Original Article

Strengthening of student youth's mental health using play sports

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Abstract:
The purpose of the article is to theoretically substantiate and empirically establish that health-preserving technologies, such as play sports, may improve the mental health of student youth. Respondents were first-year students who, on their initiative, participated in a university program to implement health technologies, regularly attending sectional trainings in play sports (males – football; females – volleyball). The ascertaining stage of the experimental study was attended by n = 122 respondents aged 18 to 20 years (M = 18.6), and the formative stage was attended by n = 72 respondents. Football EGF (n = 24) and volleyball EGV (n = 12) were formed as experimental groups, and football CGF (n = 24) and volleyball CGV (n = 12) as control groups. **Research methods:** analysis, generalization; targeted observation using data recording protocols; valid methods with standard questionnaires. **Results.** It was revealed that respondents' psychological well-being (PW), which was measured in the coordinates of positive self-esteem (.227; p≤.01), the general mood background (.321; p≤.01) and the life satisfaction index (.301; p≤.01), was a predictor of mental health. Psychological well-being (PW) was shown to have the greatest statistically significant correlation (p≤.05; p≤.01) with the self-regulation and life satisfaction characteristics of student youth. The parameters "Self-acceptance" (p<.01), "Psychological well-being" (p<.01), "Life Satisfaction Index" (p<.01), "Evaluation of Performance" (p<.01), "Integral Level of Self-Regulation" (p<.01) showed positive significant changes in both experimental groups (EGF – football, EGV – volleyball). It is emphasized that positive changes in students' self-perception of themselves are, in our opinion, the most important positive changes that affect the general mood (.223; p≤.01) and is one of the most important parameters of mental health of respondents. **Conclusions.** It is generalized that regular training and competitions of student youth in football (males) and volleyball (females) during the academic year, contribute to statistically significant changes in mental health parameters. The implemented practice is an effective health-preserving technology that should be applied in college and higher education institutions' instructional processes.
Key words: health-preserving technologies, psychological health, self-regulation, psychological well-being, self-acceptance, life satisfaction index.

Introduction

Nowadays, strengthening the mental health of student youth is a major concern. Excessive mental and psycho-emotional loads necessitate good mental health, psychological well-being, stress resistance, and the capacity to handle peak loads throughout various tests. Individual mental health refers to a person's ability to reach his full potential, overcome stress and present obstacles, work efficiently, and achieve personal and social goals. The psychological well-being of a person is essential to their mental health. The multi-component structure of mental health factors can affect the overall psycho-emotional state of the individual, thereby strengthening it.

The World Health Organization (WHO) defines "mental health" as a condition of social well-being, physical and mental comfort. Mental health is characterized not only by the absence of sickness, disability, or physical defect, but also by the existence of a well-organized healthcare system that encourages psychological well-being (World Health Statistics, 2021). Globally, the issue of mental health has a significant impact on life expectancy and is dependent on the healthcare system. For example, according to World Health Statistics (2021), a child born in Sweden may live for more than 80 years, whereas a child born in Brazil can live for fewer than 72 years. At the time, life expectancy is substantially lower in India, Afghanistan, and the African continent (Lesotho). Of course, the decrease in life expectancy is related to the extremely high danger of loss of life and mental health.

Psychological well-being is analyzed in the dimensions of a person's mental health problem. The investigation of conceptual views on psychological well-being issues (Bradburn, 1969; Diener, 1984; Ryff,

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1995; Ryan & Deci, 2001; Voronina, 2002) enabled us to synthesize the most common: health-preserving, eudemonic, hedonistic, and integrative. The health-preserving direction emphasizes the psychophysiological component. Psychological well-being is an element of a person's mental health. The key goal is to preserve all its psychophysiological functions (Voronina, 2002). Furthermore, the eudemonic approach is quite similar to the health-preserving approach. The fundamental components of which are self-realization, individualization, and a desire to completely achieve one's potential (Ryff, 1995). Unlike the previous approaches, the hedonistic approach is built on the notion of pursuing pleasure while avoiding problems. This approach represents the balance of human emotions' negative and positive polarities (Bradburn, 1969; Diener, 1984). The integration approach has been discovered to be formed from the eudemonic and hedonistic approaches. This combination embodies the concept of psychological well-being as a multidimensional phenomenon combining life satisfaction with personal self-actualization (Ryan & Deci, 2001). We conclude that psychological well-being is an important aspect in the research of student youth mental health via play sports.

In Olympic sports, the sport of great victories, mental health is the foundation upon which an athlete's long and successful career is constructed (Cheban et al., 2020a; 2020b). Coaches and players may fail to see that the quick increase in physical and mental stress, as well as the record performances, are the consequence of a variety of underlying causes. One of these factors is strong mental health. The capacity to continuously enhance mental health defines the athlete's established physical culture, as well as a high degree of preparation for development and new challenges. The athlete's physical culture is an important component in the establishment of the specialist's general and professional culture (Morosanova, 2004). The capacity to handle change is defined by readiness for continuous development and a desire to take on responsibilities. The capacity to manage change is based on adaptability and a high level of personal self-regulation. The subjectivity of athletes' competitive actions is determined by their developed self-regulatory abilities in sports behavior. The subjectivity of competitive action is complex that incorporates deliberate planning, design, organization, and progressive attainment of the desired outcome in line with the major aim and actual needs (Boryshevsky, 2010).

It has been investigated the impact of student youth value attitudes on the quality of voluntary self-regulation of conduct and the desire to succeed. It has been discovered that the attitude toward physical culture as a value is an effective component affecting the establishment of a healthy lifestyle. It has been shown that systematic physical exercise among student youth improves the development of intellectual capacities, shapes "Self", and influences the construction of general and special competencies (Blynova et al., 2020a; Popovych et al., 2021c; 2022d). In comparison to young people who are apathetic to physical activity, student youth who are routinely successful in physical culture are able to effectively adjust to today's new situations. Young people's sports activities are strongly influenced by their social position and peer reputation. The desire for prestige is important for young athletes who want to express themselves and improve their social position (Bugulov & Sokaev, 2018).

In terms of social, economic, political, and epidemiological issues, sport has seen considerable transformation in recent decades. The continued armed conflicts and the growth of the COVID-19 pandemic have motivated student youth to permanently adjust to remote study, as well as the desire to retain physical health and participate in professional sports. It has been proven that excessive usage of social media reduces young athletes' physical activity (Hudimova et al., 2021). Reduced physical activity has been shown to exacerbate feelings of loneliness and to have a detrimental impact on training, recuperation, and competitive activities. It has been established that young athletes who are active users of social media suffer from systemic manifestations of depression, which reduces psychological well-being and has a severe impact on their mental health (Hudimova, 2021). Emotional stability in the structure of young athletes' psychological health has been investigated. Young athletes were shown to have a favorable emotional connection with their concept of life purpose and belief in its achievement (Popovych et al., 2022c). The study of Popovych et al. (2021d) brought attention to the significance of emotional intelligence in the structure of mental burnout in athletes. Significant correlations have been identified between emotional intelligence and such self-regulation characteristics of the athlete's personality as self-esteem and demand level.

