

Correlation Between Juniors' Mental Health Parameters and Sports Motivation

ANASTASIIA KUROVA¹, IHOR POPOVYCH², ANDRIY ZABLOTSKYI³, YEVHENIIA BAZYKA⁴,
LILIIA POLESHCHUK⁵, NATALIYA HOI⁶, OKSANA LOS⁷

^{1,4,5}Odesa I. I. Mechnikov National University, Odesa, UKRAINE

^{2,7}Kherson State University, Kherson, UKRAINE

²Mykola Yarmachenko Institute of Special Pedagogy and Psychology, NAPS of Ukraine, Kyiv, UKRAINE

³Kremenets Regional Humanitarian and Pedagogical Academy named after Taras Shevchenko Kremenets,
UKRAINE

⁶Vasyl Stefanyk Precarpathian National University, Ivano-Frankivsk, UKRAINE

Published online: December 30, 2024

Accepted for publication: December 15, 2024

DOI:10.7752/jpes.2024.12307

Abstract:

Aim: To explore the relationship between mental health parameters and sports motivation among junior athletes.

Methods: The research sample included junior athletes aged 15–19 who trained regularly and pursued sports as a means of professional self-realization. An equal number of male ($n = 32$; 50.00%) and female athletes ($n = 32$; 50.00%) were selected. The sample maintained a balance between individual and team sports, with $n = 32$ (50.00%) participants from individual sports and $n = 32$ (50.00%) from team sports. Descriptive statistics for the sample were as follows: $M = 18.12$; $SD = \pm 2.97$; $Me = 18.00$. The parameters of mental health, the level of juniors' positive mental health and health status, and groups of intrinsic and extrinsic motives were measured with valid and reliable psycho-diagnostic tools. Standard coefficients were used to establish statistical significance. **Results.** Two athletes' profiles were created: a three-dimensional profile of mental health and a profile of sports motivation. Eighteen significant correlations between the parameters of groups of intrinsic and extrinsic motives and the mental health of athletes were established ($p \leq .050$; $p \leq .010$; $p \leq .001$), three of them being inverse. The motive of skill development has the strongest correlations with an internal locus of control over health, positive mental health, and health status. The comparative matrix allowed for identifying the superiority of Group 1 (a high level of the parameters of mental health) in four pairs of dimensions: positive mental health and positive emotions; an internal locus of control and skill development; positive mental health and skill development; health status and skill development. No significant difference was found in the level of health status (Group 1 $> 38.00 \leq 1$ Group 2) in the parameter "demotivation". **Discussion and conclusions.** It was substantiated that systematic work on oneself, which manifests in self-improvement of technical and practical skills, allows purposeful and hard-working junior athletes to achieve remarkable sports results. The motives of learning new things and positive emotions with four direct correlations each are the most dependent ones. There is a caveat that junior athletes' health status as a complex state of physical, emotional, and mental well-being may weaken sports motivation. It was recommended that the results obtained should be considered by administrators, coaches, psychologists, and managers of sports institutions who work with junior athletes.

Keywords: mental state, stress, motivation for achievement, internal locus of control, demotivation, psychological health, health-saving technologies.

Introduction

The statement that sports and physical activities have a positive impact on mental health is well-established in today's society. This statement is partly deemed to be an axiom which does not require a proof. Similarly, it is not necessary to prove that the body produces endorphins – happiness hormones which improve mood and reduce stress – during physical activities. Junior athletes who have chosen competitive, training, or rehabilitative activities as their professional self-realization are convinced of the truth of this interpretation. Moreover, systematic training improves sleep, contributes to adequate self-esteem, and is capable of reducing depression symptoms. Despite all these convincing arguments, a considerable number of junior athletes do not feel satisfied with their sports achievements, and physical and mental health. Some factors have a demotivating effect on athletes. The problem of a correlation between the parameters of juniors' mental health and sports motivation arises. Examination of demotivation deserves special attention in the context of this research.

Modern experimental research shows that engaging in game sports improves psychological well-being and is associated with good mental health, in contrast to low physical activeness, and an inactive or sedentary life-style (Popovych et al., 2022c). It was found that regular exercises and physical training alleviate the symptoms of depression and stress, improve overall quality of life, stabilize self-esteem, promote active development of social competencies, and have a positive impact on relationships between people. It was proved that an active lifestyle

has a positive impact on success in educational, professional, and work activities (Oliinyk & Voitenko, 2020). Systematic physical training for people diagnosed with an illness related to anxiety or stress improved cognitive skills – memory, vocabulary, and creative thinking (Popovych et al., 2022c; Raievska et al., 2024). Undoubtedly, this can be substantiated in terms of psychophysiology or medical science arguing that moderate regular physical exercises ensure muscle relaxation. This relaxation restores calm and stops or reduces excessive cortisol production. It is cortisol that is produced excessively in stressful situations of competitive activities, excessive psycho-emotional training loads, and extreme and conflict situations. There are studies showing that excessive information and mental overstrain affect human security (Nosov et al., 2020; Zinchenko et al., 2020; 2023a). Therefore, moderate physical loads and a well-developed physical culture can close this circle. We hope that empirical research into a correlation between the parameters of juniors' mental health and sports motivation will allow finding important scientific regularities and differences that can become a latent resource and a competitive advantage in modern youth sports.

There are modern systematic studies such as meta-analyses of interventions for improving athletes' mental health using PRISMA-ScR. The purpose of such studies was to identify gaps in knowledge and make requests for future research (Ekelund et al., 2023). Scientists have found that studies conducted on healthy athletes prevail among the analyzed publications. It is emphasized that the samples mainly involve athletes aged 15 to 19 years. It has been found that only three studies examined clinical criteria and two studies researched into mediators. Another meta-analysis presents a systematic review of studies on mental and physical health after athletes' burnout (Glandorf et al., 2023). The systematic review confirmed that athletes' burnout is related not only to an increase in negative consequences for mental health. There might also be a decrease in positive formations which will not necessarily be reflected by negative manifestations but rather demonstrate all signs of a plateau or stagnation. It is noted that there is no significant evidence of a correlation between athletes' burnout and the outcomes of their mental and physical health since the studies considered in the review were ambiguous. This testifies to the relevance and insufficient research into this area of sporting activities. The issues of mental health and motivation presented in this study are directly related to the problem of athletes' burnout. The dynamic and sometimes unmanageable and unrealized results of junior athletes, and the careless attitude towards one's emotional and mental health can become a latent problem that can result in demotivation and disappointment, and end up in emotional burnout in the future. Another systematic review of risk and protective factors in the research on elite athletes' mental health conducted by A. Kuettel and C. Larsen, (2019) found that the potential protective factors include a sense of autonomy; positive relationships with the subjects of sporting activities; harmonious private life and adequate recovery. It can be observed that these factors contribute to a reduction in excessive cortisol production.

