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Original Article

Successfulness in teenagers' sporting activities: comparative analysis of individual and team sports

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Abstract:
The purpose is to perform comparative analysis of high and low levels of the content parameters of successfulness in teenagers' sporting activities exemplified by individual (track and field, weight-lifting and catch wrestling) and team sports (football and volleyball). The research participants were the pupils of sports schools for children and youth, teenagers aged from 10 to 15 (M=13.3; SD=1.8). The sample of the participants of individual sports consisted of (n=78) respondents: track and field (n=38), weight-lifting (n=18) and catch wrestling (n=22). The sample of the participants of team sports consisted of (n=85) respondents: football (n=61) and volleyball (n=24). **Research methods:** independent expert evaluation, non-participant observation with entering the data into protocols; valid methods with standard forms. **Results.** The research compared the content parameters of successfulness between the groups of teenagers in individual (Group 1) and team sports (Group 2) and established a lack of dependence of successfulness on the type of sporting activities. It suggested proprietary independent expert evaluation of successfulness of teenagers' sports groups applying the method of comparison of the achievements in the current and previous educational and training years. The research performed distribution into groups with high (Group 1H; Group 2H) and low levels of successfulness (Group 1L; Group 2L). The following statistical differences were found out in Group 1H and Group 1L: independence (t=3.43; p>.01), the level of self-regulation (t=2.73; p>.01), independence and initiative (t=2.43; p>.01), flexibility (t=2.27; p>.05), scheduling (t=1.56; p>.05) and purposefulness (t=1.43; p>.05). The following statistical differences were determined in the teenagers of Group 2H and Group 2L: the level of self-regulation (t=1.47; p>.05), modeling (t=1.36; p>.05), neuro-psychic tension (t=1.29; p>.05), motivation for achieving success (t=1.22; p>.05), motivation for avoiding failure (t=-1.09; p>.05). The study substantiated that independence, flexibility and scheduling for Group 1H and modeling for Group 2H are those components of teenagers' self-regulation sphere which have a considerable impact on successfulness in sporting activities. **Conclusions.** The obtained scientific facts should be operationalized into educational, training and competitive activities of teenagers at schools for children and youth.
Key words: psychology of success, achievement motivation, sports school for children and youth, self-regulation of sporting activities, teenage sportsmen.

Introduction

Successfulness in sporting activities has always been a topical issue in scientific cognition. Permanent changes in all social areas have not only touched but also significantly affected educational, training, regenerative and competitive activities. Improvement of sports technologies and ergonomic impact on sports equipment have not reduced but considerably increased requirements for sportsmen's successfulness. Sporting activities of children and youth require special attention, organization, support and scientific research. Interest in physical culture, successful achievements in sport, cherished since teenage, can be a solid foundation for achieving success in professional sports.

Comprehensive development of a teenage sportsman consists of two components: 1) realization of opportunities available at adolescence; 2) realization of opportunities available for a teenager in social and psychological-pedagogical spaces (Demina, 2014). Obviously, these components are in natural interrelation, conform with each other and are enhanced by each other. Psychological analysis of sporting activities implies the use of the concept "psychological system of activity" (Shadrikov, 1980). Psychological system of activity is an integral unity of an individual's mental characteristics and their multifaceted relationships which motivate, program, regulate and realize activities, which are organized in the context of performing a certain activity. Psychological analysis of the content of activity consists in examining mental processes, mental states and psychological factors motivating, programming and regulating activeness of a teenager's personality, and also

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their characteristics through which this activity is realized. In adolescence a functional psychological system of activity develops on the basis of individual characteristics and achievement of the aim of activity. The main components of the mental system of a teenage sportsman are: motifs of activity; the aim of activity; programs pf activity; decision-making; the sub-system of characteristics important for activity (Shadrikov, 1980).

Acceptance of activity by an individual and awareness of its personal significance are an important stage of the formation of the psychological system of activity. The mechanism of "shifting a motif to an aim" is a basis of this phenomenon (Leontiev, 1972). Dynamic changes occur in the area of needs and motifs of teenage sportsmen. There is such a phenomenon as a change in the system of motifs according to the change in the level of mastering activity which is called "the drift of motifs" in scientific literature (Shadrikov, 1980). Changes in motifs of teenage sportsmen are a change in the structure of motifs, appearance of new ones and involution of old ones, transformation of the value of certain motifs (Hulias, 2020). An individual program of activity is formed in teenage sportsmen in the process of educational, training and competitive activities. This program is a component of the psychological system of activity and is represented as a method of activity, as awareness of the succession and methods for performing actions (Shadrikov, 1980).