The authors believe that regular training and competitions for student youth in football (males) and volleyball (females) will contribute to significant changes in the basic parameters of self-regulatory processes and psychological well-being by strengthening the mental health of student youth through play sports.

Hypothesis. The authors suggest that regular training and competitions for student youth in football (males) and volleyball (females) during the academic year will contribute to significant positive changes in mental health.

Purpose of the research is to theoretically substantiate and empirically establish that health-preserving technologies such as play sports may improve the mental health of student youth.

Material and methods

Methodology. A variety of conceptual provisions on self-regulation of behavior, psychological well-being, and contentment with personal life are among the methodological principles of the experimental investigation of strengthening the mental health of student youth using play sports. Systemic play sports, support of physical activity contribute to the development of self-regulation of the individual. The development of human self-

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regulation behavior influences its formation as a sports activity subject (Boryshevsky, 2010). The key parameters of the formation process are the development of planning, modeling, programming, and the formation of the ability to objectively evaluate their results. Permanent work on oneself enables the development of a system of perception of oneself and one's mental state, which is a predictor of mental health (Ryff, 1995) and one of the aspects of self-satisfaction (Neugarten, 1961). The given starting points and the outlined argumentation influenced the choice of psychodiagnostic methods and the definition of the list of relevant factors.

The use of the formative strategy prompted the consideration of experimental study on self-regulatory behavior (Nosov et al., 2020a; Plokhikh, 2021; Popovych, 2014; 2015; Popovych et al., 2020a; 2020c; 2022a), adaptive processes (Blynova et al., 2019; 2022; Popovych et al., 2020d; 2021b), and psycho-emotional loads in professional and sports activities (Mamenko et al., 2022; Popovych et al., 2021a; Zinchenko et al., 2020; 2021; 2022a; 2022c). In research relevant to our issues, emphasis is placed on the integration of intellectual and physical components (Kobets et al., 2021a; 2021b; Nosov et al., 2020b; 2021a; 2021b; Popovych & Blynova, 2019a; 2019b). Since self-satisfaction is related to the subject's mental state, the algorithm for constructing a study of the dominant mental states of respondents is taken into account (Popovych et al., 2019c; 2020b). In addition, research that take the sample's age trends into consideration are examined (Blynova et al., 2020b; Kozina et al., 2019; Ma et al., 2020; Marques et al., 2011; Popovych et al., 2019a; 2021g).

Participants. The participants of the study are first-year students of the faculties of psychology, history and sociology (Kherson State University, Kherson, Ukraine), the faculty of business and law (Kherson State University, Kherson, Ukraine), the faculty of pedagogical education and social work (Volyn National University named after Lesia Ukrainka, Lutsk, Ukraine). The study involved n = 122 respondents, including males (n = 53; 43.44%) and females (n = 69; 56.56%). The sampled young students had no professional experience in sports. Participants had an amateur level, among which were respondents (n = 25; 20.49%) who participated in regional tournaments. The age of the respondents ranged from 18 to 20 years (M=18.6).

Organization of research. Students in their first year of study from randomly selected faculties were asked to voluntarily attend sectional classes in sports after training. A football section was offered to males, while a volleyball section was offered to females. This long-term practice will be carried out within the context of university programs for the implementation of health-preserving technology from 2017 to 2022. Our experimental research was carried out within the scope of this practice. Research on the formative strategy was organized. The experiment lasted from September 2020 to June 2021, or the entire academic year. The experiment's ascertaining stage was scheduled for October 2020. At this stage, 43 observations were made with the data being entered into the protocol. Standard forms of test methods were obtained, and empirical data was processed. Then there was a formative stage, which included frequent participant training. The person in charge of the section's work managed the training and physical activity system on an advising basis. Participants competed in competitions at the university and regional levels. The experiment's control phase took place in May and June of 2021. The parameters under investigation were recorded in the experimental and control groups of football and volleyball samples. The control group included all other first-year students who did not train in these classes, did not maintain individual physical fitness or were utterly uninterested in physical activity. The organizers agreed to conduct an experiment with the Ethics Committees of universities. The organizers agreed to do an experiment with the University Ethics Committees. The student youth were told about the data collection in advance and consented to participate in the study. Confidentiality and voluntariness provided data dependability and a responsible attitude toward test form completion. Researchers were guided by the Helsinki Declaration's (2013) ethical norms.

Procedures and instruments. The key psychodiagnostic method is the questionnaire "The Scales of Psychological Well-being" ("SPW") (Ryff, 1989). The questionnaire was adapted by T. Shevelenkova and P. Fesenko, (2005). The questionnaire grouped eighty-four questions, which were divided into six main scales, three additional ones, and one general scale. "SPW" Core Scales are: "Positive Relations with Others" (PRO), "Autonomy" (A), "Environmental Mastery" (EM), "Self-Acceptance" (SA), "Personal Growth" (PG), "Purpose in Life" (PL). Additional Scales: "Meaningfulness of Life" (ML), "Balance of Affect" (BA), "Human as an Open System" (HOS). General or integral scale – "Psychological Well-being" (PW). The value of the reliability of the obtained empirical data at the level of α-Cronbach αSPW = .845 (Gottsdanker, 1978).

Satisfaction with the life of student youth was measured by the questionnaire "The Measurement of Life Satisfaction" ("MLS") (Neugarten, 1961). The general psychological condition of the respondents was measured using standardized questionnaires, as were the characteristics of their psychological comfort and level of social and psychological adaption. The psychodiagnostic method has combined twenty questions, which are divided into five main scales and one integral. The main scales of "MLS" are: "Interest in Life" (IL), "Consistency of Achieving the Goal of Life" (CAGL), "Consistency of the Set and Achieved Goal" (CSAG), "Positive Assessment of One's Qualities" (PAOQ) and "General Mood Background" (GMB). Integrated scale – "Life Satisfaction Index" (LSI). The recorded value of the reliability of the obtained empirical data was α-Cronbach αMLS = .801 (Gottsdanker, 1978).

