

## EMPIRICAL EXPLICATION OF PSYCHOLOGICAL SIGNS OF NEUROTISATION AT JUNIOR VOLLEYBALL PLAYERS

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*Introduction.* The problem of junior athletes' neurotisation occupies one of the basic positions in the studies of their successful realization in sports. Explanations of the psychological characteristics influencing neurotisation can significantly deepen the understanding of neurotisation causes at junior athletes and complement the arsenal of early diagnosis and prevention of subclinical neurotic manifestations. *Goal.* The theoretical substantiation and an empirical explication of the psychological signs of junior volleyball players' neurotisation. *Materials and methods.* The research was carried out on the basis of the children-youth sports school "Kolos", Lutsk, namely, the junior volleyball players: 120 people aged of 16-17 years. The used methods were: *theoretical* (analysis, synthesis, comparison, abstraction, generalization, systematization of scientific literature as for the psychological features of volleyball juniors' neurotisation in general); *empirical* (testing with the following methods: the psychological rapid diagnostic scale for neurotisation; Accentuated Personalities Questionnaire (K. Leonhard and H. Schmieschek); Wasserman Social Frustration Inventory (the modification of V. Boyko); Cattell's 16PF Questionnaire; the technique for prompt assessment of well-being, activity and mood (Doskin V.A. et all.); *methods of statistical data processing* (Student's t-test and correlation analysis). *Results.* The theoretical aspects as for psychological investigation of neurotisation causes and signs were considered and specific requirements to junior volleyball players'

personal and psychodynamic characteristics were determined. The different neurotisation levels (high, average, low) characteristic for junior volleyball players were studied at the performed individually-oriented study; and typical symptomatic sets of their individual traits were determined for each neurotisation level. The compositions of individual indicators of volleyball juniors' neurotisation were differentiated, so corresponding symptomatic sets were proposed for each neurotisation level: "frustration tension" (high neurotisation), "passive dependence" (average neurotisation) and "optimistic independence" (low neurotisation). *Conclusions.* The proposed theoretical and empirical-diagnostic study on correlations between junior volleyball players' neurotisation and the sets of their individual traits proves that the proposed form of examination is a productive means determining the profiles of junior athletes' performance.

*Key words:* neurotisation, neurotic features, neurotic set, set of individual traits, social frustration, character accentuations, psychological state, junior volleyball players.

**Challenge problem.** In the conditions of modern unstable society, personal manifestations of neurotic disorders caused mainly by an experience of stressful situations become a real problem. Life conditions and human behaviour are often associated with experiencing of nervous-mental stresses. The combination of adverse environmental conditions and increased mental stresses increases neurotisation of all human population, which is reflected in their mental health (Virna, 2005; Nikolaeva, Sokolova, 1995; Ushakov, 1987). This is especially true for such a complex and important human activities as sports. Participation in competitions, which require full physical and mental efforts from athletes and actions at the limits of athletes' abilities, creates situations when athletes' mental states need to be corrected (Voronova, 2007). The situation is also aggravated by numerous mechanical stresses (motor activities) (Scheicht, 2018).

Modern studies of individual activities of professional volleyball players focus on psychological-emotional tension and protective behaviour, appeared at

different game situations, in particular, when a situation must be assessed and grasped in a short time (Recope, 2018). The problem of professional volleyball players' nervous-mental stresses and their neurotisation is examined in different contexts: anthropometric profiles and somatotypes (D'Anastasio, 2019); functional circuits of movements (Campa, 2019); power asymmetries and jumping performance (Schons, 2019); the impact of so-called "visual behaviour" (visual fixations, their number and duration) on decision-making at volleyball blocking (Vila-Maldonado, 2019).

If physical efforts are too high and athletes poorly manage their mental states, an excessive mental stress occurs, which reduces the effectiveness of their activities, leads to disorganization, and as a result, to a loss, which in turn can lead to a loss of self-confidence and a general mental stress and neurotisation. The influence and specificity of stresses caused by athletes' perfectionism and professional burnout were also determined (Garinger, 2018).

It is clear that the situation of general instability blocks an optimal level of athletes' physical and mental functioning, and their expressed sensitivity to stress factors completely neutralizes over time their motives to achieve sports results. In this case, we talk about sportive neurotisation (Matieshin, 2013; Kocabas, 2018). In turn, neurotisation actualizes a person's general exhaustion, which is manifested in prolonged disturbance of sleep, a mental and physical strain, and sometimes in the desire to use violence (Ilyin, 2005).