Special attention in scientific publications is paid to the interaction between a coach and an athlete. It was found that the quality of relationships between a coach and an athlete has a considerable impact on burnout syndrome and affects the mental health of both subjects. A statistically significant superiority was demonstrated by such factors as emotional closeness, complementarity, and commitment. The subjects diagnosed with the lowest level of burnout reported a prevalence of trust, openness in communication, and a common goal (Duhaylungsod et al., 2025). Other studies established that the personality traits of coaches and athletes are important for competitive self-efficacy and affect the winning outcome of the latter (Halian et al., 2023a; 2023b).

Special attention should be paid to the age-related and psychophysiological characteristics of junior athletes. The intensive development of an adolescent's self-identity is determined by the need for self-identification. Professional self-determination (Halian, 2024; Bokhonkova et al., 2024; Kurova et al., 2023), youthful idealism, dynamic processes of self-regulation (Zavatska et al., 2024; Prokhorenko et al., 2023), the formation and development of the professional Self-concept (Halian, 2022; Popovych et al., 2023b), the formation of the value-semantic component (Melnychuk et al., 2021; Tavrovetska et al., 2023) in the dimensions of the current social transformations (Falko et al., 2024; Hrabovska et al., 2024; Popovych et al., 2023c) caused by the pandemic, military conflicts, and the effect of other sociogenic challenges (Shcherbak et al., 2023) only add a considerable number of unknown components which should be studied for the understanding and management of the process of training junior athletes. The comparative systematic review of anonymous and non-anonymous administration of depression scales in elite athletes found that anonymity is an important moderator for recording clinical symptoms of depressiveness (Harenberg et al., 2022). Another study examines an alternative aspect and successfully proves that mentally strong athletes are capable of overcoming painful periods of training and competition to achieve a high level of performance (Whitton et al., 2020). Researchers established and substantiated the resources of mental resilience: optimism, hardiness, self-efficacy, and purposefulness which comprise the core of mental strength related to the experience of pain. The typology of resilience proposed by I. Popovych et al. (2022d) shows that commitment, control, challenge, hardiness, emotionality, stability, cheerfulness, and motivation for success are content factors that have the strongest correlation with resilience.

Activeness and resilience play a key role in the ability to achieve a sports result in a junior athlete's motivation which is considered to be a stimulus to act which is a dynamic process of physiological and psychological dimensions that manages an athlete's behavior and determines their being organized (Shaboltas, 2004). Researchers Y. Krasnik et al. (2024) substantiated that motivational determinants of sports self-

fulfillment depend on professional qualifications. The attempt to establish the dependence of adventurousness in juniors' motivational structure arouses a scientific interest (Popovych et al., 2024). It was found that junior athletes with a high level of adventurousness are guided by the desire for new sensations accompanied by a frequent change of purposes in the process of sports competitions and a great desire for self-affirmation.

Given the analyzed studies, we can summarize that the research into correlations between the parameters of juniors' mental health and sports motivation is positioned as an examination of a correlation between the optimal mental state and the dimensions of internal and external stimuli to achieve a sports result.

Hypothesis: 1) juniors' sports motivation will have significant correlations with the parameters of mental health; 2) a group with a high level of the parameters of mental health will have significant differences in the internal parameters of sports motivation; 3) a group with a high level of the parameters of mental health will have no significant differences in the external parameters of juniors' sports motivation.

Aim. To study the parameters of mental health in the structure of juniors' sports motivation.

Methods

Methodology. The fundamental principles of athletes' mental health are outlined in modern research conducted on the sample of elite athletes by V. Pilkington et al. (2024) and C. Brockett et al. (2024); in the concept of emotion self-regulation of the leading type of mental activity by O. Chebykin (2023), O. Chebykin et al., (2024), and V. Plokhikh et al. (2024); in the patterns of the psychophysiological component of sporting activities (Cretu et al., 2021; Ferraz et al., 2011; Marques et al., 2011); in the studies on dominant mental states in competitive activities (Kurova et al., 2023; Popovych et al., 2022e; 2023a); in the research into motivational and resultant components of sporting activities (Popovych et al., 2020; 2022a; 2023d).

Organization of Research. The empirical data were collected in 2024. The research participants were junior athletes trained within the framework of the European and World Championships and juniors educated and trained at sports academies of professional clubs. The subjects filled out standard forms of the methodology during the theoretical training. The same forms were created in Google Forms and given to athletes who stayed in training camps and prepared for competitions outside the country. The organizers adhered to the principle of randomness and stratification by sports and gender. The purpose and hypotheses formulated in the study allowed for applying a confirmatory strategy with the elements of groups by the manifested characteristics. The research subjects were informed in advance about the confidentiality of participation. The research was approved by the Ethics Committees and Scientific-Methodological Councils of the higher education institutions where the researchers worked. The consent to conduct research was given by the administrations of sports institutions, professional clubs, and coaches. This approach to organizing the research allowed for obtaining reliable and significant empirical results. This study was carried out within the framework of the project Erasmus+ BURN.

Participants. The research participants were junior athletes aged 15 to 19 who systematically trained and chose sporting activities as their professional self-realization. All the subjects regularly participated in sports competitions of different levels – from regional competitions and international tournaments to the national, European, and World championships. The same number of research participants were selected by gender: male athletes ($n = 32$; 50.00%) and female athletes ($n = 32$; 50.00%). The equality was also maintained by individual and game sports, i. e. $n = 32$ (50.00%) research participants. The descriptive parameters of the sample population are as follows: $M = 18.12$; $SD = \pm 2.97$; $Me = 18.00$.