In order to psychodiagnoses the parameters of self-regulation of student youth, a questionnaire "Style of Self-regulation of Behavior" ("SSBM") (Morosanova, 2004) was used. The questionnaire grouped forty-six questions

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divided into four main scales, two additional ones, and a general scale. A number of questions relate to more than one scale. The statements in the standardized forms of the questionnaire outline the everyday life situations of the respondents. Situations are well chosen, they are neutral and do not apply to any of the professional areas. The main scales of "SSBM" are: "Planning" (P), "Modeling" (M), "Programming Activities" (PA), and "Evaluation of Performance" (EP). Two additional scales reflect the regulatory and personal characteristics of respondents: "Flexibility" (F) and "Independence" (I). The "Integral Level of Self-Regulation" (ILSR) general scale reflects the aggregate indication of the establishment of the personal self-regulation system. The personal system of self-regulation reflects the arbitrary activity of man and is a measure of his subjectivity. The value of the reliability of the obtained empirical data at the level of α-Cronbach αSSBM = .887 (Gottsdanker, 1978).

Statistical analysis. The empirical data collected during the ascertaining and control stages were processed using "SPSS" v. 23. Descriptive frequency characteristics were determined and a correlation matrix was constructed. Coefficients of reliability of the study: α-Cronbach, Student's t-test, Spearman (rs). Significance coefficients were taken into account – p≤.05 and p≤.01.

Results
The results of the research's ascertaining stage are presented. The obtained data were evaluated using four descriptive frequency characteristics key parameters: minimum value (min), maximum value (max), arithmetic mean (M), and standard deviation (SD). Data on 10 scales of the method "SPW" (Shevelenkova & Fesenko, 2005) are shown in Tabl. 1.

Table 1. The results of the study's ascertaining stage on the method's scales "SPW" (n=122)

Scale	Minimum Value (min)	Maximum Value (max)	Arithmetic Mean (M)	Standard deviation (SD)
Positive Relations with Others (PRO)	29.0	82.0	58.19	±9.49
Autonomy (A)	26.0	74.0	57.48	±8.92
Environmental Mastery (EM)	25.0	75.0	58.51	±9.76
Self-Acceptance (SA)	44.0	81.0	53.38	±10.12
Personal Growth (PG)	35.0	76.0	61.29	±9.12
Purpose in Life (PL)	20.0	80.0	59.39	±9.67
Balance of Affect (BA)	55.0	150.0	100.12	±14.67
Meaningfulness of Life (ML)	49.0	127.0	94.45	±11.98
Human as an Open System (HOS)	46.0	76.0	63.34	±6.78
Psychological Well-being (PW)	189.0	441.0	351.19	±49.33

The following scale deviations had the highest values in the sample: "A" (min=26.0; max=74.0; M=57.48; SD=±8.92) and "EM" (min=25.0; max=75.0; M=58.51; SD=±9.76). The obtained "A" and "EM" measures were less than those recommended by the authors who adapted the "SPW" method (Shevelenkova & Fesenko, 2005). The differences on these scales were determined to be insignificant using the Student's t-test (t=0.8-1.1; p>.05). The remaining parameters were within the normative indicators proposed by T. Shevelenkova and P. Fesenko (2005). The lower values of "Autonomy" and "Environmental Management" can be explained by the fact that the sample consisted of students in their first year of study who were in the process of adaptation, namely at the accommodation (passive) stage of adaptation. As a result, new testing, adaptability to study and living settings, and youth patterns (Shevchenko, 2019) are legitimate explanations for the low levels of the analyzed parameters "A" and "EM". Table 2 shows the data on the six scales of the method "MLS" (Neugarten, 1961).

Table 2. The results of the study's ascertaining stage on the method's scales "MLS" (n=122)

Scale	Minimum Value (min)	Maximum Value (max)	Arithmetic Mean (M)	Standard deviation (SD)
Interest in Life (IL)	1.0	8.0	4.59	±1.75
Consistency of Achieving the Goal of Life (CAGL)	1.0	8.0	5.23	±1.81
Consistency of the Set and Achieved Goal (CSAG)	1.0	8.0	4.28	±1.65
Positive Assessment of One's Qualities (PAOQ)	2.0	8.0	4.49	±1.74
General Mood Background (GMB)	1.0	8.0	4.65	±2.01
Life Satisfaction Index (LSI)	1.0	8.0	23.32	±6.84

The sample data obtained using the "MLS" method exhibited slight deviations that were within the tolerances (Neugarten, 1961) and were within the data obtained in previous investigations (Popovych et al., 2021f). It should be noted that the created sample was characterized by a range of respondents who have achieved the life goal of "CAGL" (min=1.0; max=8.0; M=5.23; SD=±1.81). Characteristics included characteristics such as determination and focus on reaching a goal. It should be highlighted that the respondents' agreement between the specified tasks and the realized objective was the lowest "CSAG" (min=1.0; max=8.0; M=4.28; SD=±1.65). This was supported by the fact that the student age is marked by high goals and youthful maximalist expressions, and they may be unable to finish what they have begun. Tabl. 3 shows the data of seven scales of the method "SSBM" (Morosanova, 2004).

Table 3. The results of the study's ascertaining stage on the method's scales "SSBM" (n=122)

Scale	Minimum Value (min)	Maximum Value (max)	Arithmetic Mean (M)	Standard deviation (SD)
Planning (P)	2.0	7.0	5.59	±2.01
Modeling (M)	2.0	7.0	6.22	±2.80
Programming Activities (PA)	3.0	8.0	4.89	±1.83
Evaluation of Performance (EP)	3.0	8.0	6.12	±2.23
Flexibility (F)	1.0	8.0	5.64	±2.07
Independence (I)	3.0	9.0	4.59	±1.86
Integral Level of Self-Regulation (ILSR)	17.0	41.0	29.39	±4.75

A comparison of the obtained data with normative indicators (Morosanova, 2004) and the results of other researchers (Blynova et al., 2020a) on all scales of the method is presented. We stated the average level of manifestation on the scales "PA" (min = 3.0; max = 8.0; M = 4.89; SD = ± 1.83), "F" (min = 1.0; max = 8.0; M = 5.64; SD = ± 2.07) and "I" (min = 3.0; max = 9.0; M = 4.59; SD = ± 1.86). The level above the average was recorded in the scales "P" (min = 2.0; max = 7.0; M = 5.59; SD = ± 2.01), "M" (min = 2.0; max = 7.0; M = 6.22; SD = ± 2.80) and "EP" (min = 3.0; max = 8.0; M = 6.12; SD = ± 2.23). We explain that respondents plan, model, and analyze the outcomes of their activities rather effectively in the present circumstances and alter them throughout activity organization. Average results on independence and flexibility were evidence of the sample's age patterns and the situations in which the individuals were.

The connections between the two-way correlation of the primary indicators of psychological well-being "SPW" and the parameters of self-regulation and life satisfaction of the respondents have been established. Table 4 demonstrates the correlation matrix.

