

Juniors' extreme risky behavior in the context of the structure of self-efficacy in competitive activity

IHOR KOVAL¹, ROMAN YAREMKO², NATALIYA HURTOVENKO³, ROKSOLANA SIRKO⁴, OKSANA STELMAKH⁵, VOLODYMYR SLOBODIANYK⁶, YULIYA KULYK⁷, IHOR HOIAN⁸

^{1,2,4,5,6,7}Lviv State University of Life Safety, Lviv, UKRAINE

³Pavlo Tychyna Uman State Pedagogical University, Uman, UKRAINE

⁸Vasyl Stefanyk Precarpathian National University, Ivano-Frankivsk, UKRAINE

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Abstract:

The aim of this study is to perform theoretical and empirical research on the manifestations, levels, and differences in extreme risky behavior among junior athletes within the framework of self-efficacy in competitive activities. **Methods:** The research participants consist of junior athletes who regularly compete at various levels and are enrolled in Ukrainian sports schools for children and youth. The study includes representatives from team contact sports such as football, handball, and fire-applied sports (n = 37; 50.00%) as well as individual contact sports including freestyle wrestling, karate, judo, Greco-Roman wrestling, and boxing (n = 37; 50.00%). Valid and reliable psycho-diagnostic tools, previously tested in numerous sports studies involving junior samples, were used to measure the relevant parameters. **Results:** Using the Kruskal-Wallis H-test, one significant superiority of the sample of junior athletes engaging in individual contact sports (Group 2) over the sample of junior athletes engaging in game contact sports (Group 1) by the parameter “emotional risk propensity” ($H = 11.324$; $p < .001$) was found. Eleven correlations were established, ten of them being direct and one correlation being inverse. It was found that the content parameters of junior athletes' extreme risky behavior are more dependent on self-efficacy than the functional parameters. It was explained that the content parameters – emotional, cognitive, behavioral, and controlling-regulatory propensities – are largely aimed at educational-training, competitive, and recovery activities. Attention was focused on the functional parameters, and it was explained that they reflected the juniors' psychophysiological activeness. It was empirically established and theoretically substantiated that the formedness of a medium level of extreme risky behavior (G_{II}) has the largest number of significant superiorities. **Discussion and conclusions:** It was substantiated that the research into junior athletes' extreme risky behavior in the context of the structure of self-efficacy of competitive activity is an examination of correlations and significant differences of the relevant parameters pertaining to age-related psycho-physiological formations, the search for the meaning of life, lower self-confidence, and the formation of the worldviews which are inherent in adolescents. It was summarized that self-efficacy in interpersonal interaction, self-efficacy in subject activity, and motivation for achieving a sports result are relevant dimensions of junior athletes' sporting activities. It was recommended that a system of educational-training preparation aimed at optimizing junior athletes' extreme risky behavior should be developed. The obtained results possess scientific novelty and should be implemented in the educational-training activity of sports schools for children and youth.

Keywords: risk, addictive behavior, deviant behavior, educational-training activity, fire-applied sport, motivation for achievement, stress.

Introduction

Global social transformation processes, social conflicts, cataclysms, permanent armed conflicts, and sociogenic challenges create a social field of uncertainty and pose serious obstacles that prevent young people from achieving life goals. Professional and amateur sports are constantly developing which requires searching for new resources, reconsidering the existing technologies, and revealing latent opportunities. Junior sports are not only a transitional link between children's and adult sports, but also a measure of Olympic ambitions and record-breaking sports achievements. The trials facing junior athletes which hamper the achievement of sports aims and the fulfilment of dreams encourage them to rethink the meaning of life. At the same time, as noted by O. Vdovichenko (2021), juniors are characterized by impulsiveness and emotional instability which cause their involvement in dangerous and extreme situations that are accompanied by risky actions. It was found that young drivers make up a predominant share in the statistics on road traffic accidents, considerably outnumbering older drivers (Hatfield & Fernandes, 2009). The researchers prove that risk propensity moderates the relationship between the perceived risk and risky behavior. Additionally, it was statistically confirmed that the level of bipolarity and impulsiveness in athletes engaging in extreme sports and high-risk sports is significantly higher

than in the control group of the corresponding age and gender (Dudek et al., 2016; Kuzikova et al., 2020). In scientific literature, two groups explaining risky behavior predominate: the first group – the need for thrills or new sensations (Zukerman, 1984) and the second group – physiological features determining extreme risky behavior (Sannikova & Bykova, 2008). The same conditional division combining functional and content parameters was used in this research. It seems that the combination of the proposed dimensions allows for comprehensive reflection of the researched phenomenon which is crucial in creating the empirical picture of the study.

Researchers B. Zamboanga et al. (2012) underscored that adolescents engaging in sports are more prone to alcoholism than those who do not engage in sports. It was proved that beginner athletes who expect high results due to alcohol use tend to drink alcohol unlike those who do not uphold this idea. It is noteworthy that deviant behavior which can take on all forms of addiction is capable of playing a compensatory role for junior athletes. While minor manifestations can have a positive restorative effect, systematic intentions have a negative effect on all areas of sporting activities. One of the forms of addiction pertaining to extreme risky behavior of junior athletes is adrenaline addiction. Adrenaline addiction itself is neither harmful nor dangerous. However, this addiction can lead to impulsive participation in dangerous sporting activities. Such thrill-seekers try their hand at fire-applied sport, motoball, parachuting, and other extreme sports. At the moment of danger, rational perception is often disabled in such people, and young people may not be aware of the consequences of risks (Bykova, 2012). Junior athletes who are prone to extreme risky behavior say that risks bring them emotional satisfaction, energize their bodies, and are a powerful stimulator of vitality. Actually, an adrenaline rush is a natural reaction of the body to survival – the body prepares itself to escape from danger. (Ilyin, 2012). The research by O. Vavryniv and R. Yaremko (2022) and Blikhar et al. (2023) reveals that an important professional quality for young firefighters is not only a well-formed readiness for risky behavior but also empathy. Empathy is a factor of professional self-realization of future rescuers. Analysis of individual and typological features of adolescent respondents showed that emotionality is a consolidating trait that is inherent in all young people who are prone to extreme risky behavior (Bykova, 2012). E. Ilyin (2012) argues that temperament traits, determination, emotional stability/instability, and orientation of the sphere of motives and needs significantly correlate with extreme risky behavior. It should be highlighted that socially focused motivational orientation (Popovych et al., 2022b) for junior athletes can be an additional catalyst in the desire for taking risks to achieve a sports result. Occasionally junior athletes' achievements have a huge amplitude of ups and downs which may seem illogical. Explanations can be found in the multi-faceted and complicated psychology of junior sports.

