 10.7752/jpes.2019.s6344
- Silva, J. M. (1990). An analysis of the training stress syndrome in competitive athletics. *Journal of Applied of Sport Psychology*, 2, 5-20. DOI: 10.1080/10413209008406417
- Smith, R. E. (1986). Toward a cognitive-affective model of athletic burnout. *Journal of Sport Psychology*, 8, 36-50.
- Solovey, O., Ben, A., Dudchenko, S., Nosov, P. (2020). Development of control model for loading operations on Heavy Lift vessels based on inverse algorithm. *Eastern European Journal of Enterprise Technologies*, 5/2(107), 48-56. DOI: 10.15587/1729-4061.2020.214856
- Spector, R. I. (1992). Psychological characteristics of the highest sporting achievements (theoretical and methodological analysis). Extended abstract of Candidate's thesis. Moscow: Russian State Academy of Physical Culture.
- Spielberger, C. D. (1983). State Trait Anxiety. Mind Garden Inc., California.
- Strykalenko, Y., Shalar, O., Huzar, V., Andriieva, R., Zhosan, I., & Bazylyev, S. (2019). Influence of the maximum force indicators on the efficiency of passing the distance in academic rowing. *Journal of Physical Education and Sport*, 19(3), 1507-1512. DOI: 10.7752/jpes.2019.03218
- Strykalenko, Y., Huzar, V., Shalar, O., Voloshynov, S., Homenko, V., & Svirida, V. (2021). Physical fitness assessment of young football players using an integrated approach. *Journal of Physical Education and Sport*, 21(1), 360-366. DOI: 10.7752/jpes.2021.01034
- Timakova, T. S. (1993). Personal and psychological characteristics of skiers of different types of condition. *Theory and practice of physical culture*, 2, 15-19.
- Weinberg, R., & Gould, D. (2001). Fundamentals of the psychology of sports and physical culture. Kiev: Olympic Literature.
- Zinchenko, S., Tovstokoryi, O., Nosov, P., Popovych, I., Kobets, V., & Abramov, G. (2020). Mathematical Support of the Vessel Information and Risk Control Systems. *CEUR Workshop Proceedings*, 2805, 335-354.