Table 4. Correlation matrix of key research indicators (n = 122)

Parameters	Indicators of psychological well-being				
	PRO	SA	PW	PL	ML
Interest in Life (IL)	.185*	.122*	.131*	.076	.086*
Consistency of Achieving the Goal of Life (CAGL)	.037	.086*	.094*	.132*	.141*
Consistency of the Set and Achieved Goal (CSAG)	-.052	.017	.086*	-.088*	.032
Positive Assessment of One's Qualities (PAOQ)	.133*	.163*	.227**	-.078	.052
General Mood Background (GMB)	.221**	.223**	.321**	.077	.096*
Life Satisfaction Index (LSI)	.098*	.142*	.301**	.057	.091*
Planning (P)	.029	-.025	.069	.087*	.078
Modeling (M)	-.019	-.035	.089*	.097*	.086*
Programming Activities (PA)	.031	-.015	.071	.097*	.044
Evaluation of Performance (EP)	.097*	-.041	.091*	.057	.017
Flexibility (F)	.101*	.065	.019	-.212**	-.075
Independence (I)	.051	.086*	.049	-.031	.023
Integral Level of Self-Regulation (ILSR)	.085*	.145*	.121*	.089*	.102*

Note: PRO – Positive Relations with Others; SA – Self-Acceptance; PW – Psychological Well-being; PL – Purpose in Life; ML – Meaningfulness of Life; * – p<.05; ** – p<.01.

Significant bilateral correlation connections are graphically shown in the form of a correlation galaxy between the key parameters of psychological well-being, which indicate the mental health of student youth, as well as the parameters of self-regulation and life satisfaction (Fig. I).
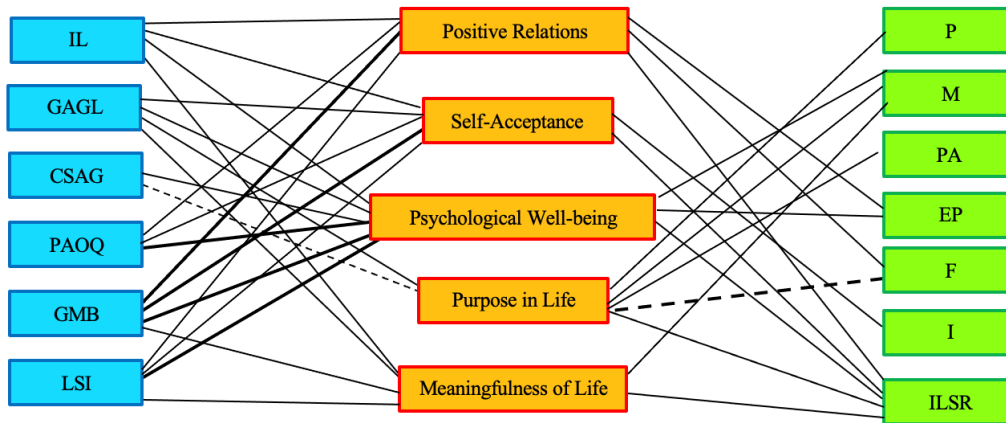
Note: ▬ ▬ ▬ ▬ negative connections at p≤.01; ------ negative connections at p≤.05; ——— positive connections at p≤.05; ▬▬▬ positive connections at p≤.01; IL – Interest in Life; CAGL – Consistency of Achieving the Goal of Life; CSAG – Consistency of the Set and Achieved Goal; PAOQ – Positive Assessment of One's Qualities; GMB – General Mood Background; LSI – Life Satisfaction Index; P – Planning; M – Modeling; PA – Programming Activities; EP – Evaluation of Performance; F – Flexibility; I – Independence; ILSR – Integral Level of Self-Regulation.

Figure I. A correlation galaxy of parameters that reflect the mental health of student youth (n=122)

We state that Psychological Well-Being (PW) had the most significant correlations – nine (p≤.05; p≤.01). All of the correlations were positive. We explain this by noting that respondents' psychological well-being is a predictor of mental health, as measured by positive self-esteem (.227; p≤.01), mood (.321; p≤.01) and life satisfaction index (.301; p≤.01). Likewise, psychological well-being was strongly associated with modeling, or the ability to construct one's own future (.089; p≤.05), evaluation of performance (.091; p≤.05) and integral level of self-regulation (.121; p≤.05). Psychological well-being was found to have a high operational capacity and to influence respondents' self-regulatory preparation for effective educational, professional, and training activities. General mood background, positive relations with others (.221; p≤.01), and self-acceptance (.223; p≤.01) had a strong positive correlation. The favorable background of the respondents' affective and volitional spheres enriches interpersonal connections and fosters self-acceptance of each other as they are in reality, i. e. promotes open, trusting relationships. Building such ties is beneficial to their mental health. We have identified the most essential correlation highways upon which experimental research's formative strategy was constructed.

The study's formative strategy was for male respondents to routinely attend football training during the academic year (September 2020 - June 2021), and for female respondents to routinely attend volleyball training. Tournaments at the regional and university levels were attended by participants. The Experimental Football Group (EGF) (n = 24) and the Control Football Group (SGF) (n = 24) were chosen, as were the Experimental Volleyball Group (EGV) (n = 12) and the Control Volleyball Group (SGF) (n = 12). Empirical data of the measured parameters were obtained at the control stage of the study. A comparison of the obtained data of experimental and control samples was performed via Mean ± SD using the Student's t-test. Tabl. 5 compares the studied parameters of the male football sample before and after the experiment.

Table 5. Studied parameters of the male football sample before and after the experiment

Parameter	EGF (n=24)		t	CGF (n=24)		t
	before	after		before	after	
Positive Relations with Others (PRO)	57.98±9.22	58.19±9.38	t=.47; p>.05	57.19±9.49	58.19±9.21	t=.61; p>.05
Self-Acceptance (SA)	52.79±9.98	56.43±10.21	t=3.44; p<.01	53.28±10.02	54.38±10.11	t=1.10; p>.05
Psychological Well-being (PW)	349.89±51.44	391.89±53.04	t=4.76; p<.01	351.19±49.33	371.65±51.33	t=1.43; p>.05
Purpose in Life (PL)	61.44±9.89	64.22±9.01	t=.97; p>.05	59.56±9.68	59.89±9.59	t=.99; p>.05
Meaningfulness of Life (ML)	93.77±12.05	98.56±12.66	t=.55; p>.05	94.45±11.93	95.11±11.56	t=1.28; p>.05
Positive Assessment of One's Qualities (PAOQ)	4.89±1.89	4.99±1.74	t=.67; p>.05	4.49±1.74	4.88±1.68	t=.78; p>.05
General Mood	4.45±1.89	4.98±2.01	t=.59;	4.65±2.01	4.94±2.02	t=.79;

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Parameter	before	after	t	before	after	t
Background (GMB)			p>.05			p>.05
Life Satisfaction Index (LSI)	22.89±6.56	27.32±7.84	t=4.82; p<.01	23.30±6.89	26.32±7.69	t=2.82; p<.05
Modeling (M)	6.78±2.77	8.22±2.98	t=3.59; p<.01	6.22±2.67	6.98±2.82	t=.51; p>.05
Evaluation of Performance (EP)	6.19±2.19	7.12±2.28	t=4.79; p<.01	6.12±2.23	6.59±2.27	t=1.67; p>.05
Integral Level of Self-Regulation (ILSR)	30.41±5.01	34.39±4.89	t=4.67; p<.01	29.39±4.75	31.30±4.91	t=1.06; p>.05

Note: EGF – experimental football group; CGF – control football group; t – Student's t-test difference; * – p<.05; ** – p<.01; PRO – Positive Relations with Others; SA – Self-Acceptance; PW – Psychological Well-being; PL – Purpose in Life; ML – Meaningfulness of Life; PAOQ – Positive Assessment of One's Qualities; GMB – General Mood Background; LSI – Life Satisfaction Index; M – Modeling; EP – Evaluation of Performance; ILSR – Integral Level of Self-Regulation.