It should be highlighted that it is in adolescence that the professional and personal development of a young individual takes place, and the worldview is formed. Juniors who devote themselves to sporting activities go through complex life challenges, and an athlete's personality is formed (Kurova et al., 2023; Popovych et al., 2023f). A key role in these processes is played by emotional and volitional self-regulation of an athlete's behavior (Kuznetsov et al., 2019). Self-regulation of sporting activities is a conscious process of mental activeness in the educational, training, competitive, and recovery activities of athletes that ensures support and achievement of both individual tasks, and the overall aim of sporting activities (Prokhorenko et al., 2023). It was proved that the parameters of life orientations are factors determining the motivation for achieving success and affecting junior athletes' risky behavior (Tavrovetska et al., 2023).

Junior athlete's self-efficacy in the examined context is of special scientific interest. The studies of I. Halian et al. (2023a; 2023b) established correlations between junior athletes' personality traits with the level of their self-efficacy and demonstrated the relationship between the coach's qualities and junior athlete's self-efficacy. It was found that a junior's self-efficacy is an extremely vulnerable and fragile formation that is based on faith and confidence in one's ability to solve tasks in sporting activities. Self-efficacy requires permanent exhausting work that will contribute to the formation of the winner's psychology and allow an athlete to surpass themselves.

The research into juniors' extreme risky behavior in the context of the structure of self-efficacy of competitive activity is an attempt to establish correlations and differences between the examined parameters, determined by age-related psychophysiological formations, the search for the meaning of life, lower self-confidence, the formation of worldviews which are inherent in adolescents.

Hypothesis: 1) there are no differences in the intensity of the examined parameters between the representatives of game and individual contact sports; 2) the parameters of extreme risky behavior will have significant correlations with junior athletes' self-efficacy; 3) the formedness of a medium level of extreme risky behavior will have the highest indicators of the parameters of juniors' self-efficacy in comparison with low and high levels.

Purpose. To conduct theoretical-empirical research into the manifestations, levels, and differences of junior athletes' extreme risky behavior in the context of the structure of self-efficacy of competitive activity.

Methods

Methodology. The methodological foundation of the research into extreme risky behavior involves studies that consider risk to be a permanent and unsurmountable component of any activity. Risk protects an athlete from conservatism and conformism, and plays a key role in decision-making (Ilyin, 2012). Extreme risky

behavior is an individual and typological complex of risk propensity (Bykova, 2012; Sannikova & Sannikov, 2018) and the desire for self-expression in adolescents (Hoian et al., 2024; Hrys et al., 2024; Zavatska et al., 2022).

When making the research empirical picture, choosing a strategy, and selecting psycho-diagnostic tools, we studied the research subject and analyzed a number of publications in the following areas: a) competitive activity in the context of achieving a victory result (Popovych et al., 2022d; 2021b); b) the psycho-emotional component in the context of risky activity (Chebykin et al., 2024; Karpenko et al., 2024; Plokhikh et al., 2024; Popovych et al., 2023e; Yaremko et al., 2022); c) stressogenic (Blikhar et al., 2024; Shcherbak et al., 2023) and traumatic experience of sporting activities (Staude et al., 2023a; 2023b; 2024); d) psychophysiological (Andrieieva et al., 2020; Galan et al., 2017; 2020) and anthropometric regularities (Borysenko et al., 2020; Cretu et al., 2021; Kozin et al., 2022; 2023) and their impact on educational-training activities; e) space safety (Blynova et al., 2022) and risky behavior (Tavrovetska et al., 2023); f) peculiarities of respondents' cognitive processes and educational activity (Kobets et al., 2021; Popovych et al., 2023a); g) methodological problems of safe (Nosov et al., 2021a; 2021b), extreme (Nosov et al., 2020; Zinchenko et al., 2022; 2023a; 2023b), and risky (Mamenko et al., 2022) behavior in similar areas of human activity.

Participants. The research participants are junior athletes who regularly participated in competitions of all levels (from regional to international ones) and were trained and educated at sports schools for children and youth of Ukraine located in Lviv and Kyiv. The research involved representatives of game contact sports: football, handball, and fire-applied sport ($n = 37$; 50.00%), and contact individual sports: freestyle wrestling, karate, judo, Greco-Roman wrestling, and boxing ($n = 37$; 50.00%), a total of $n = 74$ athletes. All the junior athletes were aged 15 to 19 years ($M = 16.45$; $SD = \pm 4.08$). Gender representation is as follows: male junior athletes ($n = 44$; 59.46%) and female junior athletes ($n = 30$; 40.54%).

Organization of research. The game sports – football and handball – were represented by the junior teams U-15, U-17 and U-19. All the respondents attended sports schools for children and youth. Empirical data were collected using Google Forms between February and April 2024. The competitive and training stage was active. There were participants preparing for international sports competitions, in particular, the summer Olympic games. We believe that the proposed research strategy allowed for objective determination of the parameters of juniors' extreme risky behavior in the context of the structure of self-efficacy of competitive activity. The sample was randomly selected, the data were collected confidentially, and the subjects voluntarily agreed to participate in the research. Double consent was received to conduct the research – from the administrations of sports schools for children and youth and the athletes' head coaches.