Successfulness in sporting activities is determined by two indexes: 1) reaching an appropriate qualifying standard; 2) achieving a forecasted sports result. In order to reach a certain level of physical development or acquire social recognition, sportsmen should demonstrate themselves and meet the qualifying requirements, comply with the acknowledged qualifying conditions. It requires participating in a training program of appropriate complexity, which can be meant for an individual or for a group (Puni, 2002). Awareness of the method for achieving success is related to the realized value-based choice of an individual. Therefore, creation of successful social-psychological interaction by teenage sportsmen is impacted by two groups of factors: objective and subjective. Objective factors are social requirements, social expectations, norms and restrictions functioning in society (Popovych, 2017). Subjective factors are personal characteristics and personality traits (Matveev, 1999). External and internal criteria of successfulness are an important aspect in analyzing successfulness of teenage sportsmen. A. Maslow (1970) considers the following criteria of successfulness: high living standards, internal feeling of significance, satisfaction and other characteristics of the image of a successful individual: effectiveness in decision-making; making extensive efforts to achieve aims; a personal position; responsibility for personal actions; an ability to articulate an opinion different from the majority publicly; honesty; availability of deep emotional experiences; building and supporting sincere relationships with other people. We can conclude that in order to conduct high-quality research of the above phenomenon, it is necessary to study successfulness in sporting activities of teenage sportsmen as a dynamic phenomenon of the integral long-term process based on specific internal activity of their meaning-of-life orientations. Success in sports, from a psychological point of view, plays a very important role in a sportsmen's life as a source of motifs and feelings. Evaluation of sports results (success or failure) is often subjective (Demina, 2014). A sportsman decides on how a certain achievement will be evaluated depending on the level of their aspirations which are clearly determined subjective requirements for a future result in sporting activities. These subjective requirements acquire the form of self-expectations or expectations of self-effectiveness (Popovych et al., 2020; 2021b), developed on the basis of the ideas about their previous achievements. The level of aspirations is a mediated self-esteem of a teenage sportsman as a requirement for quantitative and qualitative aspects of sporting activities. In adolescence aspirations are too changeable and usually characterized by an extremely high level. It should be taken into consideration by trainers when working with teenagers. Some scientists believe that relationships with a trainer have the greatest impact on the results and a sportsman's progress among all the factors affecting successfulness in teenagers' sporting activities (Ilyin, 2008; Matveev, 1999). The most favorable conditions for a positive sportsman's attitude towards a trainer are partnership, readiness and ability to collaborate effectively in sporting activities and gain mutual understanding of everyday live. If between a trainer and a sportsman there are relationships of cooperation and mutual trust, a sportsman is not afraid of disagreement with a trainer, of taking responsibility for new decisions in a changing situation (Matveev, 1999). It is important to consider the sporting system as a comprehensive process in the dimensions "sportsman-trainer-sportsmen-competitors", since all the participants of this system affect successfulness and subjective perception of a result by a sportsman. This system is a nucleus of social-psychological factors of successfulness in sporting activities.

Formation of the ability to regulate one's mental state is considered to be one of the most important components of teenagers' sporting activities. It was found out that self-regulation of mental states (Popovych & Blynova, 2019; Popovych et al., 2019b) affects a victory result (Popovych et al., 2019a; 2021e), quality of training and competitive processes (Popovych et al., 2021c) and effectiveness of sporting activities (Popovych et al., 2022a). A teenage sportsman's ability to regulate a mental state and have self-control over oneself involves their entire functional structure, whose features are related to realization of individual functions of the comprehensive regulatory process. These functions include: setting, accepting and maintaining aims; creating a model of significant conditions for achieving an aim; planning, programming future actions necessary for achieving an aim; controlling and evaluating results of activity and making decisions on necessary corrections (Morosanova, 2002).

Theoretical analysis of the problem of successfulness in teenagers' sporting activities allowed differentiating between two groups of factors: 1) individual-personal factors: motivational, emotional-volitional, behavioral and regulatory; 2) social-psychological factors: content, modality and character of relations in the system of relationships "sportsman-trainer-sportsmen-competitors". Successful sporting activity of teenagers is considered to be a complex of individual-personal and social-psychological factors in the system of relationships "sportsman-trainer-sportsmen-competitors" ensuring realization of their age-related and individual-psychological opportunities.

Hypothesis. We assume: 1) availability of statistically significant differences of the parameters of successfulness between the groups of teenagers engaged in individual and team sports; 2) availability of statistically significant differences of the parameters under study between the groups of teenagers with high and low levels of successfulness in the research samples.

Purpose is to perform comparative analysis of high and low levels of the content parameters of teenagers' successfulness in sporting activities exemplified by individual (track and field, weight-lifting and catch wrestling) and team sports (football and volleyball).

Material and methods

Methodology. Methodological foundations of the research are based on the concept of successful sporting activities as realization of age-related opportunities and opportunities offered to an individual by social and psychological-pedagogical spaces (Demina, 2014); the concepts of behavioral self-regulation (Popovych, 2014b; Popovych et al., 2022b), theoretical foundations of the psychological system of activity (Shadrikov, 1980), foundations of construction of the model of the expected future (Popovych, 2014a; 2014c), axiopsychological projection of life achievements (Hulias & Hoian, 2022; Hulias & Karpenko, 2022). Retrospective analysis of the outlined concepts and theoretical foundations affected the development of the research empirical strategy and selection of psycho-diagnostic instruments.

The verification strategy is applied as the basis of the research. While drawing the empirical picture of the research, we studied the works revealing regularities of the age period under study (Popovych et al., 2021g); outlining regularities of psycho-physiological, educational, training and competitive activities of teenage sportsmen (Kozina et al., 2019; Marques et al., 2011; Popovych et al., 2021f), showing effectiveness of application of health-maintaining technologies (Popovych et al., 2021a; 2021d; 2022c), improvement of psychological well-being (Hudimova, 2021; Hudimova et al., 2021; Storozhuk et al., 2022), application of modern educational technologies and their effect on the respondents' results (Kobets et al., 2021a; 2021b). We also considered the studies on an individual's self-regulation readiness (Blynova et al., 2019; Nosov et al., 2020a; 2021a; 2021b), anticipatory ability (Plokhikh, 2021) and modern studies using advanced experimental solutions (Mamenko et al., 2022; Zinchenko et al., 2020; 2021; 2022).

Participants. The research participants were the pupils of sports schools for children and youth: the Specialized sports school for children and youth of the Olympic reserve №1 in gymnastics (Ivano-Frankivsk, Ukraine), the Sports school for children and youth №2 (Ivano-Frankivsk, Ukraine), the Regional sports school for children and youth "Spartak", (Kherson, Ukraine), the Sports school for children and youth "Osvita" (Kherson, Ukraine), the Sports school for children and youth "Kherson" (Kherson, Ukraine), Lviv sports school for children and youth "Enerhetyk" (Lviv, Ukraine), the Branch of Lviv sports school for children and youth "Enerhetyk" (Zhydachiv, Ukraine). All the respondents were teenagers, aged from 10 to 15 (M=13.3; SD=1.8). The sample of the participants of individual sports involved (n=78) respondents: track and field (n=38), weight-lifting (n=18) and catch wrestling (n=22). The sample of the participants of team sports involved (n=85) respondents: football (n=61) and volleyball (n=24). Among the research participants there were winners and medalists of local, regional, national and international tournaments. The total number of the participants n=163: males (n=95; 58.28%) and females (n=68; 41.72%).