Procedures and instruments. The parameters of juniors' mental health were determined using: the methodology "Multidimensional Health Locus of Control Scales" (MHLCS) (Wallston et al., 1978); the methodology "Positive Mental Health Scale" (PMH-SCALE) (Lukat et al., 2016), and the methodology "The Mental Health Continuum – Short Form" (MHC-SF) (Lamers et al., 2011). The adapted version of the methodology "MHLCS" (Wallston et al., 1978) whose psychometric characteristics were tested on the Ukrainian sample by L. Karamushka et al. (2023) was applied. A five-point direct Stapel scale assigning from 1 point – strongly disagree to 5 points – strongly agree was used. The methodology contains three scales: an internal locus of control (ILC) which reflects the extent to which juniors feel control over their health status; control of powerful others (CPO) which shows that others are responsible for health, for instance, medical personnel; control of a chance (CC) which shows that chance, fate or fortune are determinant. The scale scores range from 6 to 30 points. The data homogeneity of Cronbach's alpha by the methodology was reported at a medium level ($\alpha = .768$). The next methodology used to determine the parameters of mental health was "PMH-SCALE" (Lukat et al., 2016), adapted by L. Karamushka et al. (2022). The methodology contained nine statements. A four-point direct Stapel scale assigning from 1 point – false to 4 points – true was used. The scale scores ranged from 9 to 36 points which reflected the value of positive mental health (PMH). The parameter of Cronbach's alpha was reported at a high level ($\alpha = .913$). The final psycho-diagnostic tool used to determine the parameters of mental health was "MHC-SF" (Lamers et al., 2011). The version of the methodology adapted by researchers T. Nosenko and A. Chetveryk-Burchak (2014) was applied. The methodology contains fourteen statements and a six-point direct Stapel scale where 0 point – never; 1 – once or twice; 2 – about once a week; 3 – about 2–3 times a week; 4 – almost every day; 5 – every day. The methodology was used to determine the

respondents' health status (HS) for two weeks. The phenomenon of health status is positioned in the structure of mental health and represents the experience of the signs of hedonic, psychological, and social well-being. The applied scale conditionally combined three levels: prosperity (PS); a moderate level (ML), and the level of depression (DP). The parameter of Cronbach's alpha was reported at a high level ($\alpha = .897$).

The motivational profile of junior athletes was created using the parameters of the questionnaire "Sports Motivation Scale" (SMS) (Vallerand, 1997). The version tested on the Ukrainian sample was used in the research (Popovych et al., 2024). R. Vallerand (1997) based his questionnaire on the hierarchical model of intrinsic and extrinsic motivation which provides a basis for organizing and implementing the key mechanisms of sporting activities. The methodology allowed for identifying intrinsic motives: learning new things (LNT); positive emotions (PE), skill improvement (SI), and extrinsic motives: goal shifting (GS); a heightened sense of duty (HSD); and social approval (SA). The scale of demotivation (D) is positioned separately since both internal and external factors can demotivate an athlete. Demotivational factors reduce the desire to engage in sports, devalue the achieved results, and weaken faith in achieving a sports result. The empirical data homogeneity was determined using the parameter of Cronbach's alpha and demonstrated a satisfactory level ($\alpha = .715$).

Statistical Analysis. To determine descriptive frequency characteristics and perform initial statistical operations, the computer program "IBM SPSS Statistics" version 29.0.0.0 (241) was used. The initial empirical results were automatically entered into Google Forms, then they were transferred to the matrix of empirical data in "MS Excel". To visualize the research data, the graphical editor "MS Word" was used. The statistical levels of $p \leq .050$; $p \leq .010$ and $p < .001$ were considered to be significant. Several standard unified statistical coefficients were employed.

Results

To appropriately reflect the components of juniors' mental health, three methodologies were selected. They were used to measure different parameters of the examined phenomenon. To replicate the research results, the descriptive frequency characteristics of the parameters were given by the methodologies "MHLCS" (Wallston et al., 1978), "PMH-SCALE" (Lukat et al., 2016) and "MHC-SF" (Lamers et al., 2011). To interpret the results, the following characteristics were chosen: the mean (M), the squared deviation (SD), and the median (Me) which are presented in Tabl. 1.

Table 1 Descriptive frequency characteristics of the parameters of juniors' mental health by the research methodologies (n = 64)

Scale	M	SD	Me
Internal locus of control (ILC)	22.12	± 3.68	22.00
Control of powerful others (CPO)	14.19	± 2.37	14.50
Control of a chance (CC)	15.44	± 2.57	16.00
Positive mental health (PMH)	24.34	± 4.12	24.50
HS (HS)	38.12	± 6.36	38.00

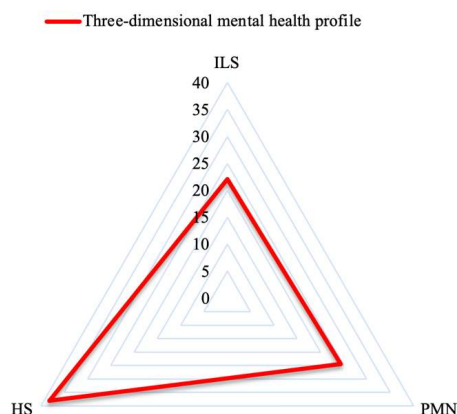
Note: M – the mean; SD – the squared deviation; Me – the median.

The methodology "MHC-SF" (Lamers et al., 2011) was employed to identify juniors' health status (HS) and make a successful attempt to differentiate between them by the following levels: prosperity, a moderate level, and the level of depression. Tabl. 2 presents the results of the distribution.

Table 2. Results of the distribution of the dimension "health status" by levels

Level	The number of subjects	
	n	%
Prosperity (PS)	14	21.88
Moderate level (ML)	38	59.38
Depression (DP)	12	18.74

The parameters of mental health allowed creating a three-dimensional profile of a junior athlete's mental health which is presented graphically as a petal diagram (Fig. I). The name of the three-dimensional profile implies three dimensions: an internal locus of control, positive mental health, and health status. The area formed through connecting the three points of the examined parameters is identified as the state of mental health. The development of the junior athletes' parameters should be above a medium level or at a high level. It was found that the high intensity of one or two parameters does not ensure the expected winning outcome. This comparison was tested in practice, and the significance of this statement was established. We can state that, in comparison with the average normative data of the researchers who tested these methodologies (Karamushka et al., 2023), our subjects' parameters were at a medium level: PMH (M = 24.34; SD = ± 4.12 ; Me = 24.50), HS (M = 38.12; SD = ± 6.36 ; Me = 38.00) and above medium indicators of mental health: ILC (M = 22.12; SD = ± 3.68 ; Me = 22.00).



Note: — the contour uniting the parameters of mental health; ILC – internal locus of control over health; PMH – positive mental health; HS – health status.