Procedures and instruments. The key psycho-diagnostic instrument relevantly reflecting the examined phenomenon was the methodology by M. Zukerman (1984) "Self-assessment of the tendency to extreme risky behavior" (STERB). The questionnaire consisted of forty statements and a three-point direct scale with the variants of responses: a) yes, true; b) no, false; c) difficult to answer. The method contained four scales: ST – seeking a thrill; IM – intolerance of monotony; SNS – seeking new sensations; MSD – maladaptive search for difficulties. Direct and reverse scoring was applied. One point was awarded for each match. The range of points for the scales was the same – from 0 to 10. The homogeneity of the empirical data by α -Cronbach was .813 (a medium level). The method "STERB" (Zukerman, 1984) is aimed at identifying various behavior orientations related to the need for risk, novelty, and extremity, whereas another diagnostic tool – "Risk Traits" (RT) (Sannikova & Bykova, 2008) – aims to determine content peculiarities of the examined phenomenon. Forty statements allowed for identifying self-regulation manifestations, and verbal, nonverbal, and individual-typological characteristics of the respondents. The four-point Stapel scale with the following options of responses was used: a) definitely, yes – 0 points; b) probably, yes – 1 point; c) probably, no – 3 points; d) definitely, no – 4 points. Four main scales of the method were used: ERP – emotional risk propensity; CRP – cognitive risk propensity; BRP – behavioral risk propensity; CRRP – controlling-regulating risk propensity. The homogeneity of the empirical data by α -Cronbach was .744 (a satisfactory level). Since competitive activity is focused on results, and this result should reflect the context of the structure of junior athletes' self-efficacy in our research, two tools were proposed: "The Self-Efficacy Scale" (SES) (Sherer et al., 1982) and "The Scale of the Need for Achievement" (SNA) (Orlov et al., 1974). The method "SES" (Sherer et al., 1982) was represented by two scales: Subject Activity (SA) and Interpersonal Communication (IC). The homogeneity of the empirical data by α -Cronbach was .756 (a satisfactory level). The modified questionnaire "The Need for Achieving a Sports Result" (NASR) (modification by Popovych et al., 2022a) was used on the basis of "SNA: (Orlov et al., 1974). The homogeneity of the empirical data by α -Cronbach was .764 (a satisfactory level).

Statistical analysis. Mathematical and statistical processing of the research data was performed using the computer program "IBM SPSS Statistics" v. 27.0.0.0 (112), and partially applying the service "MS Excel". The figure was created using "MS Word". The statistical parameters applied for establishing reliability: homogeneity of the dataset was established by α -Cronbach; the distribution of the empirical data was examined using the Kolmogorov-Smirnov test; the Pearson correlation coefficient was used for establishing correlations (R); the Kruskal-Wallis H-test – for comparing the values of unrelated groups; the Mann-Whitney U-test – for comparing the values of related groups; the measurements are significant at the level of $p \leq .050$; $p \leq .010$; $p \leq .001$.

Results

Descriptive frequency characteristics were determined by all the psycho-diagnostic tools: “STERB” (Zukerman, 1984), “RT” (Sannikova & Bykova, 2008), “SES” (Sherer et al., 1982), “NASR” (modification by Popovych et al., 2022a). Three parameters were found according to the research strategy: the mean (M), the mean squared deviation (SD), and the median (Me). At this stage, the normal distribution of the empirical data was confirmed using the Kolmogorov-Smirnov test. Group 1 consisted of the junior athletes representing game contact sports: football, handball, and fire-applied sport (n = 37; 50.00%). Group 2 consisted of the junior athletes representing contact individual sports: freestyle wrestling, karate, judo, Greco-Roman wrestling, and boxing (n = 37; 50.00%). H-test of Kruskal-Wallis was used to identify differences between unrelated groups of junior athletes (Tabl. 1).

Table 1. Comparison of the examined parameters of Group 1 and Group 2 by the Kruskal-Wallis H-test (n = 74)

Group	DFC	Scales										
		ST	IM	SNS	MSD	ERP	CRP	BRP	CRRP	SA	IC	NASR
Group 1	M	7.66	5.42	6.75	5.91	13.48	9.08	15.94	13.03	33.23	4.12	14.76
	SD	±1.28	±.93	±1.13	±.98	±2.26	±2.11	±2.96	±2.51	±5.54	±.69	±2.46
	<i>Me</i>	<i>7.50</i>	<i>5.50</i>	<i>6.00</i>	<i>6.00</i>	<i>13.50</i>	<i>10.00</i>	<i>15.50</i>	<i>13.00</i>	<i>33.00</i>	<i>4.00</i>	<i>15.00</i>
Group 2	M	8.16	6.02	7.03	5.98	15.32	11.28	16.22	14.12	32.95	3.34	16.03
	SD	±1.37	±1.01	±1.17	±.99	±2.55	±1.88	±2.71	±2.35	±5.49	±.56	±2.67
	<i>Me</i>	<i>8.00</i>	<i>6.00</i>	<i>7.00</i>	<i>6.00</i>	<i>15.50</i>	<i>11.00</i>	<i>16.00</i>	<i>14.00</i>	<i>33.50</i>	<i>3.50</i>	<i>16.00</i>
SP	H	.358	.371	2.963	.243	11.324	3.592	2.045	2.345	2.371	3.139	.389
	p	.587	.539	.085	.645	<.001	.058	.111	.103	.105	.062	.528

Note: Group 1 – representatives of contact game sports; Group 2 – representatives of contact individual sports; SP – statistical parameter the Kruskal-Wallis H-test; DFC – descriptive frequency characteristic; M – mean; SD – squared deviation; Me – median (given *in italics*); ST – seeking a thrill; IM – intolerance of monotony; SNS – seeking new sensations; MSD – maladaptive search for difficulties; ERP – emotional risk propensity; CRP – cognitive risk propensity; BRP – behavioral risk propensity; CRRP – controlling-regulating risk propensity; SA – Subject Activity; IC – Interpersonal Communication; NASR – need for achieving a sports result.