Organization of research. The teenagers going to sports schools participated in the empirical research voluntarily. The sports schools were selected randomly, taking into consideration kinds of sports, gender and regional representativeness. The verification strategy of the research was implemented during the last months of the academic year 2020/2021 (May-June 2021). Independent expert evaluation was used to analyze successfulness of teenage sports groups of the current 2020/2021 and the previous 2019/2020 academic years. Each respondent underwent expert evaluation in terms of successfulness during the above period. Individual and team prizes, individual and team dynamics of progress/regress, the ratio of quantitative and qualitative indexes in tournaments, playing time in team sports, attendance of theoretical and practical classes and absence because of illness/trauma were considered. The research groups were divided into groups with a high level of successfulness (Group 1H; Group 2H) and groups with a low level of successfulness (Group 1L; Group 2L). The suggested organization of the research allowed distributing the participants among the research groups and determining significant differences. The research was conducted on the basis of the consent of the teenagers' parents, administrations of the schools for children and youth and personal trainers.

Procedures and instruments. The following important task to be done was to select relevant psycho-diagnostic instruments, appropriately reflecting the research factors and parameters of the phenomenon of successfulness considering the respondents' age.

In order to examine the content parameters of the teenagers' motivation, affecting successfulness in sporting activities we used the psycho-diagnostic tests "Motivation for achieving success" ("MAS") (Elers, 2002) and "Motivation for avoiding failure" ("MAF") (Elers, 2002). These tests contain the scales of the same names "MAS" and "MAF". The test "Motivation for achieving success" (Elers, 2002) combined forty statements which allowed determining the levels of the parameter under study appropriately. The test "Motivation for avoiding failure" ("MAF") (Elers, 2004) consisted of thirty lines with three characteristics in each one. The respondents chose those which characterize them most accurately. Application of these tests allowed directing teenagers' sporting activities towards maximum successful realization. The emotional sphere in adolescence is unstable and develops dynamically. In order to determine parameters of the emotional sphere, the method "Zung Self-Rating Depression Scale" ("SDS") (Zung, 1965) and the questionnaire "Neuro-psychic tension" ("NPT") (Nemchin, 1983) were used. The method "Zung Self-Rating Depression Scale" (Zung, 1965) contains Self-Rating Depression Scale (SDS) used to differentiate diagnostics of depressive states and states close to depression. This method is applied as a preliminary stage of pre-doctor diagnostics. The method consists of twenty statements. A four-point scale is used: 1 point – "never or seldom"; 2 points – "sometimes"; 3 points – "often"; 4 points – "almost always or permanently". The questionnaire "Neuro-psychic tension" (Nemchin, 1983) is a list of characteristics of neuro-psychic tension composed on the basis of the data of clinical-psychological observations. It consists of thirty basic characteristics of this state divided into three degrees of manifestation. Each degree has from one to three points. The range of points is from thirty to ninety. The questionnaire allows determining three levels of neuro-psychic tension: detensive (DNPT) – a weak degree of manifestation; intensive (INPT) – a moderate degree of manifestation; extensive (ENPT) – an excessive degree of manifestation.

In order to examine the content parameters of the volitional sphere, the method "Development of volitional qualities" ("DVQ") (Smirnov, 1984) was applied. The method "Development of volitional qualities" (Smirnov, 1984) was used to evaluate the development of volitional qualities in the respondents by the degree of the formation of volitional skills. The following parameters were measured: Purposefulness (P), Persistence and Enthusiasm (PE), Decisiveness and Courage (DC), Restraint and Self-Control (RS), Independence and Initiative (II). Three variants of scenarios of the course of actions are suggested for each of fifteen social situations: the respondents should choose the most attractive one for them. The method implies selection of one of two scales: a three-point scale or a seven-point scale. In order to examine the content parameters of the self-regulation sphere, the questionnaire "Style of Self-regulation of Behavior" ("SSBM") (Morosanova, 2004) was used. The questionnaire combines forty-six statements and a four-point scale: "correctly" – 1 point; "maybe, correctly" – 1 point; "maybe, incorrectly" – 0 point; "incorrectly" – 0 point. Seven parameters were measured: four basic parameters, two additional parameters and one integrated parameter: "Scheduling" (P), Modeling (M), Programming of Sporting Activities (PSA), Evaluation of the Results of Sporting Activities (ERSA), Flexibility (F), Independence (I), "Level of Self-Regulation" (LS). Homogeneity of the responses was established by means of α-Cronbach. The obtained indexes were at medium and high levels, within $\alpha = .812– .945$, that complies with the requirements for the obtained data of our empirical research.

Statistical analysis. The empirical data obtained by means of the verification strategy of the research were processed with "SPSS" v. 27.0 and arranged by means of the graphic editor MS "Word". In order to replicate the research, the obtained data were presented by descriptive frequency characteristics. The following reliability coefficients were used: α-Cronbach, Student's t-test, Spearman's correlation coefficient (r_s) and ranking (R). The data were considered reliable at the level of significance not lower than $p \leq .05$.

Results

The respondents' empirical results were presented by means of descriptive frequency characteristics (M – arithmetic mean; SD – mean squared deviation). The data were differentiated by the kinds of sports in order to compare the parameters under study in the representatives of individual (Group 1) and team sports (Group 2). Tabl. 1 contains comparison of the parameters of the motivational sphere in the research participants.