Adolescents are particularly sensitive to stressful situation perception and experiencing; this is the time when people discover intensively their Self, often experiences internal contradictions that contribute the feelings of guilt, self-doubt, self-restraint, constant dissatisfaction. These conditions are often accompanied by strong affective experiences that can be quickly transformed into neurotic states, become permanently chronic, and, as a result, make a person socially maladapted (Mielgo-Ayuso, 2017). Therefore, it is very important to study the psychological parameters of junior athletes with different levels of neurotisation in order to prevent appearance of nervous-psychological and psychosomatic disorders.

The study **hypothesis** is: junior athletes' neurotisation (of high, average or low levels) are characterized by typical symptomatic sets, which, in turn, depend on the compositions of their individual traits.

The article **goal** is to explain theoretically and empirically psychological signs of junior volleyball players' neurotisation.

**Material and methods.** To achieve the put forward goal, we used the following **methods**: *theoretical* (analysis, synthesis, comparison, abstraction, generalization, systematization of scientific literature as for the psychological features of volleyball juniors' neurotisation in general); *empirical* (testing with the following methods: the psychological rapid diagnostic scale for neurotisation; Accentuated Personalities Questionnaire (K. Leonhard and H. Schmieschek); Wasserman Social Frustration Inventory (the modification of V. Boyko); Cattell's 16PF Questionnaire; the technique for prompt assessment of well-being, activity and mood (Doskin V.A. et al.); *methods of statistical data processing* : Student's t-test for independent samples for determination of statistically significant differences between average values obtained for the examined groups created from junior volleyball players having different levels of neurotisation and correlation analysis for determination of correlations between the diagnosed indicators.

The research was carried out at the children-youth sports school "Kolos", Lutsk; the **sample** consisted of junior volleyball players, 120 people aged of 16-17 years (62 girls and 58 boys). During sample formation, the requirements for its content-richness and equivalence were observed. The requirements of the sample content-richness criterion were fulfilled by selecting of a sample corresponding to the study subject and hypothesis. The equivalence criterion was supported by the normal distribution of empirical data obtained for the entire sample.

**Results.** The theoretical concept is impossible without taking into consideration of the ideas of psychological science about an individual's neurotisation causes and signs (Basyuk, 2009; Doroshkevich, Kalyuzhnyi 2004; Carvasarskyi 1990; Mendelevich, Solovieva 2002); diagnostic criteria of athletes' psychophysiological states (Ilyin, Kiselev, Safonov, 1989; Konyaev,

Korobeinikov, 2004); trends in the volleyball technique development (Ikeda et al. 1983; Korobeynikov, 2004; Tuchinska, 2014).

Based on the problem analysis, we can conclude there are two trends describing neuroses, neurotic disorders and neurotisation. The followers of the first approach affirm that neurotic phenomena are determined by certain pathological biological mechanisms, although they do not deny the role of a mental trauma as a trigger mechanism and a possible condition for disease appearance. However, a psychological trauma, according to their views, is only one of numerous possible and equivalent exogenies that disturb homeostasis. The second approach to the nature of neuroses is an assumption that the whole clinical picture of a neurotic disorder can be deduced from psychological mechanisms alone (Airapetianz, 1982).

Psychological traumatisation is one of the leading causes of neurotisation, but its pathogenic significance is determined by really complex links with many other conditions (genetically determined “soil” and “tendencies”) that are a result of whole personal life, from a person’s organism formation and to his/her personality development (Haletska, 1999). According to classical views of V. Myasishchev, neurotic disorders are characterized by the following features: an exciting psychogenic cause of a disease, usually associated with interpersonal relations or inability to resolve conflict situations arising because these relations; the dominance of emotional and somatic-vegetal disorders in the clinical picture, as specific signs of this disease; reversibility of clinical signs under favourable conditions (Myasishchev, 1960). Recently, the study of so-called borderline narcissistic disorders, arisen from a set of emotions related to feelings of inferiority, has become particularly popular. Here, we talk not about a fragmentary affliction of an isolated sphere of intra- or inter-psychological functioning, but of the formation of a coherent personal structure, of a certain lifestyle (Sokolova, 1995). Factors leading to the development of neurosis, neurotic disorder, neurotisation can be events that lead to an unresolved conflict for a person between his/her obligations and desires or his/her hobby and a situation,

etc. (Carvasarsky, 1990). Many accentuations and pathological personal traits contribute to neurotic responses of adolescents (Bedlinsky, 2011; Kucherova, 2015).

The specificity of volleyball is that athletes must move fast, jump high, have a good arsenal of technical-tactical actions. Volleyball is a game competitive by its nature and regulated by the special code of rules. Volleyball is one of the most emotional sports. Rapid changes of game situations, alternations of luck and misfortunes, physical tension, influence of the spectators lead to a great burst of emotions, joy and experiences. The force of stimuli influencing athletes' CNS during competitions is very high. This leads to a sharp increase of the cerebral cortex excitability and changes in conditioned reflexes, which is the physiological basis of doubts, unbelief in own forces, stiffness and excessive tension of movements, so players start making motor errors (Voronova, 2007).

