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Original Article

Impact of psychogenic factors on motivational orientation of junior athletes

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Abstract:
The purpose of the empirical research is to find out the impact of psychogenic factors on motivational orientation of junior athletes. The study identified differences in the psychological content parameters reflecting psychogenic factors of junior athletes by high and low levels. The research involved juniors (n=75) (*Me=17;* M=17.23; SD=±1.67) representing the following football clubs (n=43): FC "Krystal" (Kherson, Ukraine), FC "Riatuvalnyk" (Mykolaiv, Ukraine), FC "Enerhiia" (Lviv, Ukraine) and juniors (n=32) of handball clubs "Dniprianka" (Kherson, Ukraine) and "Real" (Mykolaiv, Ukraine). **Methods:** the selected methods, which are reliable and sensitive to the research subject, allowed measuring the research parameters relevantly, ensured external and internal validity. In addition, purposeful observation with entering data in standard reports was used. Statistically significant differences were found by means of standard coefficients. **Results.** It was empirically established and substantiated that there are dominant negative statistically significant correlations ($p \leq .050$; $p \leq .010$) of depressiveness (D), neuro-psychic tension (NPT), situational reactive anxiety (SRA) and personal anxiety (PA), spontaneous (Scale II) and reactive aggressiveness (Scale VII) with all the parameters of motivational orientation of junior athletes: subject-directed (Sb); result-directed (R), socially directed (Sc) and personally directed motivational orientation (P). A positive correlation of neuro-psychic tension (NPT) and spontaneous aggressiveness (Scale II) is accounted for by an impact on socially directed motivational orientation. It was proved that there are statistically significant differences between the respondents with a high level of the parameters reflecting psychogenic factors and the subgroup of respondents with a low level. Thirteen statistically significant differences were registered ($p \leq .050$; $p \leq .010$). The study highlights that subject-directed motivational orientation (Sb) is the most dependent on the level of development of the parameters reflecting psychogenic factors. **Discussion and conclusions.** It was substantiated that the suggested summative research strategy with elements of comparison of the examined variables confirmed its efficiency. The applied methods, which are sensitive to the research subject, allowed establishing and substantiating statistically significant differences. The obtained results should be taken into consideration by coaches in physical and tactical-technical training for the representatives of team sports
Key words: identity, depression, anxiety, mental health, competitiveness, competition, self-actualization.

Introduction

Modern physical and tactical training for athletes requires subjects of sporting activities to have well developed competences which will allow showing better results, establishing personal, national and world records, demonstrating high functional and psycho-emotional readiness not only in training conditions, but also repeating or even surpassing these achievements in competition process. Competition process is always difficult and unpredictable. It is usually characterized by a powerful psychogenic impact on the participants of a contest. Personality of a junior athlete is partially created and developed in these conditions.

Difficult stressful conditions and extreme trials hindered a great number of talented juniors who showed incredibly high results in trainings and certain competitions, but could not confirm their results in open national and international sports forums. Motivational orientation, development of personal volitional qualities, strength of will and unshakeable spirit allowed few individuals to reach the desirable peak of fame in sports. Obviously, it is necessary to examine a significant correlation of the parameters reflecting psychogenic factors with components of motivational orientation of a junior athlete's personality. Comprehension and consideration of a

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significant impact of the above factors can considerably affect the organization of educational and training process, meeting schedules, time for recovery and psycho-emotional relaxation, and theoretical training.

Sports records of juniors require knowledge and consideration of psycho-physiological regularities (Cretu et al., 2021; Kozina et al., 2019; Paliichuk et al., 2018), psychological new formations (Popovych et al., 2022b) which are sensitive and determining in representatives of this age group (Popovych et al., 2022d). Permanent self-identification, creation of one's "Self", youthful exuberance, responsibility, perfectionism, social desirability, aspiration to succeed fast (Popovych & Blynova, 2019; Shevchenko et al., 2023; Zarichanskyi et al., 2023; Zhuravlova et al., 2023) affect dominant mental states of junior athletes and have an impact on current training and competition processes (Popovych et al., 2022e; 2022f).

It is obvious that sporting activities involving a scientific-experimental component, identification of statistically significant results and operationalization in educational and training processes can achieve high results and motivate subjects to create safe educational and training space (Blynova et al., 2022b; Kalenchuk et al., 2023; Popovych et al., 2020a). Researchers statistically confirmed that space safety correlates with respondents' self-efficacy and motivation. Quality psychological-pedagogical accompaniment of juniors' activities gives reasons for being oriented toward success (Fomych, 2023).