Table 1. Comparison of descriptive frequency characteristics Group 1 (n_1=78) and Group 2 (n_2=85) by the tests "MAS" and "MAF" (Elers, 2002)

Scale		Group 1		Group 2		Student's t-test	Level of significance
		M_1	SD_1	M_2	SD_2		
MAS	h	23.03	±2.437	22.34	±2.329	.5561	–
	m	18.56	±2.131	17.44	±2.027	.4778	–
	l	12.58	±1.812	11.09	±1.798	.4636	–
MAF	h	19.35	±2.187	20.15	±2.245	-.4890	–
	m	14.78	±1.931	15.23	±1.943	.5758	–
	l	8.39	±1.310	9.12	±1.405	.5544	–

Note: MAS – motivation for achieving success; MAF – motivation for avoiding failure; h – a high level; m – a medium level; l – a low level; Group 1 – a group of teenage sportsmen of individual sports; Group 2 – a group of

teenage sportsmen of team sports; M_1 – arithmetic mean Group 1; M_2 – arithmetic mean Group 2; SD_1 – mean squared deviation Group 1; SD_2 – mean squared deviation Group 2.

The obtained data show that descriptive frequency characteristics MAS and MAF do not have significant differences in Group 1 and Group 2 and relatively equally distributed by the levels. Combination of a high level of motivation for achieving success with a low level of motivation for avoiding failure is typical for the respondents.

Tabl. 2 contains comparison of descriptive frequency results by the content parameters of the emotional sphere of the research participants by the method "Zung Self-Rating Depression Scale" (Zung, 1965) and the questionnaire "Neuro-psychic tension" (Nemchin, 1983).

Table 2. Comparison of descriptive frequency characteristics Group 1 (n_1=78) and Group 2 (n_2=85) by the method "SDS" (Zung, 1965) and the questionnaire "NPT" (Nemchin, 1983)

Scale		Group 1		Group 2		Student's t-test	Level of significance
		M_1	SD_1	M_2	SD_2		
SDS	h	59.78	±9.965	60.18	±9.998	.7350	–
	m	46.44	±7.740	48.12	±7.934	.7019	–
	l	33.09	±6.272	32.89	±6.285	-.5126	–
DNPT		57.23	±8.865	59.89	±8.912	.7118	–
INPT		44.97	±7.234	47.56	±7.456	.6512	–
ENPT		31.39	±6.034	32.89	±6.189	.4036	–

Note: SDS – self-rating depression scale; h – a high level; m – a medium level; l – a low level; DNPT – detensive neuro-psychic tension; INPT – intensive neuro-psychic tension; ENPT – extensive neuro-psychic tension; Group 1 – a group of teenage sportsmen of individual sports; Group 2 – a group of teenage sportsmen of team sports; M_1 – arithmetic mean Group 1; M_2 – arithmetic mean Group 2; SD_1 – mean squared deviation Group 1; SD_2 – mean squared deviation Group 2.

The parameters of successfulness of teenagers' emotional sphere have a considerable impact on results in sporting activities. A sportsman's functional readiness for educational, training and competitive activities depend on the degree of manifestation of neuro-psychic tension. The obtained arithmetic means show a moderate distribution by the levels. The recorded data of the parameters DNPT, INPT and ENPT in Group 1 and Group 2 are within the norm suggested by the author of the questionnaire (Nemchin, 1983) and within the limits of the values obtained by other scientists (Demina, 2014). Average data by a high level were registered by the scale SDS in both groups Group 1 (M=59.78; SD=±9.965) and Group 2 (M=60.18; SD=±9.998). It is observable that the values of depression and neuro-psychic tension are lower in the research participants of Group 1, but significant differences were not registered.

Tabl. 3 contains comparison of descriptive frequency results by the content parameters of the volitional sphere of teenage sportsmen by the method "Development of volitional qualities" ("DVQ") (Smirnov, 1984).

Table 3. Comparison of descriptive frequency characteristics Group 1 (n_1=78) and Group 2 (n_2=85) by the method "DVQ" (Smirnov, 1984)

Scale	Group 1		Group 2		Student's t-test	Level of significance
	M_1	SD_1	M_2	SD_2		
P	14.55	±2.425	15.06	±2.510	.3765	–
PE	13.43	±2.238	13.53	±2.255	.2112	–
DC	11.73	±1.955	11.06	±1.843	-.8450	–
RS	12.07	±2.011	11.45	±1.908	.5566	–
II	13.17	±2.195	11.97	±1.995	.8064	–

Note: P – purposefulness; PE – persistence and enthusiasm; DC – decisiveness and courage; RS – restraint and self-control; II – independence and initiative; Group 1 – a group of teenage sportsmen of individual sports; Group 2 – a group of teenage sportsmen of team sports; M_1 – arithmetic mean Group 1; M_2 – arithmetic mean Group 2; SD_1 – mean square deviation Group 1; SD_2 – mean square deviation Group 2.

Comparison of the average data by the method "DVQ" (Smirnov, 1984) representing the volitional sphere of the research participants showed the advantage of the representatives of Group 1 by the parameters DC (M=11.73; SD=±1.955), RS (M=12.07; SD=±2.011) and II (M=13.17; SD=±2.195). The representatives of Group 2 have an advantage by the other parameters P (M=15.06; SD=±2.510) and RE (M=13.53; SD=±2.255). Since the advantage is not significant, it is obvious that significant statistical differences were not determined. This distribution is considered relatively equal and corresponding to teenage respondents.

Tabl. 4 contains comparison of descriptive frequency results by the content parameters of the self-regulation sphere of teenage sportsmen by the questionnaire "Style of Self-regulation of Behavior" ("SSBM") (Morosanova, 2004).

Table 4. Comparison of descriptive frequency characteristics Group 1 (n1=78) and Group 2 (n2=85) by the questionnaire "SSBM" (Morosanova, 2004)

Scale	Group 1		Group 2		Student's t-test	Level of significance
	M_1	SD_1	M_2	SD_2		
S	4.52	±1.92	4.42	±1.90	.7566	–
M	5.29	±2.34	5.13	±2.28	.8459	–
PSA	3.83	±1.79	3.34	±1.77	.5936	–
ERSA	5.14	±2.13	5.64	±2.34	-.6204	–
F	4.45	±1.86	4.08	±1.76	.8976	–
I	3.92	±1.81	3.43	±1.56	.8004	–
LS	24.86	±4.67	22.34	±4.34	.3459	–

Note: S – scheduling; M – modeling; PSA – programing of sporting activities; ERSA – evaluation of results in sporting activities; F – flexibility; I – independence; LS – level of self-regulation; Group 1 – a group of teenage sportsmen of individual sports; Group 2 – a group of teenage sportsmen of team sports; M_1 – arithmetic mean Group 1; M_2 – arithmetic mean Group 2; SD_1 – mean squared deviation Group 1; SD_2 – mean squared deviation Group 2.