Figure I. The petal diagram of a three-dimensional profile of juniors' mental health

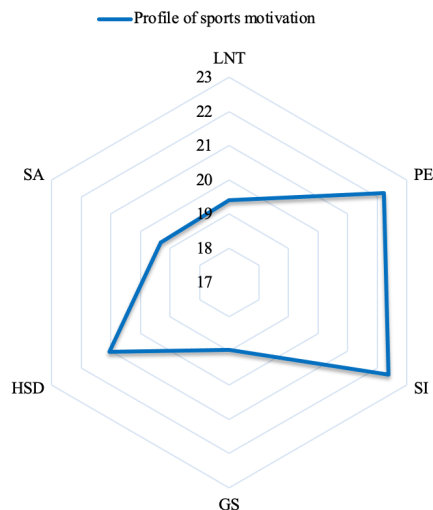
Tabl. 3 presents the descriptive frequency characteristics of the parameters of sports motivation by the methodology "SMS" (Vallerand, 1997).

Table 3. Descriptive characteristics of the parameters of sports motivation by the research methodology (n = 64)

Scale	M	SD	Me
Learning new things (LNT)	19.41	±3.37	19.50
Positive emotions (PE)	22.23	±3.71	22.50
Skill improvement (SI)	22.39	±3.73	22.00
Goal shifting (GS)	18.98	±3.16	19.00
Heightened sense of duty (HSD)	21.04	±3.51	21.00
Social approval (SA)	19.32	±3.22	19.50
Demotivation (D)	9.34	±1.56	10.00

Note: M – the mean; SD – the squared deviation; Me – the median.

These parameters allowed creating the profile of a junior athlete's motivation presented graphically as a petal diagram (Fig. II).



Note: — the contour uniting the parameters of sports motivation; LNT – learning new things; PE – positive emotions; SI – skill improvement; GS – goal shifting; HSD – heightened sense of duty; SA – social approval.

Figure II. The petal diagram of the profile of junior athletes' sports motivation

The profile of sports motivation combined six dimensions of motivation which belong to two groups of motives – intrinsic and extrinsic. The internal group is represented by two motives: learning new things (M = 19.41; SD = ±3.37; Me = 19.50); positive emotions (M = 22.23; SD = ±3.71; Me = 22.50), and skill improvement (M = 22.39; SD = ±3.73; Me = 22.00). The external group is represented by the following motives: goal shifting (M = 18.98; SD = ±3.16; Me = 19.00); a heightened sense of duty (M = 21.04; SD = ±3.51; Me = 21.00); and social approval (M = 19.32; SD = ±3.22; Me = 19.50). The parameter "demotivation" was not involved in creating the profile since this dimension is opposite to motivation. We have to state that the level of demotivation of the research sample is above medium (M = 9.34; SD = ±1.56; Me = 10.00). The rest of the parameters have medium or above medium intensity and do not have significant differences with the data

reported in the junior sports sample in the research by I. Popovych et al. (2024). When analyzing the profile, it is important to compare two areas of the triangles formed by the group of intrinsic (LNT; PE; SI) and extrinsic motives (GS; HSD; SA). As a rule, the superiority of intrinsic motives indicates higher sports results of subjects and higher motivation for sporting activities.

Correlations between the parameters of mental health and the dimensions of motivation were established using Pearson's correlation coefficient (R). Tabl. 4 presents a complete correlation matrix of all the examined parameters.

Table 4. Correlation matrix of the examined parameters ($n = 64$)

Scale	CP	Parameters of sports motivation						
		LNT	PE	SI	GS	HSD	SA	D
ILC	R	.292*	.281*	.512**			.431**	-.437**
	p	.040	.042	.000			.000	.000
CPO	R		.283*			.413**	.388**	
	p		.043			.003	.009	
CC	R	.389*			.281*			
	p	.011			.042			
PMH	R	.283*	.432**	.499**				-.421**
	p	.043	.000	.000				.000
HS	R	.283*	.381*	.501**				-.489**
	p	.043	.013	.000				.009

Note: CP – coefficients K. Pearson; LNT – learning new things; PE – positive emotions; SI – skill improvement; GS – goal shifting; HSD – heightened sense of duty; SA – social approval; D – demotivation; ILC – internal locus of control; CPO – control of powerful others; CC – control of a chance; PMH – positive mental health; HS – health status; * – $p < .050$; ** – $p < .010$ and $p < .001$.

Eighteen significant correlations between the parameters of mental health and the dimensions of motivation ($p \leq .050$; $p \leq .010$; $p \leq .001$) were established, three of them being inverse. The motive of skill improvement has the strongest correlations with the following parameters of mental health: ILC ($R = .512$; $p = .000$), PMH ($R = .499$; $p = .000$), and HS ($R = .501$; $p = .000$). The most dependent variables are the motive of learning new things – four direct correlations: with ILC ($R = .292$; $p = .040$), CC ($R = .389$; $p = .011$), PMH ($R = .283$; $p = .043$), and HS ($R = .283$; $p = .043$), and the motive of positive emotions – four direct correlations: with ILC ($R = .281$; $p = .042$), CPO ($R = .283$; $p = .043$), PMH ($R = .432$; $p = .000$), and HS ($R = .381$; $p = .013$). Demotivation expectedly showed inverse correlations: with ILC ($R = -.437$; $p = .000$), PMH ($R = -.421$; $p = .000$), and HS ($R = -.489$; $p = .000$). There were no parameters without significant correlations. The motive of a heightened sense of duty has the only direct correlation with CPO ($R = .413$; $p = .003$).

In the logical context of empirical research, it was of scientific interest to identify significant differences between the groups with a high level (Group 1) and a low level (Group 2) of the parameters of mental health. The median was used for the distribution which was as follows: ILC (Group 1 $> 22.00 \leq 1$ Group 2); PMH (Group 1 $> 24.50 \leq 1$ Group 2), and HS (Group 1 $> 38.00 \leq 1$ Group 2). The Mann-Whitney U-test was used to find significant differences in comparison. Tabl. 5 presents statistically significant differences in the parameters of sports motivation in the comparative matrix according to the methodology “SMS” (Vallerand, 1997).