Psychogenic factors in sporting activities are difficulties, stresses, stressful situations of competition, educational, training and rehabilitation work causing disturbances in emotional, cognitive and behavioral areas of the subjects of sporting activities. Such disturbances can result in neurotic disorders: anxiety, hysteria, neurasthenia and sleep disorders. All these can cause temporary and long-lasting declines in an athlete's functional mental state (Oliynyk & Voitenko, 2020).

We emphasize that a psychogenic impact is experienced by all subjects of sporting activities. Coaching staff experiencing considerable psycho-emotional tension and nervous strain for a certain period of time can have mental exhaustion which usually leads to professional deformation (Popovych et al., 2022c). Such coaching staff cannot accompany and control a competition of their trainees appropriately. There are studies showing that psychogenic disorders caused by experiencing psycho-traumatic situation act as exogenous-stressful agents disrupting homeostasis (Kuzikova et al., 2023; Vasylyuk, 1984).

Stressogenic factors hold a special place among psychogenic factors (Sonnyk et al., 2017). Physical, chemical, biological, social and psychological impacts can be stressogenic factors or stressors in sporting activities. The role of stressors in training and competition activities can be radically different. For instance, in the course of training, the reaction of an athlete's body has adaptive nature and the impact of stressors is positive, maintains appropriate functional tonus of a body and prevents detraining. Awareness of the fact that a sporting contest is important for tournament placement of teams increases the impact of stressorgenic factors on its participants. Sometimes such games are called "a game of the season". Under such conditions stress acquires all characteristics of distress (H. Seley (1976)). Under distress, i.e. a long-lasting effect of a stressor, an athlete's psycho-physiological and functional states acquire unfavorable modality. If the adaptive resource does not cope, it causes mental disorders. As H. Sonnyk et al. (2017) thinks, two main components play a leading role in the occurrence of psychogenic disorders: a psychogenic factor and a subject's state. Whereas psycho-traumatic factors have an external impact and can be classified into sudden, acute and chronical, a subject's state is an internal factor affected by it.

As empirical research shows, the development of emotional intelligence, hardiness and resilience of competition participants are the internal resource capable of not only ensuring the result of a sporting contest, but also protecting participants against traumas (Popovych et al., 2020b).

The researchers I. Popovych et al. (2019a; 2019b) empirically found and theoretically substantiated that dominant mental states of competition participants identified before a contest as well as pre-competition expectations (Popovych et al., 2020c; 2021a) allow forecasting the result of a competition with high probability.

The impact of psychogenic factors on motivational orientation of junior athletes is regarded as determination of external and internal components causing difficulties, stresses, stressful situations in sporting activities and disrupt the functioning of emotional, cognitive and behavioral spheres of juniors.

Hypothesis. We assume that: 1) psychological content parameters reflecting psychogenic factors will have a statistically significant impact on the components of motivational orientation of junior athletes; 2) there will be statistically significant differences between the respondents with a high level of the parameters reflecting psychogenic factors and the subgroup of respondents with a low level.

Purpose. To examine the impact of psychogenic factors on motivational orientation of junior athletes.

Methods

Methodology. Basic concepts of an individual's stress, experience of a traumatic situation (Kuzikova et al., 2023), psychological regularities of experiencing critical situations (Vasylyuk, 1984), the study on psychogenic disorders of personality (Sonnyk et al., 2017) and the authors' concept of the research on dominant mental states (Popovych et al., 2022a; Prokhorenko et al., 2023) are methodological foundations of the research on the impact of psychogenic factors on juniors' sporting activities (Seley, 1976). Attention is focused on external and internal

components which are capable of disrupting the functioning of emotional, cognitive and behavioral sphere of athletes.

When developing the strategy of the summative research with elements of comparison, we took into consideration a number of modern studies which are directly or indirectly associated with the research subject: 1) regularities of educational and training process and its connection with tactical-technical training (Gumennykova et al., 2021; Kobets et al., 2021a; 2021b; Marques et al., 2011; Nosov et al., 2021b); 2) research on content parameters of human adaptive resources (Blynova et al., 2022a; Plokhikh, 2022; 2023; Plokhikh & Yanovska, 2022; Vavryniv & Yaremko, 2022; 3) the role of a value-based component in difficult life situations (Halian, 2022; Hulias & Hoian, 2022; Karpenko & Klympush, 2023); 4) psychogenic factors in adjacent studies on other areas of human activities (Mamenko et al., 2022; Nosov et al., 2020a; 2020b; 2021a; Zinchenko et al., 2021; 2022; 2023).