In addition, volleyball is such a sport that is characterized by: non-stationary environmental conditions (constant changes of a situation, when it is necessary to quickly perceive it, make and implement creative decisions in the active opposition with rivals and time deficiency); the game nature (absence of stereotypical motor programs and conditions for problem solving), high mental tension, dynamism, result dependence on rivals' counteractions; existing problematic tactical situations, so operational tasks needs to be continuously solved (sport-operational activities) and constantly occurring stressful situations should be overcome; motor and psychological complexity and conflicting nature of activities; changeable emotional background (contrast of emotions), which complicates orientation (Viatkina, 1981).

The presented theoretical excursion allows us to state that focusing on the psychological signs of junior volleyball players' neurotisation can significantly supplement early diagnosis and prevention of subclinical neurotisation, psychosomatic complaints and predisposition to them.

Another important point we use in our research is that the psychological signs of neurotisation are not arranged into a steady general line, but have variable

manifestations. Thus, we think that an individually oriented study has advantages and help us determine typical symptom sets of junior volleyball players' individual traits that correspond to their neurotisation (high, average or low levels).

For the statistical and mathematical processing of the obtained empirical data, first of all, all the examined players were divided into 3 groups according to the determined levels of their neurotisation: group 1 - junior volleyball players with high neurotisation (23.3% of the sample), group 2 – those with average neurotisation (46,7%), group 3 - junior volleyball players with low neurotisation (30%).

The results of Wasserman Social Frustration Inventory (the modification of V. Boyko) became a significant addition to neurotisation determination. The statistically significant differences for manifested social frustrations of the volleyball juniors from different groups are presented in Table 1.

Table 1

Statistically significant differences at volleyball juniors' social frustration

Diagnostic indicators	Xa	Xa	t	P
Social Frustration (gr1) vs Social frustration (gr2)	3,52	2,64	24,5	0,000
Social Frustration (gr1) vs Social frustration (gr3)	3,52	1,58	31,7	0,000
Social Frustration (gr2) vs Social frustration (gr3)	2,64	1,58	22,4	0,000

The group distribution of the examined indicators shows pronounced social frustration of young players with high neurotisation. The data qualitative analysis shows that all three studied groups are characterized by general trends to dissatisfaction in certain areas of life, in particular, dissatisfaction with learning (Xa = 3.73); their position in society (Xa = 4.00); leisure (Xa = 3.83); professional choices (Xa = 3.63). As for differences between the groups, the greatest differences are observed as for satisfactory relationships with classmates; educational conditions; financial conditions; relationships with parents;

relationships with friends; opportunities to have interesting vacations; their way of life as a whole.

The further diagnostic work was aimed at the objective confirmation of differences in the junior volleyball players' individual traits obtained at processing the other diagnostic methods.

In particular, the data obtained with the Accentuated Personalities Questionnaire (K. Leonhard and H. Schmieschek) show that the players with high neurotisation (group 1) have mainly hyperthymia accentuation, which is characterized by high spirits background in combination with thirst for actions, optimism, persistence and high activity, or hyper-perseverance accentuation, which is characterized by high resistance to affect, duration of emotional response and experiences; the players with average neurotisation (group 2) have mainly hyper-exactness accentuation, which is characterized by honesty, accuracy, seriousness and reliability in all cases; and the players with low neurotisation (group 3) have mainly anxiety accentuation, which is characterized by a tendency to different fears and poor ability to make decisions (Table 2).

Table 2

Statistically significant differences in accentuated personalities of the junior volleyball players from different groups

Diagnostic indicators	Xa	Xa	t	P
hyperthymia (gr.1) vs. hyperthymia (gr.2)	16,409	13,375	2,42*	0,000
hyperthymia (gr.p1) vs. hyperthymia (gr.3)	16,409	12,166	2,99*	0,000
hyper-perseverance (gr.1) vs. hyper-perseverance (gr.3)	14,667	11,687	2,90*	0,000
hyper-exactness (gr.1) vs. hyper-exactness (gr.3)	14,750	10,500	4,52	0,000
hyper-exactness (gr.2) vs. hyper-exactness (gr.3)	16,750	10,500	2,93*	0,006
anxiety accentuation (gr.1) vs. anxiety accentuation (gr.3)	11,167	16,062	-3,03*	0,005

According to the results of Cattell's 16PF Questionnaire, the group with high neurotisation showed the highest results for the indicators of dominance (factor E) (such people can be described as dominant, forceful, assertive, aggressive, competitive, stubborn, bossy); vigilance (factor L) (such people can be described as suspicious, sceptical, distrustful, oppositional); and low perfectionism (factor Q3), (such people can be described as tolerating disorder, unexacting, undisciplined, lax, self-conflict, impulsive, careless of social rules), see Table 3.