Table 5. The comparative matrix of juniors' sports motivation in Group 1 and Group 2

Parameters of sports motivation	CM-W	Parameters of mental health		
		ILC	PMH	HS
Learning new things (LNT)	U			
	p			
Positive emotions (PE)	U		.1721.000*	
	p		.043	
Skill improvement (SI)	U	1015.500*	1411.000*	1585.500**
	p	<.001	<.001	<.001
Goal shifting (GS)	U			
	p			
Heightened sense of duty (HSD)	U			
	p			
Social approval (SA)	U			
	p			
Demotivation (D)	U	1233.000*	1531.000*	
	p	<.001	<.001	

Note: CM-W – coefficients U-test Mann-Whitney; ILC – internal locus of control; PMH – positive mental health; HS – health status; U – the Mann-Whitney U-test; p – the level of significance by the Mann-Whitney U-test; * – the level of significance $p \leq .050$ and ** – the level of significance $p \leq .010$, the data is given in **bold type**.

It was found that Group 1 with a high level of the parameters of mental health surpasses the group with a low level (Group 2) in the four compared parameters: PMH and PE ($U = 1721.000$; $p = .043$); ILC and SI ($U = 1015.500$; $p < .001$); PMH and SI ($U = 1411.000$; $p < .001$); and HS and SI ($U = 1585.500$; $p < .001$). The superiority of Group 2 was reported in the compared pairs: ILC and D ($U = 1233.000$; $p < .001$), and PMH and D ($U = 1531.000$; $p < .001$).

Discussion

Empirical research into the problems of athletes' mental health in amateur (Sutcliffe et al., 2021) and elite sports (Mannes et al., 2018) is quite operationalized and implies practical efficient recommendations and algorithms for enhancement (Lorenzón et al., 2022; Pereira Vargas et al., 2021). There is a series of empirical studies on sports motivation and operationalization of incentives for junior athletes' activeness in the dimensions of educational, training and competitive activities (Jordalen et al., 2016; Popovych et al., 2023e). It is noteworthy that psycho-diagnostic tools, which are successfully used in empirical sports studies, are periodically improved and adapted (Mallett et al., 2007). We agree with the authors of the systemic review by E. Prior et al. (2022) on the necessity of permanent improvement of the methodology for examining and implementing the strategies for supporting athletes' mental health. At the same time, we can state that the uniqueness of our research consists in the simplicity of empirical calculations and wide opportunities for implementing the findings in practice. The possibility to compare the three-dimensional profile of mental health and the profile of juniors' sports motivation, and visual tracking of changes allow for finding latent resources.

We can state that the descriptive characteristics of the parameters of mental health (see Tabl. 1) demonstrate values that are higher than those recommended by the developers of the norms (Lamers et al., 2011; Lukat et al., 2016; Wallston et al., 1978). The proposed distribution (see Tabl. 2) by the levels of juniors' health status also confirmed the prevalence of prosperity ($n = 14$; 21.88%) and the moderate level ($n = 38$; 59.38%) in the subjects of the sample population. This may testify to an average statistical positive trend in the examined parameters. The combination of three dimensions obtained using independent methodologies which formed the basis of the three-dimensional profile (see Fig. I) visually confirm the validity of the above positive trend. The shortest contour and the location of any dimension of mental health close to the center of the diagram allow identifying a problem zone and developing a plan for mental interventions. Health status is a complex state of a junior's physical, emotional, and mental well-being at a particular moment, whereas positive mental health involves a tendency to effectively overcome stressful situations. Locus of internal control demonstrates juniors' ability to control their mental health. Thus, the three-dimensional model of mental health shows a psycho-dynamic complex of mental health which should be analyzed not as a group or team profile, but as an individual one. The combination of two motives in the profile of juniors' sports motivation (see Fig. II) allows for, in addition to measuring the total area and the contour length, performing a comparison between the groups of intrinsic and extrinsic motives. The obtained correlation between athletes' profiles can prompt interesting scientific analytical facts.

The established patterns (see Tabl. 4) focus on the strongest correlations between the motive of skill improvement (SI) and the parameters of mental health ($p < .050$ $p < .010$; $p < .001$); an internal locus of control over health, positive mental health, and health status. Obviously, the desire for skill improvement which is usually accompanied by a huge amount of physical work and excessive psycho-emotional loads is supported by a mental health resource. Naturally, self-improvement which can be observed in improving technical and practical skills allows purposeful and hard-working juniors to achieve remarkable sports results. This can be explained by the fact that demotivation has statistically significant inverse correlations with analogous parameters of mental health. We can observe a quite different matrix of correlations with the parameters of the group of extrinsic motives (see Tabl. 4), all of them being inverse.

The comparative matrix of juniors' sports motivation (see Tabl. 5) made it possible to establish an interesting scientific fact. The distribution of groups by health status ($\text{Group 1} > 38.00 \leq \text{Group 2}$) showed no significant difference in the parameter "demotivation". This can be explained by the fact that junior athletes' comfortable health status as a complex state of physical, emotional, and mental well-being can weaken sports motivation rather than activate it. This allows junior athletes to create a temporary illusion of comfort when they do not need to change anything and prove themselves.

We can summarize that the first, second, and third hypotheses were confirmed since juniors' sports motivation has significant correlations with the parameters of mental health; the group with a high level of the parameters of mental health has statistically significant differences in the parameter of intrinsic motivation; the group with a high level of the parameters of mental health does not have significant differences in the parameters of juniors' extrinsic motivation. The obtained results are valuable for all subjects of junior sports.

Conclusions

The research into the correlations between the parameters of juniors' mental health and sports motivation is positioned as an examination of relationships between the optimal mental state and the dimensions of internal and external stimuli for achieving a sports result.

The descriptive frequency characteristics and the levels of health status allowed identifying the prevalence of a moderate level in the subjects of the sample population. Two athletes' profiles were created: a three-dimensional profile of mental health and a profile of sports motivation. It was noted that operationalization of the profiles allows for finding latent resources of juniors' sports motivation. Eighteen significant correlations between the parameters of the groups of intrinsic and extrinsic motives and the mental health of the respondents ($p \leq .050$; $p \leq .010$; $p \leq .001$) were established, three of them being inverse. The strongest correlations were established between the motive of skill improvement with an internal locus of control over health, positive mental health, and health status. It was substantiated that systematic work on oneself which is observed in the self-improvement of technical and practical skills allows purposeful and hardworking juniors to achieve remarkable sports results. The most dependent sports motives are the motive of learning new things and the motive of positive emotions – with four direct correlations each. The comparative matrix of juniors' sports motivation shows the superiority of Group 1 (a high level of the parameters of mental health) in four pairs of parameters: positive mental health and positive emotions; an internal locus of control and skill improvement; positive mental health and skill improvement; health status and skill improvement. No significant difference was found in the level of health status (Group 1 $> 38.00 \leq$ 1 Group 2) in the parameter "demotivation". There is a caveat that the comfortable health status of junior athletes as a complex state of physical, emotional, and mental well-being can weaken sports motivation.