Participants. The research involved juniors (n=75) representing team contact sports: football and handball. This choice is determined by the fact that the above sports are characterized by a high degree of trauma risks, require exhausting physical and psycho-emotional devotedness. The male sample was represented (n=43) by junior athletes of the following clubs: FC "Krystal" (Kherson, Ukraine), FC "Riatuvalnyk" (Mykolaiv, Ukraine), FC "Enerhiia" (Lviv, Ukraine). The female sample was represented (n=32) by junior athletes of the clubs: "Dniprianka" (Kherson, Ukraine) and "Real" (Mykolaiv, Ukraine). The respondents' age (*Me=17;* M=17.23; SD=±1.67).

Procedures and instruments. The questionnaire "Athlete's Motivational Orientation" ("AMO") (Smoldovskaya, 2022) is a basic psycho-diagnostic method. A three-point scale was used to identify the parameters of motivational orientation. Motivational orientation is represented by orientations towards subject, result, social and personal components of sporting activities. All of them are topical in the context of our research. Cronbach's alpha confirmed a medium level of data homogeneity (α_C=.812).

Depressiveness is the most common state associated by junior athletes with their psycho-functional decline. Worse general condition, sadness and a lack of positive emotions or fatigue are very often regarded by juniors as indicators of their current depressive mental state. In order to perform objective evaluation of depressiveness as one of relevant measurements of the impact of psychogenic factors, the psycho-diagnostic instrument "Zung Self-Rating Depression Scale" ("ZSDS") (Zung, 1965) was used. The scale of neuro-psychic tension given by the questionnaire with the same name "Neuro-psychic tension" ("NPT") is important in the context of our research (Nemchin, 1983). High levels of homogeneity by α-Cronbach were registered by these scales.

Two parameters of anxiety accompanying psychogenic impacts are: situational reactive anxiety (SRA) and personal anxiety (PA). These parameters were identified by the questionnaire of C. Spielberger (1971) "State-trait anxiety inventory" ("STAI"). α-Cronbach was α=.816.

To some extent, athletes' aggressiveness is a destructive reaction to psychogenic manifestations. Two scales of aggressiveness were use: spontaneous (Scale II) and reactive (Scale VII) measured by "Freiburg personality inventory" (Form B) ("FPI-B"), adapted by O. Lutsenko (2016). Scale II (spontaneous aggressiveness) – high indexes show the signs of psychotization of an intro-tension type which is a precondition of excessive impulsiveness. Scale VII (reactive aggressiveness) – high indexes show the signs of psychotization of an extra-tension type which is a precondition of aggressive attitude towards others and aspiration to dominate. The index was not measured by α-Cronbach.

Organization of Research. The research was conducted using the summative strategy with the elements of comparison of the examined variables. The examined parameters relevantly reflected the research subject and ensured external and internal validity. In addition to psycho-diagnostic instruments, purposeful observation with entering the data in standard reports was used. Compliance with the principles of ecological validity incentivized us to create empirical cross-sections under conditions of a maximum effect of psychogenic factors. Therefore, empirical data were collected in the athletes who participated in principal contests of a derby type. Participating teams competed not only for prizes but also for retaining places in the elite division. Since the research was conducted in Ukraine under martial law, we processed the data collected after the competitions hold with a break caused by air raid alerts (the danger of artillery attacks of a particular location). It is worth mentioning that some participants were seriously injured in the contests. The injured athletes, who were replaced by the coaching staff of the team, also participated in the research. All the above characteristics and collection of empirical data after competitions ensured ecological validity, since the respondents were after experiencing exhausting physical and psycho-emotional loads. The result which is one of the most important components of sporting activities dominated the competition participants. The reserve athletes who did participate in competitions were not involved in the empirical cross-section. The empirical data were collected after principal sporting contests of football and handball teams in September-October 2022. All the participants were informed and voluntarily took part in the research. The Ethics Committee agreed to the research and the collection of empirical data meeting confidentiality requirements.