Comparison of the average data by the questionnaire "SSBM" (Morosanova, 2004), representing the self-regulation sphere of the research participants, showed the advantage of the representatives of Group 1 by all the parameters, except for ERSA. The advantage of Group 2 was registered by this parameter. At the same time, significant statistical differences were not determined by any of the parameters. This tendency can be explained by a considerable advantage of the parameters of the self-regulation sphere of the respondents of individual sports since permanent individual work, high requirements for oneself, work with a personal trainer, orientation towards their technical and physical characteristics induce an increase in above parameters. Thus, comparison of the parameters under study in the representatives of individual (Group 1) and team sports (Group 2) by means of Student's t-test allowed disproving the first hypothesis. We can state that there are no statistically significant differences of the parameters under study between Group 1 and Group 2. Therefore, there are no differences in the parameters of successfulness of teenage sportsmen depending on kinds of sports.

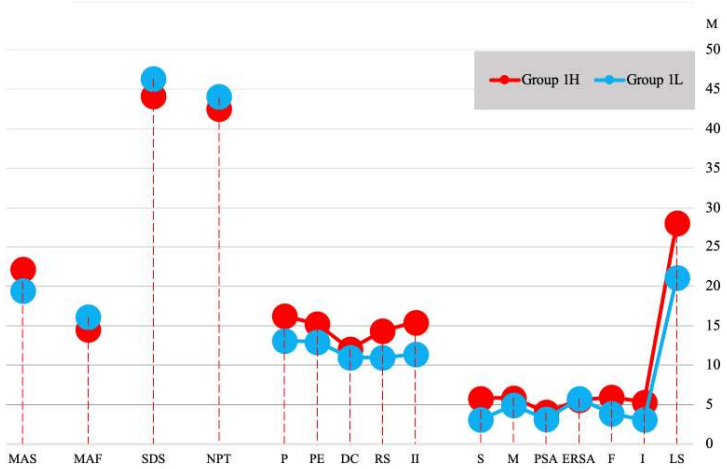
It is necessary to test the second hypothesis and compare the differences of the parameters under study in the groups with high and low levels of successfulness. It should be mentioned that the distribution was performed by means of independent expert evaluation. Tabl. 5 contains comparison of descriptive frequency characteristics of the parameters under study between the group with high – Group 1H (n_1=32) and low levels of successfulness – Group 1L (n_1=46) in the sample of individual sports.

Table 5. Comparison of descriptive frequency characteristics Group 1H and Group 1L by the parameters under study

Scale	Group 1H		Group 1L		Student's t-test	Level of significance	R
	M_1	SD_1	M_2	SD_2			
MAS	22.11	±2.037	19.41	±1.986	.8459	–	
MAF	14.51	±1.822	16.12	±1.935	-.8958	–	
SDS	44.12	±7.634	46.33	±7.884	-.7956	–	
NPT	42.56	±7.043	44.03	±7.764	-.8342	–	
P	16.23	±2.867	13.09	±2.110	1.4312	p < .05	6
PE	15.23	±2.923	12.94	±2.134	.9002	–	
DC	12.03	±2.034	10.95	±1.756	.7670	–	
RS	14.34	±2.435	10.94	±1.756	.9866	–	
II	15.45	±2.956	11.34	±1.35	2.4334	p < .01	3
S	5.78	±2.56	3.09	±1.67	1.5602	p < .05	5
M	5.85	±2.49	4.95	±2.07	.9234	–	
PSA	4.06	±1.98	3.12	±1.65	.8450	–	
ERSA	5.56	±2.36	5.74	±2.39	-.3867	–	
F	5.95	±2.65	3.83	±1.47	2.2703	p < .05	4
I	5.32	±2.21	3.02	±2.123	3.4303	p < .01	1
LS	28.08	±5.34	21.05	±4.03	2.7343	p < .01	2

Note: MAS – motivation for achieving success; MAF – motivation for avoiding failure; SDS – self-rating depression scale; NPT – neuro-psychic tension; P – purposefulness; PE – persistence and enthusiasm; DC – decisiveness and courage; RS – restraint and self-control; II – independence and initiative; S – scheduling; M – modeling; PSA – programming of sporting activities; ERSA – evaluation of results in sporting activities; F – flexibility; I – independence; LS – level of self-regulation; Group 1H – a group of teenage sportsmen with a high level of successfulness in individual sports; Group 1L – a group of teenage sportsmen with a low level of successfulness in individual sports; M_1 – arithmetic mean Group 1H; M_2 – arithmetic mean Group 1L; SD_1 – mean squared deviation Group 1H; SD_2 – mean squared deviation Group 1L; R – ranking (by strength of significant differences).

In order to visualize the data, a diagram of comparison of the parameters of successfulness of teenage sportsmen in Group 1H and Group 1L (Fig. I) was made.



Note: M – arithmetic mean; Group 1H – a group of teenage sportsmen with a high level of successfulness in individual sports; Group 1L – a group of teenage sportsmen with a low level of successfulness in individual sports; MAS – motivation for achieving success; MAF – motivation for avoiding failure; SDS – self-rating depression scale; NPT – neuro-psychic tension; P – purposefulness; PE – persistence and enthusiasm; DC – decisiveness and courage; RS – restraint and self-control; II – independence and initiative; S – scheduling; M – modeling; PSA – programming of sporting activities; ERSA – evaluation of the results in sporting activities; F – Flexibility; I – independence; LS – level of self-regulation.