A comparison of the results of the study's control stage in the football sample before and after the experiment revealed significant statistical differences. Changes in parameters in the EGF experimental group were: "SA" (t=3.44; p<.01), "PW" (t=4.76; p<.01), "LSI" (t=4.82; p<.01), "M" (t=3.59; p<.01), "EP" (t=4.79; p<.01), "ILSR" (t=4.67; p<.01). Significant changes in one parameter were observed in the CGF control group – "LSI" (t=2.82; p<.05). Significant changes in respondents' self-acceptance were observed, which obviously affected their evaluation of their own performance and increased their self-regulatory capacity. Of course, changes in such powerful psychological formations of the athlete's personality have had an impact on the psychological well-being of the football experimental sample under study.

Table 6 presents a comparison of the studied parameters of the female volleyball sample before and after the experiment.

**Table 6.** Studied parameters of the female volleyball sample before and after the experiment

Parameter	EGV (n=12)		t	CGV (n=12)		t
	before	after		before	after	
Positive Relations with Others (PRO)	58.18±9.51	61.05±9.56	t=2.49; p<.05	59.19±9.40	60.45±9.48	t=2.12; p<.05
Self-Acceptance (SA)	53.39±10.14	56.39±10.19	t=3.39; p<.01	54.38±10.11	56.76±10.65	t=1.10; p>.05
Psychological Well-being (PW)	351.21±49.37	393.34±52.93	t=5.04; p<.01	349.18±49.39	369.54±51.87	t=1.43; p>.05
Purpose in Life (PL)	59.41±9.69	63.22±8.98	t=.58; p>.05	58.09±9.44	59.49±9.55	t=.79; p>.05
Meaningfulness of Life (ML)	94.49±11.87	97.76±12.44	t=.53; p>.05	95.43±11.56	96.17±11.57	t=1.29; p.>.05
Positive Assessment of One's Qualities (PAOQ)	4.51±1.68	4.87±1.78	t=.69; p>.05	4.51±1.56	4.32±1.34	t=-.08; p>.05
General Mood Background (GMB)	4.63±2.05	4.87±2.09	t=.44; p>.05	4.45±1.89	4.89±2.13	t=.79; p>.05
Life Satisfaction Index (LSI)	23.29±6.79	27.21±7.56	t=4.44; p<.01	24.39±6.34	26.78±7.34	t=2.45; p<.05
Modeling (M)	6.19±2.68	7.78±2.98	t=1.09; p>.05	6.09±2.45	6.78±2.68	t=.59; p>.05
Evaluation of Performance (EP)	6.09±2.18	7.01±2.24	t=3.44; p<.01	6.08±2.12	6.53±2.28	t=1.86; p<.05
Integral Level of Self-Regulation (ILSR)	29.41±4.67	33.51±4.56	t=3.78; p<.01	29.87±4.32	31.06±4.67	t=1.79; p<.05

Note: EGV – experimental volleyball group; CGV – control volleyball group; t – Student's t-test difference; * – p<.05; ** – p<.01; PRO – Positive Relations with Others; SA – Self-Acceptance; PW – Psychological Well-being; PL – Purpose in Life; ML – Meaningfulness of Life; PAOQ – Positive Assessment of One's Qualities; GMB – General Mood Background; LSI – Life Satisfaction Index; M – Modeling; EP – Evaluation of Performance; ILSR – Integral Level of Self-Regulation.

A comparison of the study's control stage results in the volleyball sample before and after the experiment revealed significant statistical differences. EGV parameter changes in the experimental group were: "PRO" (t=2.49; p<.05), "SA" (t=3.39; p<.01), "PW" (t=5.04; p<.01), "LSI" (t=4.44; p<.01), "EP" (t=3.44; p<.01), "ILSR" (t=3.78; p<.01). Significant changes were observed in two parameters in the CGV control group: "PRO" (t=2.12; p<.05) i "LSI" (t=2.82; p<.05). In contrast to the male football sample, an interesting scientific fact

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revealed significant changes in the parameter of positive correlations in both groups: EGV (t=2.49; p<.05) and CGV (t=2.12; p<.05). Clearly, changes in females' attitudes change rapidly quantitatively and qualitatively throughout the year, in contrast to the same period in the male sample. It should also be noted that at the end of the year, CGV recorded a decrease in the parameter "Positive Assessment of One's Qualities". Obviously, focusing exclusively on studying, apathy toward physical activity, and a lack of social mobility all lower self-esteem and, as a result, had a negative impact on females' mental health. Males, it has been observed, were more focused on the main goal and frequently strive to win at any cost. Females were better at controlling their emotions and adhering to rules and responsibilities in sports. Females experienced emotions more subtly, whereas males expressed them openly. We did not rule out the possibility that football, as opposed to volleyball, is a more contact and injury-prone sport.