Statistical Analysis. The programs "IBM SPSS Statistics" version 29.0.0.0 (241) and "MS Excel" were used to process the empirical dataset and determine statistically significant differences. "MS Word" was used to make a graphical presentation. Statistical significance of the empirical research was established by: α-Cronbach, the correlation coefficient of Karl Pearson (r_{xy}) at the levels p≤.050 and p≤.010 and Mann-Whitney U-test.

Results

The main descriptive frequency characteristics were identified by the scales of the following methods: "AMO" (Smoldovskaya, 2022); "ZSDS" (Zung, 1965); "NPT" (Nemchin, 1983); "FPI-B" (by adapted O. Lutsenko, 2016). Tabl. 1 gives the following characteristics: M – mean; Me – median; Mo – mode; SD – squared deviation; min – minimum measure of distribution; max – maximum measure of distribution.

Table 1. Descriptive frequency characteristics of the research parameters

Statistics	Parameters									
	D	**NPT**	**SRA**	**PA**	**Scale II**	**Scale VII**	**Sb**	**R**	**Sc**	**P**
M	44.65	45.20	35.34	36.30	3.18	5.66	8.28	7.92	9.69	8.20
Me	*44.50*	*46.00*	*35.00*	*36.00*	*3.00*	*6.00*	*8.00*	*8.00*	*10.00*	*8.00*
Mo	49.00	47.00	38.00	39.00	2.00	6.00	10.00	6.00	10.00	8.00
SD	4.21	3.69	2.30	2.77	1.95	1.90	1.44	1.47	.83	1.32
min	37.00	39.00	31.00	30.00	1.00	1.00	5.00	6.00	8.00	6.00
max	50.00	51.00	39.00	40.00	7.00	9.00	10.00	10.00	11.00	10.00

Note: M – mean; Me – median (*given in italics*); Mo – mode; SD – squared deviation; min – minimum measure of distribution; max – maximum measure of distribution; D – depression; NPT – neuro-psychic tension; SRA – situational reactive anxiety; PA – personal anxiety; Scale II – spontaneous aggressiveness; Scale VII – reactive aggressiveness; Sb – subject-directed motivational orientation; R – result-directed motivational orientation; Sc – socially-directed motivational orientation; P – personally-directed motivational orientation.

There are no statistically significant differences by all the parameters between the given descriptive statistics and the range of the calculated norms suggested by the authors of the methods and the researchers who adapted them. Empirical studies on sports using the above psycho-diagnostic instruments show tendencies by a number of parameters, but no statistically significant differences were found (Popovych et al., 2023b).

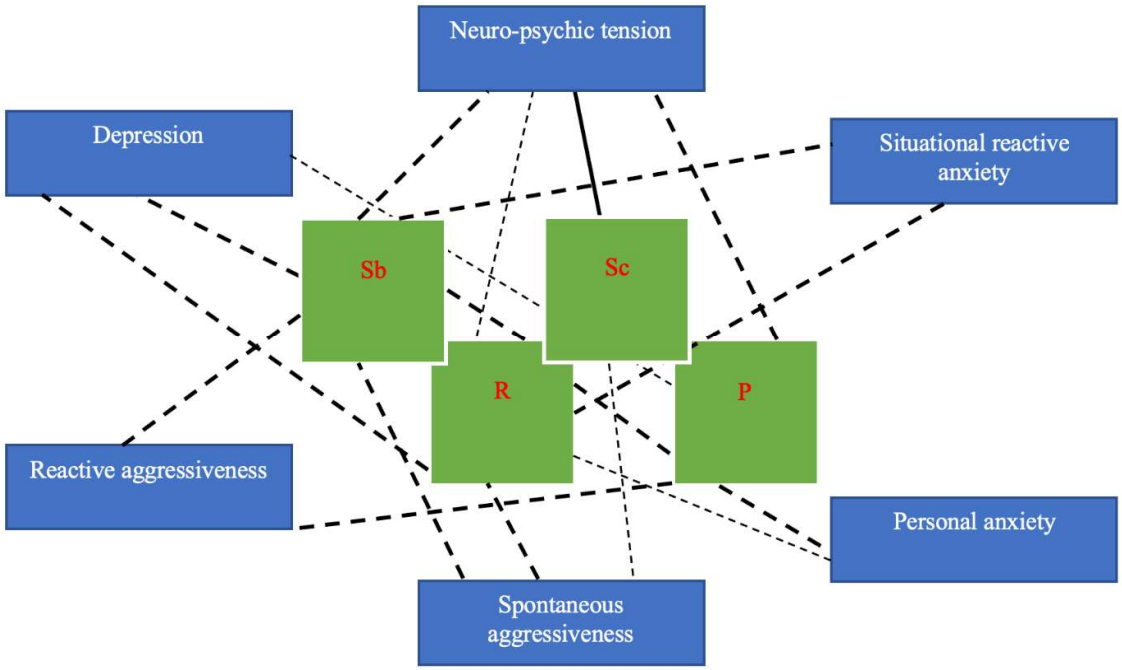
Relationships between the bilateral correlation of the measurements of the respondents' motivational orientation and the parameters of psychogenic factors were found by Pearson (r_{xy}) and given as a correlation matrix in Tabl. 2.