Figure I. Diagram of comparison of the parameters of successfulness of teenage sportsmen in Group 1H and Group 1L

Significant statistical differences were determined in the following parameters between Group 1H and Group 1L: purposefulness (t=1.43; p>.05), independence and initiative (t=2.43; p>.01), scheduling (t=1.56; p>.05), flexibility (t=2.27; p>.05), independence (t=3.43; p>.01), the level of self-regulation (t=2.73; p>.01). The obtained data show the advantage of Group 1H over Group 1L. Obviously, achievement of sports results and success of teenage sportsmen in track and field, weight-lifting and catch wrestling determine the content parameters of the volitional sphere and self-regulation. It is important that statistically significant differences in the parameters C (t=2.43; p>.01) and CI (t=3.43; p>.01) were obtained by the two methods. It can be explained by the fact that independence and initiative of teenagers are a precondition for future sports achievements and the most important factor of successfulness of teenagers in individual sports. We assume that due to the formation and development of independence and initiative there are significant differences in the parameters of self-regulation: S (t=1.56; p>.05), F (t=2.27; p>.05), LS (t=2.73; p>.01). Adolescence is a sensitive period for an individual's independence. Obviously, independence and initiative necessary for sporting activities of teenagers engaged in individual sports, have a powerful impulse for development and at the same time they are a factor of successfulness in sporting activities. Tabl. 5 contains comparison of descriptive frequency characteristics of the parameters under study between the groups with high Group 2H (n_1=42) and low levels of successfulness Group 2L (n_1=43) in the sample of team sports.

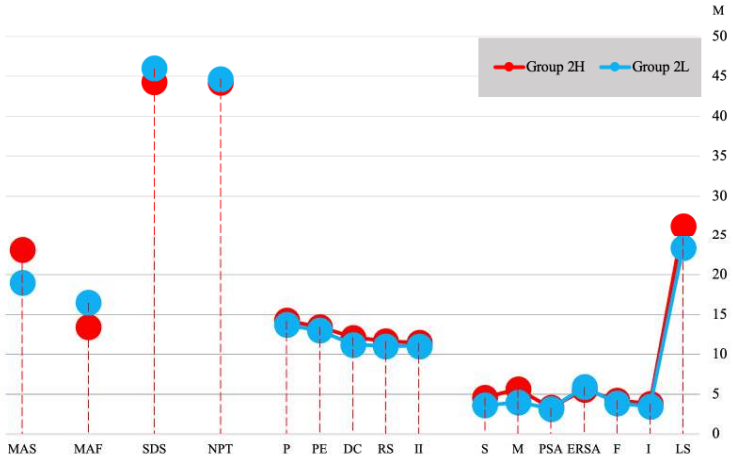
Table 5. Comparison of descriptive frequency characteristics Group 2H and Group 2L by the parameters under study

Scale	Group 2H		Group 2L		Student's t-test	Level of significance	R
	M_1	SD_1	M_2	SD_2			
MAS	23.09	±2.337	19.02	±1.834	1.2248	p < .05	4
MAF	13.45	±1.756	16.47	±1.986	-1.0934	p < .05	5
SDS	44.34	±7.641	45.99	±7.869	-.7230	–	
NPT	44.23	±7.898	41.71	±6.796	1.2908	p < .05	3
P	14.23	±2.398	13.69	±2.091	.5412		
PE	13.43	±2.249	12.98	±2.136	.9047	–	
DC	12.11	±1.973	11.23	±1.798	.4677	–	
RS	11.67	±1.934	11.03	±1.801	.8663	–	
II	11.43	±1.934	11.05	±1.923	.2783		
S	4.56	±1.98	3.56	±1.78	.4692		
M	5.62	±2.34	3.99	±1.91	1.3643	p < .05	2
PSA	3.29	±1.68	3.18	±1.64	.4884	–	
ERSA	5.55	±2.28	5.88	±2.41	.3908	–	
F	4.23	±1.81	3.85	±1.49	.3467		
I	3.78	±1.75	3.42	±1.66	.3034		
LS	26.23	±5.01	23.35	±4.29	1.4745	p < .05	1

Note: MAS – motivation for achieving success; MAF – motivation for avoiding failure; SDS – self-rating depression scale; NPT – neuro-psychic tension; P – purposefulness; PE – persistence and enthusiasm; DC – decisiveness and courage; RS – restraint and self-control; II – independence and initiative; S – scheduling; M –

modeling; PSA – programming of sporting activities; ERSA – evaluation of the results in sporting activities; F – flexibility; I – independence; LS – level of self-regulation; Group 2H – a group of teenage sportsmen in individual sports; Group 2L – a group of teenage sportsmen in team sports; M_1 – arithmetic mean Group 2H; M_2 – arithmetic mean Group 2L; SD_1 – mean square deviation Group 2H; SD_2 – mean square deviation Group 2L; R – ranking (by strength of significant differences).

In order to visualize the data, a diagram of comparison of the parameters of successfulness of teenage sportsmen in Group 2H and Group 2L (Fig. II) was made.

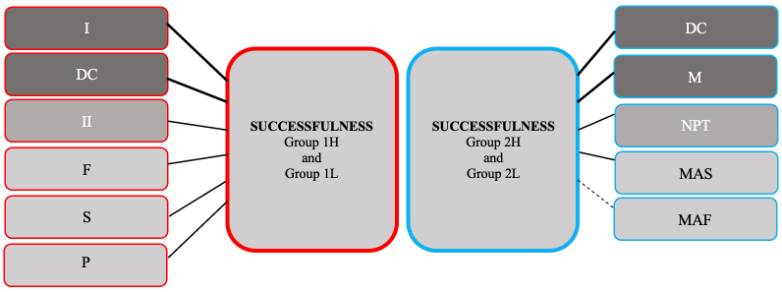


Note: M – arithmetic mean; Group 2H – a group of teenage sportsmen with a high level of successfulness in team sports; Group 2L – a group of teenage sportsmen with a low level of successfulness in team sports; MAS – motivation for achieving success; MAF – motivation for avoiding failure; SDS – self-rating depression scale; NPT – neuro-psychic tension; P – purposefulness; PE – persistence and enthusiasm; DC – decisiveness and courage; RS – restraint and self-control; II – independence and initiative; P – planning; M – modeling; PSA – programming of sporting activities; ERSA – evaluation of results in sporting activities; F – flexibility; I – independence; LS – level of self-regulation.