The obtained results will be valuable for administrators, coaches, psychologists, and managers of sports institutions who work with junior athletes.

Acknowledgements

The research was conducted within the framework of the EU program Erasmus+, the area Development of Higher Education Potential. **The project of Kherson State University Boosting University Psychological Resilience and Wellbeing in (Post-) War Ukrainian Nation** (101129379 – BURN – ERASMUS-EDU-2023-CBHE).

References

- Bokhonkova, Y., Kruglov, K., Buhaiova, N., & Kryzhanovskyi, O. (2024). Student Leadership in Times of Social Transformation. *Insight: the psychological dimensions of society*, 12, 311–336. <https://doi.org/10.32999/2663-970X/2024-12-15>
- Brockett C. L., Stansen C., Bourke M., et al. (2024). Factors that influence mental health and well-being of high-performance athletes from Olympic or Paralympic sport who have transitioned out of national-level or international-level sport: a mixed methods approach. *BMJ Open Sport & Exercise Medicine*, 10, e001991. <https://doi.org/10.1136/bmjsem-2024-001991>
- Cretu, M., Borysenko, I., Ushmarova, V., Grynyova, V., & Masych, V. (2021). Features of vascular regulation of students – future specialists in physical education and sports of different sports specializations with different body lengths. *Health, Sport, Rehabilitation*, 7(2), 29–44. <https://doi.org/10.34142/HSR.2020.07.02.03>
- Chebykin, O. (2023). Psycholinguistic Mechanisms of Emotion Regulation of Educational Activity. *Insight: the psychological dimensions of society*, 10, 117–136. <https://doi.org/10.32999/2663-970X/2023-10-6>
- Chebykin, O., Sytnik, S., Massanov, A., & Pavlova, I. (2024). Research on the Correlation Between Emotional-Gnostic and Personal Characteristics with Parameters of Adolescents' Creativity. *Insight: the psychological dimensions of society*, 11, 105–122. <https://doi.org/10.32999/2663-970X/2024-11-6>
- Duhaylungsod, C. J., Icalina, K., & Longakit, J. C. (2025). Effects of perceived coach leadership on athlete's burnout: Implications for coach-athlete relationship quality. *Journal of Coaching and Sports Science*, 4(1), 23–33. <https://doi.org/10.58524/jcss.v4i1.405>
- Ekelund, R., Holmström, S., Gustafsson, H., Ivarsson, A., Lundqvist, C., & Stenling, A. (2023). Interventions for improving mental health in athletes: a scoping review. *International Review of Sport and Exercise Psychology*, 1–36. <https://doi.org/10.1080/1750984X.2023.2258383>
- Falko, N., Serbin, I., Hurtovenko, N., & Tylnyi, I. (2024). Life Orientations of Migrant Students under Martial Law. *Insight: the psychological dimensions of society*, 12, 378–399. <https://doi.org/10.32999/2663-970X/2024-12-16>
- Ferraz, R., van den Tillaar, R., Ferraz, S., Santos, A., Mendes, R., Marinho, D., Cretu, M., Marques, M. (2011). A Pilot Study on the influence of fatigue on kicking velocity in the soccer players. *Journal of Physical Education and Sport*, 11(2), 178–181.
- Glandorf, H. L., Madigan, D. J., Kavanagh, O., & Mallinson-Howard, S. H. (2023). Mental and physical health outcomes of burnout in athletes: a systematic review and meta-analysis. *International Review of Sport and Exercise Psychology*, 1–45. <https://doi.org/10.1080/1750984X.2023.2225187>
- Halian, A. (2024). Personal Predictors of Future Medical Workers Adaptation to the Conditions of Professional Activity. *Insight: the psychological dimensions of society*, 11, 343–363. <https://doi.org/10.32999/2663-970X/2024-11-18>