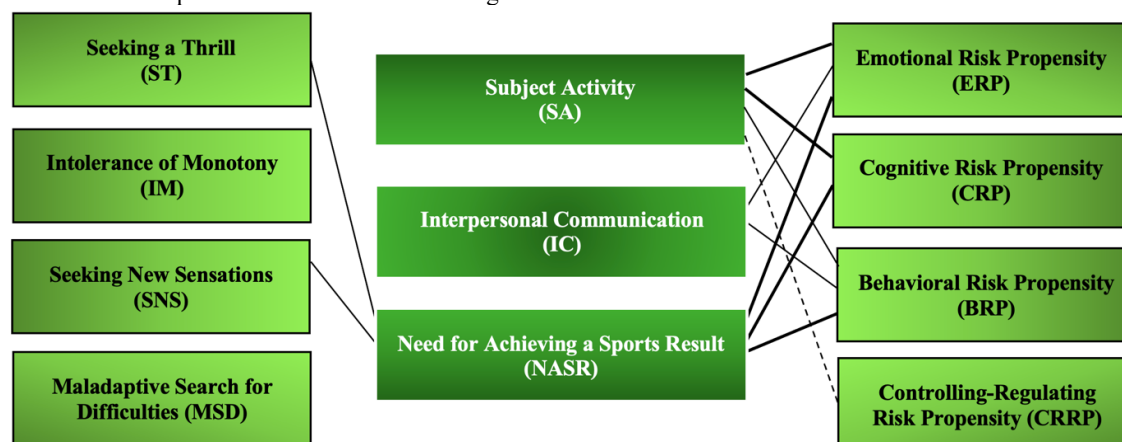
Using the Kruskal-Wallis H-test, one significant superiority of Group 2 over Group 1 was established by the parameter “emotional risk propensity” (H = 11.324; p < .001). In addition, two increasing trends were observed, one in Group 2 – by the parameter “cognitive risk propensity” (H = 3.592; p = .058) and the other in Group 1 – by the parameter “Interpersonal Communication” (H = 3.139; p = .062). No significant differences were found between the levels of the average descriptive frequency characteristics and the data obtained in similar sports studies conducted on juniors’ samples (Popovych et al., 2022a; Tavrovetska et al., 2023). The research design implies establishing correlations between the scales of extreme risky behavior and self-efficacy of junior athletes’ competitive activity. The normal distribution allowed for using the Pearson correlation coefficient (R). The matrix of bivariate correlations between the examined parameters is presented in Tabl. 2

Table 2. Correlation matrix of the parameters of extreme risky behavior and self-efficacy of juniors’ competitive activity (n = 74)

Scale	SP	Scales of self-efficacy of competitive activity		
		SA	IC	NASR
ST	<i>R</i>	.187	.109	.243*
	<i>p</i>	.062	.185	.015
IM	<i>R</i>	.155	.061	.181
	<i>p</i>	.122	.098	.065
SNS	<i>R</i>	.162	.033	.221*
	<i>p</i>	.091	.685	.019
MSD	<i>R</i>	.020	.030	.192
	<i>p</i>	.845	.706	.055
ERP	<i>R</i>	.271**	.245*	.339**
	<i>p</i>	.007	.015	<.001
CRP	<i>R</i>	.268**	.173	.321**
	<i>p</i>	.006	.086	<.001
BRP	<i>R</i>	.244*	.221*	.412**
	<i>p</i>	.014	.019	<.001
CRRP	<i>R</i>	-.222*	.033	.099
	<i>p</i>	.021	.685	.331

Note: SP – the statistical parameter of the Pearson correlation coefficient (R); SA – Subject Activity; IC – Interpersonal Communication; NASR – the need for achieving a sports result; ST – seeking a thrill; IM – intolerance of monotony; SNS – seeking new sensations; MSD – maladaptive search for difficulties; ERP – emotional risk propensity; CRP – cognitive risk propensity; BRP – behavioral risk propensity; CRRP – controlling-regulating risk propensity; R – the Pearson correlation coefficient; p – the level of significance; * – p ≤ .050; ** – p ≤ .010, and *** – p ≤ .001 (bold type).

The correlation pleiade in Fig. I qualitatively complements the statistical material given in Tabl. 2 and allows for efficient interpretation of the research findings.



Note: — direct correlations at $p \leq .050$; - - - direct correlations at $p \leq .010$ and $p < .001$; \dashv inverse correlations at $p \leq .050$.

Figure I. Correlation pleiade of the parameters of extreme risky behavior and self-efficacy of junior athletes' competitive activity ($n = 74$)

Eleven correlations were established, ten of them being direct and one correlation being inverse. It is noteworthy that the functional component presented by the parameters of extreme risky behavior, established by the questionnaire "STERB" (Zukerman, 1984), has two correlations. At the same time, the content component, whose parameters were determined by the method "RT" (Sannikova & Bykova, 2008), has nine correlations. Hence, junior athletes' extreme risky behavior is more dependent on the content components than on the functional components. The strongest direct correlations with the parameters of self-efficacy were established between emotional risk propensity and SA ($R = .241$; $p = .007$) and NASR ($R = .339$; $p \leq .001$); between cognitive risk propensity and SA ($R = .271$; $p = .007$) and NASR ($R = .321$; $p \leq .001$); between behavioral risk propensity and NASR ($R = .412$; $p \leq .001$). Accordingly, the need for achieving a sports result has the largest number of the strongest correlations ($p \leq .001$) – three (.339; .321; .412).

The design of the summative strategy implies the division of all the parameters of extreme risky behavior into three levels: low – Group I, medium – Group II, and high – Group III. The levels were experimentally determined using frequency characteristics – M and SD (see Tabl. 1). This distribution allowed for qualitatively identifying significant differences in juniors' self-efficacy, finding these differences for three groups, as contrasted with the division by the median, since the median allows for dividing only into two groups reflecting high and low levels. Our choice was determined by the fact that a considerable portion of representatives of a medium level are very close to the border and can fall into different groups. To avoid this and find a reliable result, all three groups were compared. Tabl. 3 represents differences between the three groups by all parameters of the method "STERB" (Zukerman, 1984).

Table 3. Differences between the researched groups of parameters "STERB" (Zukerman, 1984) in the dimensions of self-efficacy

Scale	SP	Mann-Whitney U-test								
		Subject Activity			Interpersonal Communication			The Need for Achieving a Sports Result		
		G_I & G_{II}	G_I & G_{III}	G_{II} & G_{III}	G_I & G_{II}	G_I & G_{III}	G_{II} & G_{III}	G_I & G_{II}	G_I & G_{III}	G_{II} & G_{III}
ST	<i>U</i>	903.500						945.500		
	<i>p</i>	.012						.021		
IM	<i>U</i>				556.000			322.000		
	<i>p</i>				<.001			<.001		
SNS	<i>U</i>							355.000		
	<i>p</i>							<.001		
MSD	<i>U</i>	338.500						389.000		
	<i>p</i>	<.001						<.001		

Note: SP – statistical parameter; U – критерій Mann-Whitney; p – the level of significance; ST – seeking a thrill; IM – intolerance of monotony; SNS – seeking new sensations; MSD – maladaptive search for difficulties; G_I – the group with the parameters of a low level; G_{II} – the group with the parameters of a medium level; G_{III} – the group with the parameters of a high level.