The study's experimental and control groups were tested for significant differences. A chart comparing the mental health parameters of student youth before and after the experiment was created to visualize the results of the formative experiment (Fig. II).
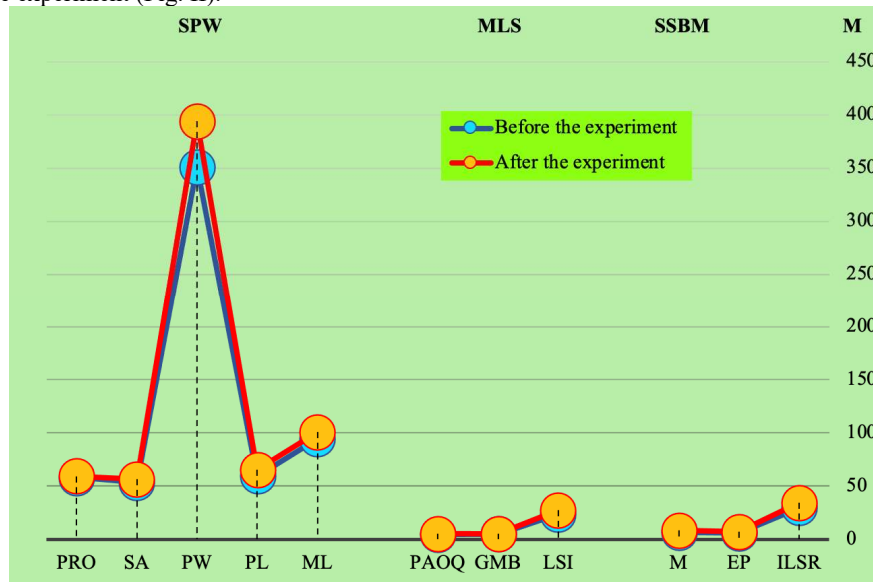
Note: M – arithmetic mean; SPW – questionnaire "The Scales of Psychological Well-being"; MLS – questionnaire "The Measurement of Life Satisfaction"; SSBM – questionnaire "Style of Self-regulation of Behavior"; PRO – Positive Relations with Others; SA – Self-Acceptance; PW – Psychological Well-being; PL – Purpose in Life; ML – Meaningfulness of Life; PAOQ – Positive Assessment of One's Qualities; GMB – General Mood Background; LSI – Life Satisfaction Index; M – Modeling; EP – Evaluation of Performance; ILSR – Integral Level of Self-Regulation.

Figure II. Comparing diagram of mental health parameters before and after the experiment

Significant statistical differences in the experimental group after the experiment were recorded in the following parameters: "SA" (p<.05), "PW" (p<.01), "PL" (p<.05), "ML" (p<.05), "LSI" (p<.05), "ILSR" (p<.05). This result supports the conclusion that an organized formative experiment in the form of a university program for the implementation of health technologies through play sports, particularly for males – training and football competitions, and females – volleyball competitions, is effective.

Discussion
The problem of athlete health and the introduction of health-preserving technologies is one of the most relevant in sports science, particularly in major sports. There are several aspects to this problem that are relevant. The most important of which is to maintain the athlete's resourcefulness at a high level in order to win and record results. As a guarantee of the development of sports activities, contradiction is a combination of the intensity of high achievements and the duration of these achievements over time. Such a long symbiotic relationship is nearly impossible to achieve. All rapid record results are set in part once, and if exceeded, it is done during the athlete's short peak ascent. In our study of student youth, the next aspect of the outlined problem is the introduction of health technologies as a mass phenomenon in order to improve mankind's health. We recorded the results of significant statistical changes (p<.05; p<.01) in the self-regulation parameters according to method "SSBM" (Morosanova, 2004) in the experimental groups (EGF, EGV): "M", "EP", "ILSR", were confirmed in a study of student youth value attitudes toward physical culture and sports (Blynova et al., 2020). The interdependence between students' level of physical activity, the parameters of their self-regulation, and the need to succeed was stated in the aforementioned study. The parameters of self-regulation and motivation to succeed are statistically significant in physically active students (p<.01). Tóth et al. (2019) discovered that a high

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level of student motivation to participate in regular sports improves physical performance and effectiveness in educational and professional activities. This confirms the findings of our formative experiment in football and volleyball experimental groups. As a result, the correlation established by Tóth et al. (2019) regarding respondents' involvement in physical activity and anxiety as a determinant of physical "Self-concept" in our dimension is confirmed. It is worth noting that in studies of the dominant mental states of play sports athletes, the most relevant state that provides a successful outcome is "Value-sense self-regulation" (Popovych et al., 2019b; 2021e). At all stages of sports activities, it is obvious that the self-regulatory component is at the core of the respondents' subjectivity.

We consider it an important scientific fact to discover statistically significant changes in the respondents' self-acceptance of themselves in both experimental samples ($p<.01$). Of course, this parameter was related to respondents' mental health, self-esteem, and self-satisfaction. Other research has found that young athletes' psychological well-being is determined by their awareness of their life purpose, self-acceptance, and understanding of their own life position (Popovych et al., 2022b). Positive changes in students' self-perception were considered to be the most important positive changes that affect not only the overall mood (.223; $p\leq.01$) but were also one of the most important parameters of respondents' mental health. This parameter had a high assimilation capacity, and positive changes occurred after long-term targeted exposure (Boryshevsky, 2010), which only added to the value of the result.

Conclusions

1. It is theoretically substantiated and empirically clarified that the psychological well-being ("PW") of respondents was a predictor of mental health, which was in the coordinates of positive self-esteem ("PAOQ") (.227; $p\leq.01$), general mood background ("GMB") (.321; $p\leq.01$) and life satisfaction index ("LSI") (.301; $p\leq.01$).

2. A correlation matrix of key research indicators was created. It was stated that psychological well-being (PW) had nine (most) statistically significant correlations ($p\leq.05$; $p\leq.01$) with the parameters of self-regulation and life satisfaction of student youth.

3. The research formative strategy was organized. Positive significant changes in the parameters were observed in both experimental groups (EGF and EGV): "Self-Acceptance" ($p<.01$), "Psychological Well-being" ($p<.01$), "Life Satisfaction Index" ($p<.01$), "Evaluation of Performance" ($p<.01$), "Integral Level of Self-Regulation" ($p<.01$).

4. Statistically significant changes in respondents' self-acceptance of themselves ($p<.01$) were discovered during the control stage of the study. These positive changes in students' self-perception were regarded as the most important positive changes that affect general mood background (.223; $p\leq.01$) and were one of the most important parameters of respondents' mental health.

5. Regular students' football (males) and volleyball (females) training and competitions during the academic year have been shown to contribute to statistically significant changes in mental health. It is practical to incorporate health-preserving technology into the educational processes of college and higher education institutions.

References:

Blynova, O., Derevianko, S., Ivanova, O., Popovych, I., & Estay Sepulveda, J. G. (2022). Professional relevance of potential labor emigrants. *Revista Notas Históricas y Geográficas, 29*, 88-106.

Blynova, O., Popovych, I., Tkach, T., Serhet, I., Semenova, N. & Semenov, O. (2020a). Value Attitudes of Student Youth to Physical Culture and Sports as Factors in their Aspiration for Success. *Journal of Critical Reviews, 7*(19), 6775-6783. DOI: 10.31838/jcr.07.19.778

Blynova, O., Kruglov, K., Semenov, O., Los, O., & Popovych, I. (2020b). Psychological safety of the learning environment in sports school as a factor of achievement motivation development in young athletes. *Journal of Physical Education and Sport, 20*(1), 14-23. https://doi.org/10.7752/jpes.2020.01002

Blynova, O. Ye, Popovych, I. S., Bokshan, H. I., Tsilmak, O. M., & Zavatska, N. Ye. (2019). Social and Psychological Factors of Migration Readiness of Ukrainian Students. *Revista ESPACIOS, 40*(36), 4.