- Halian, I. M. (2022). Value contradictions in personal axiogenesis. *Insight: the psychological dimensions of society*, 7, 11–23. <https://doi.org/10.32999/2663-970X/2022-7-2>
- Halian, I., Popovych, I., Huias, I., Serbin, Iy., Vyshnevska, O., Kovalchuk, Z., & Pyslar, A. (2023a). Correlation between personality traits of young athletes and their level of self-efficacy. *Journal of Physical Education and Sport*, 23(5), 1119–1129. <https://doi.org/10.7752/jpes.2023.05140>
- Halian, I., Popovych, I., Vovk, V., Kariyev, A., Poleshchuk, L., & Halian, O. (2023b). Correlation of the coach's qualities and junior athletes' self-efficacy. *Journal of Physical Education and Sport*, 23(7), 1621–1630. <https://doi.org/10.7752/jpes.2023.07199>
- Harenberg, S., Ouellet-Pizer, C., Nieto, M., Kuo, L., Vosloo, J., Keenan, L., & Wilson, S. (2022). Anonymous vs. non-anonymous administration of depression scales in elite athletes: a meta-analysis. *International Review of Sport and Exercise Psychology*, 1–21. <https://doi.org/10.1080/1750984X.2022.2095658>
- Hrabovska, S., Partyko, T., & Stelmashchuk, K. (2024). Adaptability to Stress in Student Youth at Different Stages of the Russian-Ukrainian Military Conflict. *Insight: the psychological dimensions of society*, 12, 115–136. <https://doi.org/10.32999/2663-970X/2024-12-6>
- Jordalen, G., Lemyre, P.-N., & Durand-Bush, N. (2016). Exhaustion Experiences in Junior Athletes: The Importance of Motivation and Self-Control Competencies. *Frontiers in Psychology*, 7, 1867. <https://doi.org/10.3389/fpsyg.2016.01867>
- Karamushka, L. M., Kredentser, O. V., Tereshchenko, K. V., Lagodzinska, V. I., Ivkin, V. M., Kovalchuk, O. S. (2023). Instruments for assessing staff's mental health and well-being: psychological practicum. In Karamushka L. M. (Ed.) Kyiv: G. S. Kostyuk Institute of Psychology of the NAES of Ukraine.
- Karamushka, L., Kredentser, O., Tereshchenko, K. (2022). Adaptation on the Ukrainian Sample of Methods "The Modified BBC Subjective Well-being Scale (BBC-SWB)" and "Positive Mental Health Scale (PMH-scale)". *Organizational psychology. Economic psychology*, 3–4(27), 85–94. <https://doi.org/10.31108/2.2022.3.27.8>
- Karpenko, Ye., Savko, N., Lialyuk, Yu., & Kolisnyk, R. (2024). Emotional Intelligence in Organization of the Personality Motivation Structure. *Insight: the psychological dimensions of society*, 11, 57–76. <https://doi.org/10.32999/2663-970X/2024-11-4>
- Kuettel, A., & Larsen, C. H. (2019). Risk and protective factors for mental health in elite athletes: a scoping review. *International Review of Sport and Exercise Psychology*, 13(1), 231–265. <https://doi.org/10.1080/1750984X.2019.1689574>
- Kurova, A., Kuryliuk, Y., Zaskalieta, S., Kuchyna, N., & Bondar, Y. (2023). Organizational and Economic Aspects of Improving the Process of Managing the Educational Activities of a Higher Education Institution in the Conditions of the Socio-Economic Development of the Country. *Review of Economics and Finance*, 21, 642–664. <https://refpress.org/ref-vol21-a67/>
- Kurova, A., Popovych, I., Hrys, A., Koval, I., Pavliuk, M., Polishchuk, S., & Kolly-Shamne, A. (2023). Dispositional optimistic and pessimistic mental states of young athletes: gender differentiation. *Journal of Physical Education and Sport*, 23(4), 857–867. <https://doi.org/10.7752/jpes.2023.04110>
- Krasmik, Y., Aimaganbetova, O., Iancheva, T., Zhantikeiyev, S., Lashko, E., Makhmytov, A., & Rakhmalin, B. (2024). Motivational determinants of athletes' self-realisation depending on their professional qualification. *BMC Psychology*, 12, 416. <https://doi.org/10.1186/s40359-024-01895-3>
- Lamers, S. M. A., Westerhof, G. J., Bohlmeijer, E. T., ten Klooster, P. M., & Keyes, C. L. M. (2011). Evaluating the psychometric properties of the mental health Continuum-Short Form (MHC-SF). *Journal of Clinical Psychology*, 67(1), 99–110. <https://doi.org/10.1002/jclp.20741>
- Lorenzón, J. I., González Insua, F., Aceiro, M. A., & Delfino, G. (2022). Psychological distress related to psychological skills associated with sports performance in young athletes. *Ciencias Psicológicas*, 16(1), e-2685. <https://doi.org/10.22235/cp.v16i1.2685>
- Lukat, J., Margraf, J., Lutz, R., van der Veld, W. M., & Becker, E. S. (2016). *Positive Mental Health Scale*. APA PsycTests. <https://doi.org/10.1037/t74178-000>
- Mallett, C., Kawabata, M., Newcombe, P., Otero-Forero, A., & Jackson, S. (2007). Sport motivation scale-6 (SMS-6): A revised six-factor sport motivation scale. *Psychology of Sport and Exercise*, 8(5), 600–614. <https://doi.org/10.1016/j.psychsport.2006.12.005>
- Mannes, Z. L., Waxenberg, L. B., Cottler, L. B., Perlstein, W. M., Burrell II, L. E., Ferguson, E. G., ... Ennis, N. (2018). Prevalence and correlates of psychological distress among retired elite athletes: A systematic review. *International Review of Sport and Exercise Psychology*, 12(1), 265–294. <https://doi.org/10.1080/1750984X.2018.1469162>
- 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. <https://www.efsupit.ro/images/stories/9.Mario.pdf>
- Melnychuk, S., Kurova, A., Shvetsova, I., Shcherbakova, O., Tsilmak, O. M., & Luts, L. (2021). Theoretical fundamentals of study of values and value orientations in management of psychological scientific space.