Table 2. Correlation matrix of the measurements of motivational orientation with the parameters of psychogenic factors (n = 75)

Parameters of psychogenic factors	Pearson correlation coefficient	Directions of motivational orientation			
		Sb	**R**	**Sc**	**P**
D	r_{xy}	-.854**	-.408**	.027	-.277*
	p	.000	.000	.818	.017
NPT	r_{xy}	-.664**	-.237*	.308**	-.614**
	p	.000	.042	.007	.000
SRA	r_{xy}	-.832**	-.365**	.070	-.144
	p	.000	.001	.551	.220
PA	r_{xy}	-.732**	-.233*	.071	-.054
	p	.000	.046	.549	.648
Scale II	r_{xy}	-.764**	-.515**	.289*	-.115
	p	.000	.000	.013	.331
Scale VII	r_{xy}	-.535**	.093	.019	-.358**
	p	.000	.431	.870	.002

Note: D – depression; NPT – neuro-psychic tension; SRA – situational reactive anxiety; PA – personal anxiety; Scale II – spontaneous aggressiveness; Scale VII – reactive aggressiveness; r_{xy} – correlation coefficient of Karl Pearson; *p* – level of significance; Sb – subject-directed motivational orientation; R – result-directed motivational orientation; Sc – socially-directed motivational orientation; P – personally-directed motivational orientation; * – p<.050; ** – p<.010.

Fig. I presents graphical visualization of correlations and gives statistically significant measurements as correlation pliades.



Note: – – – negative correlations with p≤.010; - - - - - - negative correlations with p≤.050; ——— positive correlations with p≤.010; ——— positive correlations with p≤.050; Sb – subject-directed motivational orientation; R – result-directed motivational orientation; Sc – socially-directed motivational orientation; P – personally-directed motivational orientation.

Figure I. Correlation pleiades of the measurements of motivational orientation with the parameters of psychogenic factors (n=75)

We can state that subject-directed motivational orientation (Sb) of the respondents has all (six) negative statistically significant correlations (p≤.010) with the parameters of psychogenic factors: D (r_{xy}=-.854; p=.000), NPT (r_{xy}=-.664; p=.000), SRA (r_{xy}=-.832; p=.000), PA (r_{xy}=-.732; p=.000), Scale II (r_{xy}=-.764; p=.000), Scale VII (r_{xy}=-.535; p=.000). Result-directed motivational orientation (R) of the respondents has five negative statistically significant correlations (p≤.050; p≤.010) with the parameters pf psychogenic factors: D (r_{xy}=-.408; p=.000), NPT (r_{xy}=-.237; p=.042), SRA (r_{xy}=-.365; p=.001), PA (r_{xy}=-.233; p=.046), Scale II (r_{xy}=-.515; p=.000). The result of statistically significant correlations (p≤.010; p≤.050) of socially-directed motivational orientation (Sc) with the parameters of psychogenic factors is radically different: NPT (r_{xy}=.308; p=.007) and Scale II (r_{xy}=.289; p=.013). Two positive correlations were registered. Personally-oriented motivational orientation (P) of the respondents has three negative statistically significant correlations (p≤.050; p≤.010): D (r_{xy}=-.277; p=.017), NPT (r_{xy}=-.614; p=.000) and Scale VII (r_{xy}=-.358; p=.002). The first hypothesis was empirically proved – the psychological content parameters reflecting psychogenic factors have a statistically significant impact on the components of motivational orientation of junior athletes. Sixteen statistically significant correlations were registered (p≤.050; p≤.010).