Boryshevsky, M. J. (2010). The road to self: From the foundations of subjectivity to the heights of spirituality. Kyiv: Akademvydav.

Bradburn, N. (1969). The Structure of Psychological well-being. Chicago: Aldine Pub. Co.

Bugulov, A. G., & Sokaev, H. M. (2018). The role of physical education in the formation of practical human competence. *News of Science and Education, 3*(3), 33-36.

Cheban, Yu. V., Chebykin O. Ya., Plokhikh V. V., & Massanov A. V. (2020a). Emotional factor of competitive self-mobilization of professional rowers. *Insight: the psychological dimensions of society, 3*, 28-43. http://doi.org/10.32999/2663-970X/2020-3-2

Cheban, Yu., Chebykin, O., Plokhikh, V., & Massanov, A. (2020b). Emotional and volitional potential of self-mobilization in the organization of time perspective activity of highly qualified rowing athletes. *Journal of Physical Education and Sport, 20*(SI 6), 3128-3137. DOI: 10.7752/jpes.2020.s6424

1392---

JPES ®   www.efsupit.ro

Diener, E. (1984). Subjective well-being. *Psychological Bulletin, 95*(3), 542-575.

Gottsdanker, R. M. Experimenting in psychology. New York: Prentice-Hall. 1978.

Hudimova, A., Popovych, I., Savchuk, O., Liashko, V., Pyslar, A., & Hrys, A. (2021). Research on the relationship between excessive use of social media and young athletes' physical activity. *Journal of Physical Education and Sport, 21*(6), 3364-3373. DOI: 10.7752/jpes.2021.06456

Hudimova, A. Kh. (2021). Psychological well-being and social media users' behavioral online patterns in everyday life and during COVID-19 pandemic. *Insight: the psychological dimensions of society, 5*, 133-147. https://doi.org/10.32999/2663-970X/2021-5-9

Kobets, V., Liubchenko, V., Popovych, I., & Koval, S. (2021a). Institutional Aspects of Integrated Quality Assurance of Engineering Study Programs at HEI Using ICT. In: Ivanov V., Trojanowska J., Pavlenko I., Zajac J., Peraković D. (eds). Advances in Design, Simulation and Manufacturing IV. DSMIE 2021. *Lecture Notes in Mechanical Engineering*. Springer, Cham. https://doi.org/10.1007/978-3-030-77719-7_30

Kobets, V., Liubchenko, V., Popovych, I., & Koval, S. (2021b). Institutional Aspects of Integrated Quality Assurance of Study Programs at HEI Using ICT. *CEUR Workshop Proceedings, 2833*, 83-92.

Kozina, Z., Cretu, M., Safronov, D., Gryn, I., Shkrebtii, Yu., Shepelenko, T., & Tanko. A. (2019). Dynamics of psychophysiological functions and indicators of physical and technical readiness in young football players aged 12-13 and 15-16 years during a 3-month training process. *Physiotherapy Quarterly, 27*(3), 20-27. DOI: 10.5114/pq.2019.86464

Ma, F., Shevchenko, R. P., & Karhina, N. V. (2020). Student you three presentation of psychological well-being: results of content analysis of works. *Insight: the psychological dimensions of society, 3*, 44-55. https://doi.org/10.32999/2663-970X/2020-3-3

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

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.

Morosanova, V. I. (2004). Questionnaire "Style of self-regulation of behavior" (SSBM). Moscow: Kogyto-Center.

Neugarten, B. L., Havighurst, R. J., Sheldon, S., & Tobin, M. A. (1961). The Measurement of Life Satisfaction, *Journal of Gerontology, 16*(2), 134-143, https://doi.org/10.1093/geronj/16.2.134

Nosov, P., Ben, A., Zinchenko, S., Popovych, I., Mateichuk, V., & Nosova, H. (2020a). Formal approaches to identify cadet fatigue factors by means of marine navigation simulators. *CEUR Workshop Proceedings, 2732*, 823-838.

Nosov, P., Zinchenko, S., Ben, A., Prokopchuk, Y., Mamenko, P., Popovych, I., Moiseienko, V., Kruglyj, D. (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. DOI: 10.15587/1729-4061.2021.229237

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. DOI: https://doi.org/10.15587/1729-4061.2021.239093

Nosov, P., Zinchenko, S., Popovych, I., Safonov, M., Palamarchuk, I., & Blakh, V. (2020b). Decision support during the vessel control at the time of negative manifestation of human factor. *CEUR Workshop Proceedings, 2608*, 12-26.

Plokhikh, V. V. (2021). Assessment of subject's readiness for urgent actions using the variations of sensorimotor response tasks. *Insight: the psychological dimensions of society, 5*, 46-65. http://doi.org/10.32999/2663-970X/2021-5-4

Popovych, I., Blynova, O., Aleksieieva, M., Nosov, P., Zavatska, N., & Smyrnova, O. (2019a). Research of Relationship between the Social Expectations and Professional Training of Lyceum Students studying in the Field of Shipbuilding. *Revista ESPACIOS, 40*(33), 21.

Popovych, I. S., Blynova, O. Ye., Bokshan, H. I., Nosov, P. S., Kovalchuk, Z. Ya., Piletska, L. S., & Berbentsev, V. I. (2019b). The Research of the Mental States of Expecting a Victory in Men Mini-football Teams. *Journal of Physical Education and Sport, 19*(4), 2343-2351. https://doi.org/10.7752/jpes.2019.04355

Popovych, I., Blynova, O., Kuzikova, S., Shcherbak, T., Lappo, V., & Bilous, R. (2021a). Empirical research of vitality of representatives of parachuting and yoga practice: a comparative analysis. *Journal of Physical Education and Sport, 21*(1), 218-226. https://doi.org/10.7752/jpes.2021.01029

Popovych, I., Blynova, O., Nass Álvarez, J. L., Nosov, P., & Zinchenko, S. (2021b). A historical dimension of the research on social expectations of an individual. *Revista Notas Históricas y Geográficas, 27*, 190-217.

--1393

Popovych, I., Blynova, O., Nosov, P., Zinchenko, S., & Kononenko, O. (2021c). Psychological factors of competitiveness of the women's youth handball team. *Journal of Physical Education and Sport, 21*(1), 227-235. https://doi.org/10.7752/jpes.2021.01030

Popovych, I., Blynova, O., Savchuk O., & Halian, I. (2020a). Self-efficacy of future athletes with different levels of psychological safety. *Journal of Physical Education and Sport, 20*(5), 2718-2724. https://doi.org/10.7752/jpes.2020.05370

Popovych, I., Blynova, O., Savchuk, O., Zasenko, V., & Prokhorenko, L. (2020b). Expectations of a winning result in women's handball team: comparison of different age groups. *Journal of Physical Education and Sport, 20*(5), 2709-2717. https://doi.org/10.7752/jpes.2020.05369

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. DOI: 10.7752/jpes.2022.04107

Popovych, I., Borysiuk, A., Zahrai, L., Fedoruk, O., Nosov, P., Zinchenko, S., & Mateichuk, V. (2020c). Constructing a Structural-Functional Model of Social Expectations of the Personality. *Revista Inclusiones, 7*(SI), 154-167.