Seven significant superiorities were established in the examined pairs. There were two superiorities by the parameter “Subject Activity”. The group with the parameters of a medium level (G_{II}) has one superiority over the group with the parameters of a low level (G_I) – ST ($U = 903.500$; $p = .012$), and the group with the parameters of a high level (G_{III}) has one superiority over the group with the parameters of a low level (G_I) – MSD ($U = 338.500$; $p < .001$). One superiority of the group with the parameters of a high level (G_{III}) over the group with the parameters of a low level (G_I) was found by the parameter “Interpersonal Communication”– IM ($U = 556.000$; $p < .001$). Four superiorities were found by the parameter “The Need for Achieving a Sports result”. The group with the parameters of a medium level (G_{II}) has two superiorities over the group with the parameters of a high level (G_{III}): ST ($U = 523.000$; $p < .001$) and IM ($U = 644.000$; $p < .001$), and the group with the parameters of a low level (G_I) has two superiorities over the group with the parameters of a high level; the other two groups have one superiority each. The group with the parameters of a low level (G_I) has one superiority over the group with the parameters of a medium level: IM ($U = 322.000$; $p < .001$), and the group with the parameters of a high level (G_{III}) has one superiority over the group with the parameters of a low level: MSD ($U = 389.000$; $p < .001$). Tabl. 4 presents differences in all parameters of the method “RT” (Sannikova & Bykova, 2008).

Table 4. Differences between the examined groups of parameters “RT” (Sannikova & Bykova, 2008) in the dimensions of self-efficacy

Scale	SP	Mann-Whitney U-test								
		Subject Activity			Interpersonal Communication			The Need for Achieving a Sports Result		
		G_I & G_{II}	G_I & G_{III}	G_{II} & G_{III}	G_I & G_{II}	G_I & G_{III}	G_{II} & G_{III}	G_I & G_{II}	G_I & G_{III}	G_{II} & G_{III}
ERP	<i>U</i>	945.500			515.000			549.000		
	<i>p</i>	.021			<.001			<.001		
CRP	<i>U</i>	511.500								
	<i>p</i>	<.001								
BRP	<i>U</i>				383.000			523.000		
	<i>p</i>				<.001			<.001		
CRRP	<i>U</i>	837.000		178.000		644.000			675.000	
	<i>p</i>	.002		<.001		<.001			<.001	

Note: SP – statistical parameter; U – критерій Mann-Whitney; p – the level of significance; ERP – emotional risk propensity; CRP – cognitive risk propensity; BRP – behavioral risk propensity; CRRP – controlling-regulating risk propensity; G_I – the group with the parameters of a low level; G_{II} – the group with the parameters of a medium level; G_{III} – the group with the parameters of a high level.

Eleven significant superiorities were recorded in the examined pairs. There were three superiorities of the group with the parameters of a medium level (G_{II}) by the parameter “Subject Activity”: two superiorities over the group with the parameters of a low level – ERP ($U = 945.500$; $p = .021$), CRRP ($U = 837.500$; $p = .002$) and one superiority over the group with the parameters of a high level – CRRP ($U = 178.000$; $p < .001$). Two superiorities in the group with the parameters of a medium level (G_{II}) by the parameter “Interpersonal Communication” over the group with the parameters of a low level (G_I): ERP ($U = 515.000$; $p < .001$) and BRP ($U = 383.000$; $p < .001$). Six superiorities were recorded by the parameter “The Need for Achieving a Sports Result”. The group with the parameters of a medium level (G_{II}) has four superiorities, two of them – over the group with the parameters of a low level (G_I): BRP ($U = 523.000$; $p < .001$) and CRRP ($U = 644.000$; $p < .001$) and two – over the group with the parameters of a high level (G_{III}): ERP ($U = 549.000$; $p < .001$) and CRP ($U = 511.500$; $p < .001$). The group with the parameters of a high level (G_{III}) has two superiorities over the group of a medium level (G_{II}): BRP ($U = 901.000$; $p = .011$) and CRRP ($U = 675.000$; $p < .001$).

Discussion

The problem of athletes’ extreme risky behavior is not new in sports science. Social reality, which is undergoing dynamic transformation, puts an individual to permanent social risk, that is accompanied by high parameters of anxiety the sources of which should be clarified (Popovych et al., 2021a; 2023d; 2024). Beginner athletes should learn to control themselves and develop the peak readiness for important sports competitions (Popovych et al., 2023c). Participants in any activity are generators of risk situations. Junior athletes seeking self-realization in sporting activities and focusing on personal growth and professional development have to take risks or often encounter risky behavior of other subjects of interaction contacting with them. Proactive life attitude (Popovych et al., 2019; 2022c; 2022f), systematic self-improvement (Popovych & Blynova, 2019; Popovych et al., 2023b), increased adaptability (Halian, 2024; Popovych et al., 2022e), and assertiveness (Smolinska et al., 2024), allow for solving several urgent personal and professional problems to a certain extent. However, the problem of the appropriateness of extreme risky behavior in the dimensions of self-efficacy of competitive activity arouses special scientific and experimental interest. It is noteworthy that the research design implying the comparison of three groups with the parameters of low, medium, and high levels justified itself and

demonstrated a diverse picture of significant superiorities by all scales of extreme risky behavior of the respondents seeking self-efficacy (see Tabl. 3 and 4).

The descriptive frequency characteristics given in Tabl. 1 which reflected the parameters of risk and self-efficacy are at medium and upper-medium levels by the research scales. No extreme values were found, and there were no significant differences in comparison with other sports data. The research into extreme risky behavior allowed focusing attention on the formedness of controlling-regulating risk propensity (CRRP) which has rather levels in both groups: Group 1 ($M = 13.03$; $SD = \pm 2.51$; $Me = 13.00$) and Group 2 ($M = 14.12$; $SD = \pm 2.35$; $Me = 14.00$). The thing is, the ability to control and regulate risk propensity allows junior athletes to develop high self-regulation readiness and, if necessary, explosive reactive speed that can result in the desired superiority over the competitor. It is important that the actions should be controlled and not adventurous, which are difficult to explain logically later. The correlations (see Tabl. 2 and Fig. 1) demonstrated that the content parameters of junior athletes' extreme risky behavior are more dependent on self-efficacy than the functional parameters. It is obvious that emotional, cognitive, behavioral, and controlling-regulating risk propensities, which are more structured, are mostly aimed at educational-training, competitive, and recovery activities. The functional parameters largely reflect juniors' psychophysiological activeness. V. Plokhikh et al. (2024) argues that the trained and automated patterns play a crucial role in difficult extreme situations due to defense mechanisms.