According to the research strategy and in the context of confirming/disproving the second hypothesis, identification of differences in the subgroups with high and low levels of the parameters reflecting psychogenic factors is of special scientific interest. Division into subgroups was performed by the median (*Me*). The index of the median of depressiveness (D) was (*Me = 44.50*). The subgroup with a low level of depressiveness involved the respondents (D>44.50), and the subgroup with a high level involved the respondents (D≤44.50). Statistical significance of differences between the subgroups was determined using Mann-Whitney U-test (Tabl. 3).

Table 3. Differences between the subgroups with high and low levels of depressiveness (D)

Mann-Whitney U-test	**Parameters**			
	Sb	**R**	**Sc**	**P**
U	**132.000**	**344.000**	543.000	525.500
p	.000	.000	.100	.072

Note: U – критерій Mann-Whitney; p – level of significance; Sb – subject-directed motivational orientation; R – result-directed motivational orientation; Sc – socially-directed motivational orientation; P – personally-directed motivational orientation; level of significance given in **bold type** – p ≤ .050; p ≤ .010.

It was found that the subgroup with a low level of depressiveness (D>44.50) has statistically significant differences in the parameters: Sb (U=132.000; p=.000) and R (U=344.000; p=.000). Thus, high indexes of depressiveness have a significant negative impact on subject- and result-directed motivational orientation. There was a lack of significant differences in socially- and personally-directed motivational orientations.

The index of the median of neuro-psychic tension (NPT) was (*Me = 46.00*). The subgroup with a low level of neural-psychic tension involved the respondents (NPT>46.00), and the subgroup with a high level involved the respondents (NPT≤46.00). Statistical significance of differences between the subgroups was determined using Mann-Whitney U-test (Tabl. 4).

Table 4. Differences between the subgroups with high and low levels of neuro-psychic tension (NPT)

Mann-Whitney	**Parameters**			
U-test	**Sb**	**R**	**Sc**	**P**
U	**413.000**	622.500	531.000	**136.500**
p	.003	.548	.089	.000

Note: U – критерій Mann-Whitney; p – level of significance; Sb – subject-directed motivational orientation; R – result-directed motivational orientation; Sc – socially-directed motivational orientation; P – personally-directed motivational orientation; level of significance given in **bold type** – p ≤ .050; p ≤ .010.

It was found that the subgroup with a high level of neuro-psychic tension (NPT≤46.00) has statistically significant differences in the parameters: Sb (U=413.000; p=.003) and P (U=136.500; p=.000). Thus, high indexes of neuro-psychic tension have a considerable impact on subject- and personally-directed motivational orientation. There was a lack of significant differences in result- and socially-oriented motivational orientation.

The index of the median of situational reactive anxiety (SRA) was (*Me = 35.00*). The subgroup with a low level of situational reactive anxiety involved the respondents (SPA>35.00), and the subgroup with a high level involved the respondents (SPA≤35.00). Statistical significance of differences between the subgroups was determined using Mann-Whitney U-test (Tabl. 5).

Table 5. Differences between the subgroups with high and low levels of situational reactive anxiety (SRA)

Mann-Whitney	**Parameters**			
U-test	**Sb**	**R**	**Sc**	**P**
U	**192.000**	**463.000**	493.500	630.000
p	.000	.049	.089	.958

Note: U – критерій Mann-Whitney; p – level of significance; Sb – subject-directed motivational orientation; R – result-directed motivational orientation; Sc – socially-directed motivational orientation; P – personally-directed motivational orientation; level of significance given in **bold type** – p ≤ .050; p ≤ .010.

It was established that the subgroup with a low level of situational reactive anxiety (SPA>35.00) has statistically significant differences in the parameters: Sb (U=192.000; p=.000) and R (U=463.000; p=.049). Thus, high indexes of situational reactive anxiety have a significant negative impact on subject- and result-directed motivational orientation. There was a lack of significant differences in socially- and personally-directed motivational orientation.

The index of the median of personal anxiety (PA) was (*Me = 36.00*). The subgroup with a low level of personal anxiety involved the respondents (PA>36.00), and the subgroup with a high level involved the respondents (PA≤36.00). Statistical significance of differences between the subgroups was determined using Mann-Whitney U-test (Tabl. 6).