Popovych, I., Kurova, A., Koval, I., Kazibekova, V., Maksymov, M., & Huzar, V. (2022b). Interdependence of emotionality, anxiety, aggressiveness and subjective control in handball referees before the beginning of a game: a comparative analysis. *Journal of Physical Education and Sport, 22*(3), 680-689. DOI: 10.7752/jpes.2022.03085

Popovych, I., Halian, I., Halian, O., Nosov, P., Zinchenko, S., & Panok, V. (2021d). Research on personality determinants of athlete's mental exhaustion during the ongoing COVID-19 pandemic. *Journal of Physical Education and Sport, 21*(4), 1769-1780. https://doi.org/10.7752/jpes.2021.04224

Popovych, I., Halian, I., Pavliuk, M., Kononenko, A., Hrys, A., & Tkachuk, T. (2022c). Emotional quotient in the structure of mental burnout of athletes. *Journal of Physical Education and Sport, 22*(2), 337-345. DOI: 10.7752/jpes.2022.02043

Popovych, I., Pavliuk, M., Hrys, A., Sydorenko, O., Fedorenko, A., & Khanetska, T. (2021e). Pre-game expected mental states in men's mini-football teams: a comparative analysis. *Journal of Physical Education and Sport, 21*(2), 772-782. https://doi.org/10.7752/jpes.2021.02096

Popovych, I. S., & Blynova, O. Ye. (2019a). Research on the Correlation between Psychological Content Parameters of Social Expectations and the Indexes of Study Progress of Future Physical Education Teachers. *Journal of Physical Education and Sport, 19*(SI 3), 847-853. https://doi.org/10.7752/jpes.2019.s3122

Popovych, I. S., & Blynova, O. Ye. (2019b). The Structure, Variables and Interdependence of the Factors of Mental States of Expectations in Students' Academic and Professional Activities. *The New Educational Review, 55*(1), 293-306. https://doi.org/10.15804/tner.2019.55.1.24

Popovych, I. S. (2015). Construction of a personality model of the expected future. *Scientific Bulletin of KSU, 6*, 145-154.

Popovych, I., Shcherbak, T., Kuzikova, S., Blynova, O., Nosov, P. & Zinchenko, S. (2021f). 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, A., Galvez, L. M., Klenina, K. (2021g). Research of the relationship between social desirability and value orientations of adolescents. *Revista Notas Históricas y Geográficas, 26*, 241-268.

Popovych, I., Semenov, O., Hrys, A., Aleksieieva, M., Pavliuk, M., & Semenova, N. (2022d). Research on mental states of weightlifters' self-regulation readiness for competitions. *Journal of Physical Education and Sport, 22*(5), 1134-1144. DOI: 10.7752/jpes.2022.05143

Popovych, I. S. (2014). Social expectations in primary school age. *Proceedings of the 2nd International Academic Congress "Fundamental Studies in America, Europe, Asia and Africa", 27 Sept. 2014. USA.* Vol. II. New York, 176-180.

Popovych, I. S., Zavatskyi, V. Yu., Geyko, Ie. V., Halian, O. I., Zavatskyi, Yu. A., & Radul, I. H. (2019c). Research on the Structure, Variables and Interdependence of the Factors of Tourists' Mental States of Expectation for Leisure in Ukraine. *Revista ESPACIOS, 40*(37), page 22.

Popovych, I., Zavatskyi, V., Tsiuniak, O., Nosov, P., Zinchenko, S., Mateichuk, V., Zavatskyi, Yu., & Blynova, O. (2020d). Research on the Types of Pre-game Expectations in the Athletes of Sports Games. *Journal of Physical Education and Sport, 20*(1), 43-52. https://doi.org/10.7752/jpes.2020.01006

Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology, 52*, 141-166. https://doi.org/10.1146/annurev.psych.52.1.141

Ryff, C. D. (1995). The structure of psychological well-being revisited. *Journal of Personality and Social Psychology, 69*, 719-727.

Ryff, C. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology, 57*, 1069-1081.

Shevchenko, A. V. (2019). Research on the correlation between social desirability and value orientations in adolescence. *Insight: the psychological dimensions of society, 1*, 90-95. https://doi.org/10.32999/2663-970X/2019-1-14

Shevelenkova, T. D., & Fesenko P. P. (2005). Psychological well-being of the individual (an overview of the main concepts and research methodology). *Psychological diagnostics, 3*, 95-129.

Tóth, L., Lőkös, D., Sipos, K., Köteles, F. & Szabo, A. (2019). Exercise involvement and trait-anxiety are determinants of physical self-concept: exercisers exhibit superior profiles compared with non-exercisers. *Journal of Physical Education and Sport, 19*(1), 580-585. DOI: 10.7752/jpes.2019.01085

Voronina, A. V. (2002). Assessment of the psychological well-being of schoolchildren in the system of preventive and corrective work of the psychological service. Moscow: Science.

World Health Statistics. (2021). Monitoring health for the SDGs, sustainable development goals. https://www.who.int/data/gho/publications/world-health-statistics

World Medical Association Declaration of Helsinki. (2013). *Ethical principles for medical research involving human subjects, 310*(20), 2191-2194. DOI: 10.1001/jama.2013.281053

Zinchenko, S., Moiseienko, V., Tovstokoryi, O., Nosov, P., & Popovych, I. (2021). Automatic Beam Aiming of the Laser Optical Reference System at the Center of Reflector to Improve the Accuracy and Reliability of Dynamic Positioning. In: Hu, Z., Petoukhov, S., Dychka, I., He, M. (eds). Advances in Computer Science for Engineering and Education IV. ICCSEEA 2021. *Lecture Notes on Data Engineering and Communications Technologies, 83*. Springer, Cham. https://doi.org/10.1007/978-3-030-80472-5_1

Zinchenko S., Tovstokoryi O., Ben A., Nosov P., Popovych I., & Nahrybelnyi Y. (2022a). 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., Kobets, V., & Abramov, G. (2020). Mathematical Support of the Vessel Information and Risk Control Systems. *CEUR Workshop Proceedings, 2805*, 335-354.

Zinchenko, S., Tovstokoryi, O., Nosov, P., Popovych, I., & Kyrychenko, K. (2022b). Pivot Point position determination and its use for manoeuvring a vessel. *Ships and Offshore Structures,* DOI: 10.1080/17445302.2022.2052480

---1395

JPES ®   www.efsupit.ro