Figure II. Diagram of comparison of the parameters of teenage sportsmen's successfulness Group 2H and Group 2L

There are significant statistical differences in the following parameters between Group 2H and Group 2L: motivation for achieving success (t=1.22; p>.05), motivation for avoiding failure (t=-1.09; p>.05), neuro-psychic tension (t=1.29; p>.05), modeling (t=1.36; p>.05), the level of self-regulation (t=1.47; p>.05). The obtained data show the advantage of Group 2H over Group 2L. Unlike the comparison of the data of Group 1 and Group 1L, in the representatives of team sports in Group 2 and Group 2L, the teenage sportsmen's achievements of sports results and successfulness in football and volleyball determine the content parameters of motivational, emotional, volitional spheres and self-regulation. It means that there is a balance in representation of the parameters from all the spheres. It is interesting that in M (t=1.36; p>.05) there are significant differences which can be explained by the fact that in educational and training classes there are modeling of a game and analysis of the previous competition and games of the competitors that can affect the ability of modeling and a general level of self-regulation. Significant differences in NPT (t=-1.29; p>.05) can be explained by the fact that team sports provoke excessively high psycho-emotional excitation, agitation and responsibility for team results, especially in teenage sportsmen, that is not characteristic of individual sports.

Fig. III shows significant differences of the content parameters of successfulness by ranks in comparison with the representatives of individual (Group 1H and Group 1L) and team sports (Group 2H and Group 2L).



Note: ——— positive correlations with p≤.05; ——— positive correlations with p≤.01; negative correlations with p≤.05; Group 1H – a group of teenage sportsmen with a high level of successfulness in individual sports; Group 1L – a group of teenage sportsmen with a low level of successfulness in individual

sports; Group 2H – a group of teenage sportsmen with a high level of successfulness in team sports; Group 2L – a group of teenage sportsmen with a low level of successfulness in team sports; I – independence; LS – level of self-regulation; II – independence and initiative; F – flexibility; S – scheduling; P – purposefulness; M – modeling; NPT – neuro-psychic tension; MAS – motivation for achieving success; MAF – motivation for avoiding failure.

Figure III. Significant differences of the content parameters of successfulness by ranks

Ranking of significant differences of the content parameters of successfulness showed that the parameters of the self-regulation sphere dominate in both groups with a high level of successfulness (Group 1H and Group 2H). Thus, comparison of the research parameters between the groups of teenagers with high and low levels of successfulness in the samples under study by means of Student's t-test and ranking (R) allowed confirming the second hypothesis. We can state that there are statistically significant differences of the research parameters of successfulness in the representatives of individual sports between Group 1H and Group 1L and the representatives of team sports between Group 2H and Group 2L.

Discussion

The descriptive frequency characteristics (see Tabl. 1, Tabl. 2, Tabl. 3) show the respondents' empirical data reflecting cognitive, emotional-volitional and behavioral aspects of adolescence regularities. Adolescence is a complex transition period of becoming an adult. The main type of mental activities is personal-intimate communication. Teenagers actively communicate with their peers and get acquainted with each other (Savchyn & Vasylenko, 2017). Observation of teenage sportsmen's behavior and communication with them show that they believe that successfulness depends on a kind of sport, therefore, team sports have an advantage. Probably, large-scale participation and spectacularity of team sports provoke such stereotypes in perception (Ilyin, 2008). It made us formulate the first research hypothesis which was successfully disproved.

Distribution of the respondents into the groups with high and low levels of successfulness by means of expert evaluation allowed focusing on formal analytical parameters of successfulness. Administrators of sports schools for children and youth are often guided only by such analytical data. Determination of significant differences by means of Student's t-test and ranking (R) allows solving this problem. Comparison of the parameters of successfulness (see Tabl. 4, Tabl. 5 and see Fig. I, Fig. II) made it possible to determine significant differences by the research parameters and analyze representativeness by the motivational, emotional, volitional and self-regulation spheres. The method of ranking (see Fig. III) was used to determine a significant scientific fact of importance of the formation of self-regulation components in teenage sportsmen's successfulness. It is proven in the studies by M. Boryshevsky (2012) and E. Sergiyenko (2010). In Group 1H/Group 1L the strongest significant differences are characteristic of I and LS ($p>.01$), in Group 2H/Group 2L – LS and M ($p>.05$). It can be explained by the fact that independence, flexibility and scheduling are those components for representatives of individual sports which affect self-regulation and determine its dominating level. It is a factor of successfulness in sporting activities. Modeling for representatives of team sports is the component ensuring a high level of self-regulation. It is confirmed in the study on self-regulation readiness establishing an impact of the above parameters on results in sporting activities (Popovych et al, 2022d). The fact of a significant negative difference in representatives of team sports by the parameter MAF ($t=-1.09$; $p>.05$), observed in Group 2L is of special scientific interest. This fact is explained by the author of the method T. Elers (2002), showing the combination of a high level of motivation for achieving success with average and low indexes of motivation for avoiding failure. Obviously, this factor worked in Group 2H/Group 2L. We can state that teenage sportsmen's successfulness does not depend on a kind of sport but is highly dependent on the parameters of the self-regulation sphere.

Conclusions

1. We analyzed and substantiated that teenagers' successfulness in sporting activities is considered to be a complex of individual-personal and social-psychological factors in the system of relationships "sportsman-trainer-sportsmen-competitors" ensuring realization of their age-related and individual-psychological abilities.