Table 6. Differences between the subgroups with high and low levels of personal anxiety (PA)

Mann-Whitney	**Parameters**			
U-test	**Sb**	**R**	**Sc**	**P**
U	**170.500**	**428.000**	**459.000**	626.500
p	.000	.009	.017	.699

Note: U – критерій Mann-Whitney; p – level of significance; Sb – subject-directed motivational orientation; R – result-directed motivational orientation; Sc – socially-directed motivational orientation; P – personally-directed motivational orientation; level of significance given in **bold type** – p ≤ .050; p ≤ .010.

It was found that the subgroup with a low level of personal anxiety (PA>36.00) has statistically significant differences in the parameters: Sb (U=170.500; p=.000); R (U=428.000; p=.009) and Sc (U=459.000; p=.017). High indexes of personal anxiety have a significant negative impact on subject-, result- and socially-directed motivational orientation. There was a lack of significant differences in personally-directed motivational orientation.

The index of the median of spontaneous aggressiveness (Scale II) was (*Me = 3.00*). The subgroup with a low level of spontaneous aggressiveness involved the respondents with (Scale II>36.00), and the subgroup with a high level involved the respondents (Scale II≤3.00). Statistical significance of differences between the subgroups was determined using Mann-Whitney U-test (Tabl. 7).

Table 7. Differences between the subgroups with high and low levels of spontaneous aggressiveness (Scale II)

Mann-Whitney	Parameters			
U-test	Sb	R	Sc	P
U	**314.500**	542.000	534.000	632.500
p	.000	.116	.081	.560

Note: U – критерій Mann-Whitney; p – level of significance; Sb – subject-directed motivational orientation; R – result-directed motivational orientation; Sc – socially-directed motivational orientation; P – personally-directed motivational orientation; level of significance given in **bold type** – p ≤ .050; p ≤ .010.

It was found that the subgroup with a low level of spontaneous aggressiveness (Scale II>3.00) has statistically significant differences by subject-directed motivational orientation Sb (U=314.000; p=.000). Thus, high indexes of spontaneous aggressiveness have a significant negative impact on subject-directed motivational orientation. There were no differences in the rest of the parameters of motivational orientation.

The index of the median of reactive aggressiveness (Scale VII) was (*Me = 6.00*). The subgroup with a low level of reactive aggressiveness involved the respondents (Scale VII>6.00), and the subgroup with a high level involved the respondents (Scale VII≤6.00). Statistical significance of differences between the subgroups was determined using Mann-Whitney U-test (Tabl. 8).

Table 8. Differences between the subgroups with high and low levels of reactive aggressiveness (Scale VII)

Mann-Whitney	Parameters			
U-test	Sb	R	Sc	P
U	**338.000**	598.500	**405.000**	**184.500**
p	.001	.679	.006	.000

Note: U – критерій Mann-Whitney; p – level of significance; Sb – subject-directed motivational orientation; R – result-directed motivational orientation; Sc – socially-directed motivational orientation; P – personally-directed motivational orientation; level of significance given in **bold type** – p ≤ .050; p ≤ .010.

It was established that the subgroup with a low level of reactive aggressiveness (Scale VII>6.00) has statistically significant differences in the parameters: Sb (U=338.000; p=.001); Sc (U=405.000; p=.006) and P (U=184.500; p=.000). High indexes of reactive aggressiveness have a significant negative impact on subject-, socially- and personally-directed motivational orientation. There was a lack of significant differences in result-directed motivational orientation. The second hypothesis was empirically confirmed – there will be statistically significant differences between the respondents with a high level of parameters reflecting psychogenic factors and the subgroup of the respondents with a low level. Thirteen statistically significant differences were registered (p≤.050; p≤.010).

Discussion

Scientific literature on sport comprises experimental research conducted during exhausting physical and psycho-emotional training (Alekseev, 2006), the ongoing COVID-19 pandemic and under martial law (Popovych et al., 2023a). There are studies on psychogenic and stressogenic disorders related to footballers' mental states (Galan et al., 2018; 2021) and rehabilitation after serious traumas (Staude & Radzyshevska, 2021; Staude et al., 2023).

For the first time researchers attempted to identify the impact of psychogenic factors on motivational orientation of junior athletes, using a differentiated measurement of the examined variable. The motivational sphere is a complex psychological phenomenon determining the content and results of sporting activities, success and duration of sporting activities (Oliynyk & Voitenko, 2020).