The differences identified between the examined groups of parameters using the questionnaire "STERB" (Zukerman, 1984) in the dimensions of self-efficacy (see Tabl. 3) demonstrated that the groups with the parameters of medium and high levels (G_{II} and G_{III}) have three superiorities each. One superiority was recorded in the group with the parameters of a low level (G_I). A somewhat different picture was captured in identifying differences between the examined groups of the parameters by the method "RT" (Sannikova & Bykova, 2008) in the dimensions of self-efficacy (see Tabl. 4). In the second variant of comparison (see Tabl. 4), more significant superiorities were recorded – eleven as opposed to seven, and the group with the parameters of a medium level (G_{II}) had nine superiorities. We can explain it by the fact that the content parameters, unlike the functional parameters, are well-formed in adolescence, controlled and regulated by juniors themselves. The thing is, the innate parameters of extreme risky behavior should not be regarded as something negative. It is better to identify an athlete's individual-typological characteristics and help them develop a system of educational-training preparation to optimize extreme risky behavior. Implementation of this program may require involving a team or an individual psychologist since psychological correctional interventions will take place.

The first hypothesis was disproved since the Kruskal-Wallis H-test allowed for finding one significant superiority of Group 2 (individual contact sports) over Group 1 (game contact sports) by the parameter "emotional risk propensity" ($H = 11.324$; $p < .001$). The second hypothesis was confirmed since eleven correlations were established. The third hypothesis was also confirmed since the formedness of a medium level of extreme risky behavior (G_{II}) has the largest number of significant superiorities. Important scientific facts about junior athletes' extreme risky behavior in the context of organization of self-efficacy of competitive activity were obtained, and they should be implemented in the educational-training process of sports schools for children and youth.

Conclusions

It was substantiated that the research into junior athletes' extreme risky behavior in the context of the organization of self-efficacy of competitive activity is an examination of correlations and significant differences of the relevant parameters determined by age-related psychophysiological formations, the search for the meaning of life, lower self-confidence, and the formation of worldviews which are inherent in adolescents.

One significant superiority of the sample of junior athletes engaging in individual contact sports (Group 2) over the sample of junior athletes engaging in game contact sports (Group 1) by the parameter "emotional risk propensity" ($H = 11.324$; $p < .001$) was found using the Kruskal-Wallis H-test. Eleven correlations were established, ten of them being direct and one correlation being inverse. It was noted that the content parameters of junior athletes' extreme risky behavior are more dependent on self-efficacy than the functional parameters. It was explained that emotional, cognitive, behavioral, and controlling-regulating propensities which reflect the content parameters are more structured and are mostly focused on educational-training, competitive, and recovery activities. It was highlighted that the functional parameters largely reflect juniors' psychophysiological activeness. It was empirically established and theoretically substantiated that the formedness of a medium level of extreme risky behavior (G_{II}) has the largest number of significant superiorities. It was recommended that the system of educational-training preparation aimed at optimizing junior athletes' extreme risky behavior should be developed.

The purpose was achieved, the first hypothesis was disproved, and the second and third hypotheses were confirmed. It was summarized that junior athletes' self-efficacy in interpersonal interaction, self-efficacy in subject activity, and motivation for achieving a sports result are relevant dimensions of their sporting activities. It was emphasized that the obtained results possess scientific novelty, and they should be implemented in the educational-training activity of sports schools for children and youth.

References:

- Andrieieva, O., Yarmak, O., Palchuk, M., Hauriak, O., Dotsyuk, L., Gorashchenko, A., Kushni, I., & Galan, Y. (2020). Monitoring the morphological and functional state of students during the transition from middle to high school during the physical education process. *Journal of Physical Education and Sport*, 20(SI 3), 2110–2117. <https://doi.org/10.7752/jpes.2020.s3284>
- Borysenko, I., Cretu, M., & Kozina, Z. (2020). Influence of body length on orthostatic test parameters of student-athletes. *Health, Sport, Rehabilitation*, 6(4), 47–57. <https://doi.org/10.34142/HSR.2020.06.04.05>
- Bykova, S. V. (2012). The specifics of risk appetite in people with different types of emotions. *Science and education*, 6, 41–45. https://scienceandeducation.pdpu.edu.ua/journals/2012/NiO_6_2012/1/Byk.htm
- Blikhar, V., Kalka, N., & Kuzo, L. (2024). Theoretical and Empirical Study on Hardiness of Participants in Military Operations. *Insight: the psychological dimensions of society*, 11, 239–259. <https://doi.org/10.32999/2663-970X/2024-11-13>
- Blikhar, V., Kovalchuk, Z., Vavryniv, O., Yaremko, R., Bodnarchuk, V., & Tsiupryk, A. (2023). Results of the Implementation of a Comprehensive Socio-Psychological Program to Foster Professional Empathy Among Professionals in the Helping Professions. *BRAIN. Broad Research in Artificial Intelligence and Neuroscience*, 14(2), 1–13. <https://doi.org/10.18662/brain/14.2/440>
- Blynova, O., Popovych, I., Hulias, I., Radul, S., Borozentseva, T., Strilets-Babenko, O., & Minenko, O. (2022). Psychological safety of the educational space in the structure of motivational orientation of female athletes: a comparative analysis. *Journal of Physical Education and Sport*, 22(11), 2723–2732. <https://doi.org/10.7752/jpes.2022.11346>
- 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>
- 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>
- Dudek, D., Siwek, M., Jaeschke R., et al. (2016). A web-based study of bipolarity and impulsivity in athletes engaging in extreme and high-risk sports. *Acta Neuropsychiatrica*, 28(3), 179–183. <https://doi.org/10.1017/neu.2015.44>
- Galan, Y., Andrieieva, O., Yarmak, O., & Shestobuz, O. (2020). Programming of physical education and health improving classes for the girls aged 12–13 years. *Journal of Human Sport and Exercise*, 15(3), 525–534. <https://doi.org/10.14198/jhse.2020.153.05>
- Galan, Y., Nakonechnyi, I., Moseichuk, Y., Vaskan, I., Paliichuk, Y., Yarmak, O. (2017). The analysis of physical fitness of students of 13–14 years in the process of physical education. *Journal of Physical Education and Sport*, 17(SI 5), 2244–2249. <https://doi.org/10.7752/jpes.2017.s5237>
- 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., Popovych, I., Hulias, I., Serbin, Iy., Vyshnevskya, 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>
- Hatfield, J., & Fernandes, R. (2009). The role of risk-propensity in the risky driving of younger drivers. *Accident; analysis and prevention*, 41(1), 25–35. <https://doi.org/10.1016/j.aap.2008.08.023>
- Hoian, I., Yakovleva, S., Hulias, I., & Fomina, I. (2024). Self-Organization of Student Youth under Conditions of Social Uncertainty. *Insight: the psychological dimensions of society*, 11, 260–281. <https://doi.org/10.32999/2663-970X/2024-11-14>
- Hrys, A., Pavliuk, O., Hoi, N., & Los, O. (2024). Strategies of Student Youth's Self-Representations in Choosing Behavioral Tendencies. *Insight: the psychological dimensions of society*, 11, 184–203. <https://doi.org/10.32999/2663-970X/2024-11-10>
- Ilyin, E. P. (2012). Psychology of risk. St. Petersburg: Piter.
- 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. https://ceur-ws.org/Vol-2833/Paper_8.pdf
- Karpenko, Ye., Savko, N., Lialiuik, 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>