2. Comparison of the research parameters of successfulness of representatives of individual (Group 1) and team sports (Group 2) by means of Student's t-test allowed determining that there are no significant differences. We can state that there is no dependence of successfulness on the type of sporting activities.

3. Expert evaluation was used to perform distribution into the groups with high (Group 1H; Group 2H) and low levels of successfulness (Group 1L; Group 2L). Statistical differences were determined in Group 1H and Group 1L in the following parameters: independence ($t=3.43$; $p>.01$), the level of self-regulation ($t=2.73$; $p>.01$), independence and initiative ($t=2.43$; $p>.01$), flexibility ($t=2.27$; $p>.05$), scheduling ($t=1.56$; $p>.05$) and purposefulness ($t=1.43$; $p>.05$). Statistical differences of the teenagers in Group 2H and Group 2L were registered in the following parameters: the level of self-regulation ($t=1.47$; $p>.05$), modeling ($t=1.36$; $p>.05$), neuro-psychic tension ($t=1.29$; $p>.05$), motivation for achieving success ($t=1.22$; $p>.05$), motivation for avoiding failure ($t=-1.09$; $p>.05$).

4. We substantiated that independence, flexibility and scheduling for Group 1H and modeling for Group 2H are those components of the self-regulation sphere of a teenager which have a considerable impact on successfulness in sporting activities.

5. The purpose was achieved, the first hypothesis was disproven and the second hypothesis was confirmed. Administrations of sports schools for children and youth are recommended to operationalize the obtained scientific facts into educational, training and competitive activities.

References:

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. Y. (2012). Personality in the dimensions of self-consciousness. Sumy: "Ellada" publishing house.

Demina, D. S. (2014). Psychological and pedagogical support for personal development of teenagers (exemplified by individual and team sports). Extended abstract of Candidate's thesis. Nizhny Novgorod: NSPU.

Elers, T. (2002). Motivation for Achieving Success and Avoiding Failures. St. Petersburg: Piter.

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. https://doi.org/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

Hulias, I. (2020). Axiopsychological projection of life achievements of the personality. Kyiv: Lyudmila Publishing House.

Hulias, I. A., & Hoian, I. M. (2022). Explication of factors of the axiopsychological design of life achievements of modern youth. *Insight: the psychological dimensions of society, 7*, 41-57. https://doi.org/10.32999/2663-970X/2022-7-4

Hulias, I., & Karpenko, Z. (2022). Axiopsychological Differences of Men's and Women's Gender Displays in Modern Ukraine. *Journal of Education Culture and Society, 13*(1), 351-368. https://doi.org/10.15503/jecs2022.1.351.368

Ilyin, E. P. (2008). Sports psychology. St. Petersburg: Peter.

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. https://doi.org/10.5114/pq.2019.86464

Leontiev, A. N. (1972). Needs, motives and emotions. Moscow: Publishing House of Moscow State University.

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.

Maslow, A. (1970). Maslow A. Motivation and Personality. New York: Harper and Row.

Matveev, L. P. (1999). Fundamentals of the general theory of sports and the system of training athletes. Kyiv: Olympic Literature.

Morosanova, V. I. (2002). Personal aspects of self-regulation of voluntary human activity. *Psychological Journal, 23*(6), 5-17.

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

Nemchin, T. A. (1983). A state of mental stress. Leningrad: Leningrad State University.

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.

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

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. S., Blynova, O. Ye., Bokshan, H. I., Nosov, P. S., Kovalchuk, Z. Ya., Piletska, L. S., & Berbentsev, V. I. (2019a). 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.

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

Popovych, I., Hoi, N., Koval, I., Vorobel, M., Semenov, O., Semenova, N., & Hrys, A. (2022a). Strengthening of student youth's mental health using play sports. *Journal of Physical Education and Sport, 22*(6), 1384-1395. DOI: 10.7752/jpes.2022.06174

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. (2019). The Structure, Variables and Interdependence of the Factors of Mental States of Expectations in Students' Academic and Professional Activities. *The New Educational Review, 55*(1), 293-306. DOI: 10.15804/tner.2019.55.1.24

Popovych, I. S. (2017). Psychology of social expectations of personality. Extended abstract of Doctor's thesis. Severodonetsk: Volodymyr Dahl East-Ukrainian National University.

Popovych, I. S. (2014a). 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. (2014b). Social expectations in theories of personality motivation. *Bulletin of the Perm University. Philosophy. Psychology. Sociology, 4*(20), 53-63.

Popovych, I. S. (2014c). Typological features of expectations. *Scientific Bulletin of Kherson State University. Series: Psychological Sciences, 1*(2), 64-70.

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., 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. S., Zavatskyi, V. Yu., Geyko, Ie. V., Halian, O. I., Zavatskyi, Yu. A., & Radul, I. H. (2019b). 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.

Puni, A. C. (2002). Psychological training in sports. St. Petersburg: Peter

Savchyn, M., & Vasylenko, L. (2017). Developmental psychology. Kyiv: Alma mater+.

Sergiyenko, E. A. (2010). Control of behavior as subjective regulation. Moscow: Institute of Psychology of RAS.

Shadrikov, V. D. (1980). Psychological analysis of activity as a system. *Psychological Journal, 1*(3), 33-46.

Smirnov, B. N. (1984). Psychology of Will. Moscow: Smysl.

Storozhuk, S., Kryvda, N., Hoian, I., Mozgova, N., Doichyk, V., Matviienko, I., & Doichyk, O. (2022). MENTAL HEALTH AFTER TRAUMA: INDIVIDUAL AND COLLECTIVE DIMENSIONS. *Wiadomosci Lekarskie, 75*(8), 1924-1931.

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. (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.

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.

Zung, W. W. (1965). A self-rating depression scale. *Archives of General Psychiatry, 12*, 63-70. DOI: 10.1001/archpsyc.1965.01720310065008