The identified sixteen statistically significant (p≤.050; p≤.010) correlations (see Tabl. 2) testify that motivation of junior athletes is sensitive to all the parameters: depressiveness (D), neuro-psychic tension (NPT), situational reactive (SRA) and personal anxiety (PA), spontaneous (Scale II) and reactive aggressiveness (Scale VII). The types of motivation which are the most dependent on psychogenic factors are subject-directed (Sb) and personally-directed (P) motivational orientation – both of them have six statistically significant correlations. The least number of significant correlations of the parameters reflecting psychogenic factors was with socially-directed (Sc) motivational orientation of junior athletes. Two positive correlations were registered: NPT (r_{xy}=.308; p=.007) and Scale II (r_{xy}=.289; p=.013). A positive correlation can be substantiated by the fact that, in the empirical situation of the measurement, neuro-psychic tension (NPT) and spontaneous aggressiveness (Scale II) could reach the level which had a constructive impact on Sc. Therefore, high parameters of NPT and Scale II

show a constructive impact. The identified empirical fact is of special scientific interest. Such findings should be taken into consideration by those who are responsible for tactical-technical training in a team.

It was found that there are statistically significant differences between the subgroups with high and low levels in all the parameters reflecting psychogenic factors (see Tabl. 3–8). There were thirteen differences ($p \leq .050$; $p \leq .010$) showing that the selected parameters relevantly reflected the research subject. Results of juniors' sporting activities depend on the impact of psychogenic factors on motivational orientation.

The following scientific fact is of special scientific interest: subject-directed motivational orientation (Sb) is the most dependent on the level of the formation of the parameters reflecting psychogenic factors having six differences. Four differences were registered in R and two differences were registered in both Sc and P. Consequently, socially-oriented and personally-oriented motivational orientations are the least dependent. Athletes' self-improvement, formation of resilience and a high level of self-regulation are crucial in this context. Attention should be paid to the fact that there is a lack of significant differences not only in the parameter of result-directed motivational orientation R (see Tabl. 8) by the division of the sample into low and high levels of reactive aggressiveness (Scale VII). We think it proves that reactive aggressiveness does not always have a negative impact on the result, sometimes it has a mobilizing and protective effect of competition activities. We should also focus on the lack of a statistically significant correlation (see Tabl. 2 and Fig. I) between these parameters (r_{xy}=.093; p=.431).

It is obvious that psychogenic factors have a negative impact on the parameters of motivational orientation, but not all of them, that was shown in the obtained results. The identified statistically significant correlations (the first hypothesis is confirmed) and statistically significant differences (the second hypothesis is confirmed) and their values testify to the important scientific facts which should be implemented in tactical training for junior athletes in team sports.

Conclusions

1. The study substantiated that the impact of psychogenic factors on motivational orientation of junior athletes is regarded as determination of external and internal components which cause difficulties, stresses and stressful situations of sporting activities and disrupt the functioning of emotional, cognitive and behavioral spheres of juniors.

2. The research empirically found and substantiated statistically significant correlations ($p \leq .050$; $p \leq .010$) of depressiveness (D), neuro-psychic tension (NPT), situational reactive (SRA) and personal anxiety (PA), spontaneous (Scale II) and reactive aggressiveness (Scale VII) with all the parameters of the junior athletes' motivational orientation: subject-directed (Sb); result-directed (R), socially-directed (Sc) and personally-directed motivational orientation (P). Sixteen statistically significant correlations ($p \leq .050$; $p \leq .010$) were registered. Two positive correlations were registered (the rest of them are expectedly negative): NPT (r_{xy}=.308; p=.007) and Scale II (r_{xy}=.289; p=.013). A positive correlation was substantiated by the fact that, in the empirical situation of the measurement, neuro-psychic tension (NPT) and spontaneous aggressiveness (Scale II) could reach the level which had a constructive impact on socially-directed motivational orientation.

3. It was proved that there are statistically significant differences between the juniors with a high level of the parameters reflecting psychogenic factors and the subgroup of respondents with a low level. Thirteen statistically significant differences ($p \leq .050$; $p \leq .010$) were registered. It was highlighted that subject-directed motivational orientation (Sb) is the most dependent on the level of the formation of the parameters reflecting psychogenic factors having six differences.

4. Two hypotheses were confirmed. The identified scientific facts allow stating that the summative research strategy with elements of comparison of the examined variables confirmed its efficiency. The applied methods are sensitive to the research subject that allowed identifying and substantiating statistically significant differences which have scientific novelty.

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