- Journal of management Information and Decision Sciences*, 24(2), 1–6.
- Nosenko, E. L., & Chetveryk-Burchak, A. G. (2014). Questionnaire “The Mental Health Continuum – Short Form”: description, adaptation, application. *Bulletin of Dnipropetrovsk University. Pedagogy and Psychology Series*, 20, 89–97.
- Nosov, P., Zinchenko, S., Popovych, I., Safonov, M., Palamarchuk, I., & Blakh, V. (2020). Decision support during the vessel control at the time of negative manifestation of human factor. *CEUR Workshop Proceedings*, 2608, 12–26. <https://ceur-ws.org/Vol-2608/paper2.pdf>
- Oliinyk, N. A., & Voitenko, S. M. (2020). Psykholohichni osoblyvosti sportyvnoi diialnosti [Psychological features of sports activity]. Vinnytsia: VNAU. [in Ukrainian].
- Pilkington, V., Rice, S., Olive, L. et al. (2024). Athlete Mental Health and Wellbeing During the Transition into Elite Sport: Strategies to Prepare the System. *Sports Med – Open*, 10(24). <https://doi.org/10.1186/s40798-024-00690-z>
- Pereira Vargas, M. L. F., Papathomas, A., Williams, T. L., Kinnafick, F. E., & Rhodes, P. (2021). Diverse paradigms and stories: mapping ‘mental illness’ in athletes through meta-study. *International Review of Sport and Exercise Psychology*, 17(1), 343–369. <https://doi.org/10.1080/1750984X.2021.2001840>
- Plokhikh, V., Kireieva, Z., & Skoromna, M. (2024). Emotional Accompaniment of the Organization of Time Perspective of Forced Ukrainian Migrants Staying Abroad. *Insight: the psychological dimensions of society*, 11, 15–37. <https://doi.org/10.32999/2663-970X/2024-11-2>
- Popovych, I., Blynova, O., Savchuk, O., Zasenkov, V., & Prokhorenko, L. (2020). 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. <https://doi.org/10.7752/jpes.2020.05369>
- Popovych, I., Chervinska, I., Kazibekova, V., Vasylyk, V., Verbeschuk, S., & Gniezdilova, V. (2022a). Young athletes’ time perspective as a factor in the development of sports motivation. *Journal of Physical Education and Sport*, 22(10), 2427–2435. <https://doi.org/10.7752/jpes.2022.10310>
- Popovych, I., Hrys, A., Hoian, I., Mamchur, I., Babenko, A., & Fedyk, O. (2022c). Successfulness in teenagers’ sporting activities: comparative analysis of individual and team sports. *Journal of Physical Education and Sport*, 22(11), 2886–2897. <https://doi.org/10.7752/jpes.2022.11365>
- Popovych, I., Hudimova, A., Bokhonkova, Yu., Savchuk, O., Hoian, I., & Shevchenko, N. (2023a). Dispositional Mental States of Internally Displaced University Teachers Under Martial Law: Gender Differences. *Journal of Education Culture and Society*, 14(2), 171–187. <https://doi.org/10.15503/jecs2023.2.171.181>
- Popovych, I., Huias, I., Serbin, Iy., Piletska, L., Mashchak, S., & Zahrai, L. (2023b). Psychological content parameters of attention in the structure of time perspective of young female athletes: comparative analysis. *Journal of Physical Education and Sport*, 23(1), 152–161. <https://doi.org/10.7752/jpes.2023.01019>
- Popovych, I., Kolly-Shamne, A., Piletska, L., Soroka, O., Hoian, I., Yaremchuk, V., & Huzar, V. (2024). Propensity for adventurousness in the motivational structure of junior athletes. *Journal of Physical Education and Sport*, 24(7), 1647–1658. <https://doi.org/10.7752/jpes.2024.07185>
- Popovych, I., Kosmii, M., Hrys, A., Hoi, N., Dyhun, I., Hoian, I., & Nosov, P. (2023c). Pre-competition expectation profiles among junior athletes in the context of altered sporting conditions. *Journal of Physical Education and Sport*, 23(10), 2551–2562. <https://doi.org/10.7752/jpes.2023.10293>
- Popovych, I., Plokhikh, V., Hrys, A., Pavliuk, M., Nosov, P., & Zinchenko, S. (2023d). Operationalization of footballers’ emotional intelligence in the dimensions of motivational orientation: analysis based on the basic positions. *Journal of Physical Education and Sport*, 23(3), 772–781. <https://doi.org/10.7752/jpes.2023.03095>
- Popovych, I., Radul, I., Hoian, I., Ohnystyi, A., Doichyk, V., & Burlakova, I. (2022d). Athletes’ resilience typology: a comparative analysis of individual and team sports. *Journal of Physical Education and Sport*, 22(9), 2036–2046. <https://doi.org/10.7752/jpes.2022.09260>
- Popovych, I., Radul, I., Radul, V., Geiko, Ie., Hoi, N., Sribna, O., Tymosh, Yu. (2022e). Construction and comparison of mental resource complexes of male and female sports teams. *Journal of Physical Education and Sport*, 22(9), 2053–2061. <https://doi.org/10.7752/jpes.2022.09262>
- Popovych, I., Shevchenko, N., Raievska, Ya., Myshchysyn, M., Hoian, I., Yakovleva, S., & Los, O. (2023e). Operationalization of physical work ability of young athletes in terms of psychological well-being. *Journal of Physical Education and Sport*, 23(6), 1456–1464. <https://doi.org/10.7752/jpes.2023.06178>
- Prior, E., Papathomas, A., & Rhind, D. (2022). A systematic scoping review of athlete mental health within competitive sport: interventions, recommendations, and policy. *International Review of Sport and Exercise Psychology*, 1–23. <https://doi.org/10.1080/1750984X.2022.2095659>
- Prokhorenko, L., Popovych, I., Sokolova, H., Chumaieva, Yu., Kosenko, Yu., Razumovska, T., & Zasenkov, V. (2023). Gender differentiation of self-regulating mental states of athletes with disabilities: comparative analysis. *Journal of Physical Education and Sport*, 23(2), 349–359. <https://doi.org/10.7752/jpes.2023.02042>

- Raievska, Y., Savchuk, J., Hulas, I., Khokhlov, A., Hoian, I., Syniakova, V., Soroka, O., & Lukashov, O. (2024). Mechanism of comparison in the structure of self-efficacy in junior athletes' sporting activities. *Journal of Physical Education and Sport*, 24(6), 1349–1359. <https://doi.org/10.7752/jpes.2024.06153>
- Shaboltas, A. M. (2004). Motives for playing sports. Kyiv: Olympic Literature.
- Shcherbak, T., Popovych, I., Kariyev, A., Duisenbayeva, A., Huzar, V., Hoian, I., & Kyrychenko, K. (2023). Psychological causes of fatigue of football players. *Journal of Physical Education and Sport*, 23(8), 2193–2202. <https://doi.org/10.7752/jpes.2023.08251>
- Sutcliffe, J. T., Graupensperger, S., Schweickle, M. J., Rice, S. M., Swann, C., & Vella, S. A. (2021). Mental health interventions in non-elite sport: a systematic review and meta-analysis. *International Review of Sport and Exercise Psychology*, 17(1), 319–342. <https://doi.org/10.1080/1750984X.2021.2001839>
- Tavrovetska, N., Popovych, I., Savchuk, O., Piletska, L., Lappo, V., Abramian, N., & Zahrai, L. (2023). Research on risk inclination of young female athletes in the dimensions of life orientations. *Journal of Physical Education and Sport*, 23(4), 868–877. <https://doi.org/10.7752/jpes.2023.04110>
- Vallerand, R. J. (1997). Toward a hierarchical model of intrinsic and extrinsic motivation. In M. P. Zanna (Ed.), *Advances in experimental social psychology*, Vol. 29, pp. 271–360. Academic Press. [https://doi.org/10.1016/S0065-2601\(08\)60019-2](https://doi.org/10.1016/S0065-2601(08)60019-2)
- Wallston, K. A., Wallston, B. S., & DeVellis, R. (1978). Development of Multidimensional Health Locus of Control (MHLC) Scales. *Health Education Monographs*, 6(1), 160–170. <https://doi.org/10.1177/109019817800600107>
- Whitton, O. M., Bowtell, J., & Jones, M. (2020). A critical consideration of the role of mental toughness and pain in the acute pain experiences of athletes. *International Review of Sport and Exercise Psychology*, 16(1), 210–230. <https://doi.org/10.1080/1750984X.2020.1836672>
- Zavatska, N., Omelianiuk, S., Lukashov, O., & Petrenko, M. (2024). Social Comparison in the Organization of the Structure of Self-Efficacy of Higher Education Students. *Insight: the psychological dimensions of society*, 12, 290–310. <https://doi.org/10.32999/2663-970x/2024-12-13>
- Zinchenko, S., Kobets, V., Tovstokoryi, O., Nosov, P., & Popovych, I. (2023). Intelligent System Control of the Vessel Executive Devices Redundant Structure. *CEUR Workshop Proceedings*, 3403, 582–594. <https://ceur-ws.org/Vol-3403/paper44.pdf>
- 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. <https://ceur-ws.org/Vol-2805/paper25.pdf>