- Kozin, O., Cretu, M., Boychuk, Y., Kozina, Z., Korobeinik, V., & Sirenko, P. (2022). Comparative characteristics of the functional state of future art teachers and other pedagogical specialties students. *Health, Sport, Rehabilitation*, 8(4), 20–31. <https://doi.org/10.34142/HSR.2022.08.04.02>
- Kozin, O., Kozina, Z., Cretu, M., Boychuk, Y., Pavlović, R., Garmash, I., & Berezhna, Y. (2023). Vegetative regulation of vascular tone and features of the nervous system of pedagogical universities students. Is there a relationship with professional specialization?. *Health, Sport, Rehabilitation*, 9(1), 29–44. <https://doi.org/10.34142/HSR.2023.09.01.03>
- 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>
- Kuzikova, S., Shcherbak, T., Kuzikov, B., Blynova, O., Vavryniv, O., Khmiliar O., & Popovych, I. (2020). Research of predisposition to risk of participants of extreme sports. *Revista Inclusiones*, 43–58. Recuperado a partir de <https://revistainclusiones.org/index.php/inclu/article/view/1740>
- Kuznetsov, M. A., Fomenko, K. I., & Poliluyeva, I. V. (2019). Emotional and volitional regulation of the subject of artistic and sports activities. Kharkiv: KhNPU.
- Mamenko, P., Zinchenko, S., Kobets, V., Nosov, P., & Popovych, I. (2022). Solution of the Problem of Optimizing Route with Using the Risk Criterion. In: Babichev, S., Lytvynenko, V. (eds). *Lecture Notes in Computational Intelligence and Decision Making*. ISDMCI 2021. *Lecture Notes on Data Engineering and Communications Technologies*, 77. Springer, Cham. https://doi.org/10.1007/978-3-030-82014-5_17
- Nosov, P., Zinchenko, S., Ben, A., Prokopchuk, Y., Mamenko, P., Popovych, I., Moiseienko, V., Kruglyj, D. (2021a). Navigation safety control system development through navigator action prediction by Data mining means. *Eastern-European Journal of Enterprise Technologies*, 2 (9(110)), 55–68. <https://doi.org/10.15587/1729-4061.2021.229237>
- Nosov, P., Ben, A., Zinchenko, S., Popovych, I., Mateichuk, V., & Nosova, H. (2020). Formal approaches to identify cadet fatigue factors by means of marine navigation simulators. *CEUR Workshop Proceedings*, 2732, 823–838. <https://ceur-ws.org/Vol-2732/20200823.pdf>
- Nosov, P., Zinchenko, S., Plokhikh, V., Popovych, I., Prokopchuk, Y., Makarchuk, D., Mamenko, P., Moiseienko, V., & Ben, A. (2021b). Development and experimental study of analyzer to enhance maritime safety. *Eastern-European Journal of Enterprise Technologies*, 4(3(112)), 27–35. <https://doi.org/10.15587/1729-4061.2021.239093>
- Orlov Yu. M., Shkurkin, V. I., & Orlova, L. P. (1974). Construction of a test questionnaire to measure the need for achievement. In: Questions of experimental psychology and its history. Moscow: PH MCNI.
- 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., Nass Álvarez, J. L., Nosov, P., & Zinchenko, S. (2021a). A HISTORICAL DIMENSION OF THE RESEARCH ON SOCIAL EXPECTATIONS OF AN INDIVIDUAL. *Revista Notas Históricas y Geográficas*, 27, 190–217. <https://www.revistanotashistoricasygeograficas.cl/index.php/nhyg/article/view/365>
- Popovych, I., Borysiuk, A., Semenov, O., Semenova, N., Serbin, I., & Reznikova, O. (2022a). Comparative analysis of the mental state of athletes for risk-taking in team sports. *Journal of Physical Education and Sport*, 22(4), 848–857. <https://doi.org/10.7752/jpes.2022.04107>
- Popovych, I., Chervinska, I., Kazibekova, V., Vasylyk, V., Verbeschuk, S., & Gniezdilova, V. (2022b). 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., Hoi, N., Koval, I., Vorobel, M., Semenov, O., Semenova, N., & Hrys, A. (2022c). Strengthening of student youth's mental health using play sports. *Journal of Physical Education and Sport*, 22(6), 1384–1395. <https://doi.org/10.7752/jpes.2022.06174>
- 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., Hrys, A., Hoian, I., Mamchur, I., Babenko, A., & Fedyk, O. (2022d). 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., 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., 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., Koval, I., Raievska, Ya., Piletskyi, V., Buryanovaty, O., & Hrynychuk, O. (2023d). Dominating mental states of the representatives of individual sports under lockdown and martial law: comparative analysis. *Journal of Physical Education and Sport*, 23(1), 170–178. <https://doi.org/10.7752/jpes.2023.01021>
- Popovych, I., Plokhikh, V., Hrys, A., Pavliuk, M., Nosov, P., & Zinchenko, S. (2023e). 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. (2022e). 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. (2022f). 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. S., & Blynova, O. Ye. (2019). 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(SI 3), 847–853. <https://doi.org/10.7752/jpes.2019.s3122>
- Popovych, I., Shcherbak, T., Kuzikova, S., Blynova, O., Nosov, P., & Zinchenko, S. (2021b). Operationalization of tactical thinking of football players by main game roles. *Journal of Physical Education and Sport*, 21(5), 334, 2480–2491. <https://doi.org/10.7752/jpes.2021.05334>
- Popovych, I., Shevchenko, N., Raievska, Ya., Myshchysyn, M., Hoian, I., Yakovleva, S., & Los, O. (2023f). 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>
- Popovych, I., Sirko, R., Dushka, A., Slobodiany, V., Stelmakh, O., Pylypenko, L., & Zahrai, L. (2024). Types of precompetition anxiety among junior athletes. *Journal of Physical Education and Sport*, 24(6), 1394–1405. <https://doi.org/10.7752/jpes.2024.06158>
- Popovych, I. S., Zavatskyi, V. Yu., Geyko, Ie. V., Halian, O. I., Zavatskyi, Yu. A., & Radul, I. H. (2019). 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. <https://www.revistaespacios.com/a19v40n37/19403722.html>
- Prokhorenko, L., Popovych, I., Sokolova, H., Chumaieva, Yu., Kosenko, Yu., Razumovska, T., & Zasenka, 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>
- Sannikova, O. P., & Bykova, S. V. (2008). Test-questionnaire of qualitative components of risk appetite (“risk traits”) (psychodiagnostic technique). – № 24519; registration 22.05.2008
- Sannikova, O., & Sannikov, O. (2018). Adventurousness and risk in the decision-making structure. *Science and education*, 9–10, 111–119. <https://scienceandeducation.pdpu.edu.ua/articles/2018-9-10-doc/2018-9-10-st16>
- 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>
- Sherer, M., Maddux, J. E., Mercandante, B., Prentice-Dunn, S., Jacobs, B., & Rogers, R. W. (1982). The Self-Efficacy Scale: Construction and Validation. *Psychological Reports*, 51(2), 663–671. <https://doi.org/10.2466/pr0.1982.51.2.663>
- Smolinska, O., Koval, I., Pavliuk, M., & Shulha, D. (2024). Research of Assertiveness in Organization of the Time Perspective of Degree-Seeking Students in Higher Education. *Insight: the psychological dimensions of society*, 11, 222–237. <https://doi.org/10.32999/2663-970X/2024-11-12>
- Staude, V., Arutunan, Z., Radzishavska, Y., Yaremko, O., & Staude, A. (2023a). Complex rehabilitation treatment after knee arthroplasty. *Orthopaedics traumatology and prosthetics*, 1–2, 12–19. <https://doi.org/10.15674/0030-598720221-212-19>
- Staude, V., Radzishavska, Y., & Staude, A. (2023b). Using hardware myofascial release, longitudinal traction with thermal influence in patients with dorsal pain, caused by spine degenerative diseases. *Orthopaedics traumatology and prosthetics*, (3–4), 102–109. <https://doi.org/10.15674/0030-598720223-4102-109>
- Staude, V., Romanenko, K., & Staude, A. (2024). Recovery of stabilizing muscles that provide a vertical position of the trunk in patients with post-traumatic deformities of the long bones of the lower limbs in the distant period. *Orthopaedics traumatology and prosthetics*, 4, 79–86. <https://doi.org/10.15674/0030-59872023479-86>
- 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>
- Vavryniv, O. S., & Yaremko, R. Y. (2022). Empathy as a factor in the development of personal components of future rescuers' professional self-realization. *Insight: the psychological dimensions of society*, 8, 56–69. <https://doi.org/10.32999/2663-970X/2022-8-5>

- Vdovichenko, O. (2021). Comparison of risk tolerance in early and late adolescence. *Psychology: Reality and Perspectives*, 16. <https://orcid.org/0000-0003-0430-2295>
- Yaremko, R., Vavryniv, O., Tsiupryk, A., Perelygina, L., & Koval, I. (2022). Research of content parameters of the professional self-realization of future fire safety specialists. *Amazonia Investiga*, 11(53), 288–297. <https://doi.org/10.34069/AI/2022.53.05.28>
- Zamboanga, B. L., Ham, L. S., Olthuis, J. V., Martens, M. P., Groosbard, J. R., & Van Tyne, K. (2012). Alcohol Expectancies and Risky Drinking Behaviors Among High School Athletes: “I’d Rather Keep My Head in the Game”. *Prevention Science*, 13, 140–149. <https://doi.org/10.1007/s11121-011-0252-3>
- Zavatska, N., Hoi, N., Kozmenko, O., Kosheleva, N., Zavatskyi, Y., & Yaremko, R. (2022). Empirical research of student leadership’s content parameters. *Amazonia Investiga*, 11(51), 40–49. <https://doi.org/10.34069/AI/2022.51.03.4>
- Zinchenko, S., Kobets, V., Tovstokoryi, O., Nosov, P., & Popovych, I. (2023a). 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., Ben, A., Nosov, P., Popovych, I., Nahrybelnyi, Y. (2022). Automatic Optimal Control of a Vessel with Redundant Structure of Executive Devices. In: Babichev, S., Lytvynenko, V. (eds) *Lecture Notes in Computational Intelligence and Decision Making*. ISDMCI 2021. *Lecture Notes on Data Engineering and Communications Technologies*, 77. Springer, Cham. https://doi.org/10.1007/978-3-030-82014-5_18
- Zinchenko, S., Tovstokoryi, O., Nosov, P., Popovych, I., & Kyrychenko, K. (2023b). Pivot Point position determination and its use for manoeuvring a vessel. *Ships and Offshore Structures*, 18(3), 358–364. <https://doi.org/10.1080/17445302.2022.2052480>
- Zukerman, M. (1984). Methodology “Self-assessment of the tendency to extreme risky behavior”. In: Stolin, V., Shmeleva, A. *Practical training in psychodiagnostics*. Differential psychometrics. Moscow: Rech.