Table 3

Statistically significant differences in behavioural indicators of the junior volleyball players from different groups

Diagnostic indicators	Xa	Xa	t	P
Reasoning (gr.1) vs. Reasoning (gr.3) (factor B)	6,062	7,333	-2,362*	0,000
Dominance (gr.1) vs. Dominance (gr.2) (factor E)	8,187	6,000	-4,201	0,000
Dominance (gr.1) vs. Dominance (gr.3) (factor E)	8,187	5,333	4,285	0,000
Vigilance (gr.1) vs. Vigilance (gr.3) (factor L)	8,500	5,937	3,098*	0,006
Anxiety (gr.1) vs. Anxiety (gr.3) (factor F1)	6,312	8,417	-2,605*	0,016
Anxiety (gr.2) vs. Anxiety (gr.3) (factor F1)	6,454	8,417	-2,522*	0,000
Openness to Change (gr.1) vs. Openness to Change (gr.3) (factor Q1)	5,437	8,750	-4,607	0,000
Openness to Change (gr.2) vs. Openness to Change (gr.3) (factor Q1)	5,954	8,750	-4,070	0,0402
Perfectionism (gr.1) vs. Perfectionism (gr.3) (factor Q3)	6,187	8,250	-2,159*	0,000

We should notice the low anxiety (additional factor F1) in the groups of junior volleyball players with average and low neurotisation; and the players with low neurotisation showed high reasoning (factor B), they can be characterized as more intelligent, bright, fast-learning with higher general mental capacity; they are characterised by low anxiety (factor F1), which show their satisfaction with their

life, their ability to achieve something desired but low motivation to do this; their self-reliance (factor Q2) is manifested in self-control, acceptance of social rules, control over own emotions.

The examined indicators of well-being, activity and mood of junior volleyball players by the corresponding method show that junior volleyball players feel well, which is manifested in their feeling of being strong, able and full of strength, healthy and rested, fresh, enduring and cheerful; they are cheerful, moving, happy, viable and optimistic (Table 4).

Table 4

Statistically significant differences in well-being, activity and mood of the junior volleyball players from different groups

Diagnostic indicators	Xa	Xa	t	P
well-being (gr.1) vs. well-being (gr.3)	4,431	5,350	3,040*	0,005
well-being (gr.2) vs. well-being (gr.3)	4,682	5,350	2,483*	0,018
mood (gr.1) vs. mood (gr.3)	4,033	5,288	3,711	0,000

In order to generalize the volleyball juniors' individual peculiarities related with their neurotisation, we should examine significant correlation between the diagnosed indicators, which was made with correlation analysis. The players with high neurotisation are characterized by the positive correlations between neurotisation and social frustration ( $r = 0.24$  at  $p \leq 0.05$ ), hyper-perseverance accentuation ( $r = 0.34$  at  $p \leq 0.05$ ), vigilance ( $r = 0.28$  at  $p \leq 0.05$ ) and low perfectionism ( $r = 0.26$  at  $p \leq 0.05$ ); as well as the negative correlation with well-being ( $r = -0.24$  at  $p \leq 0.05$ ). The determined correlation (between social frustration and hyper-perseverance accentuation ( $r = 0.23$  at  $p \leq 0.05$ ), vigilance ( $r = 0.34$  at  $p \leq 0.05$ ) and low perfectionism ( $r = 0, 25$  at  $p \leq 0.05$ ), as well as hyper-perseverance accentuation and low perfectionism ( $r = 0.26$  at  $p \leq 0.05$ )) characterize the junior players from this group as indecisive, suspicious and pessimistic as for their behaviour, but, at the same time, they have high demands on themselves, are very sensitive to social justice, confident, ambitious; they are emotionally rigid and

conservative. All these traits together form is the neurotic set named “*frustration tension*”.

The studied players with average neurotisation are characterized by the positive correlations between neurotisation and hyperthymia ( $r = 0.39$  at  $p \leq 0.05$ ) and hyper-exactness ( $r = 0.28$  at  $p \leq 0.05$ ) and orientation on group and social requirements ( $r = 0.26$  at  $p \leq 0.05$ ), as well as the negative correlation with social frustration ( $r = -0.27$  at  $p \leq 0.05$ ). The correlation between orientation on group and social requirements and hyper-exactness ( $r = 0,33$  at  $p \leq 0,05$ ), allows us to determine the neurotic set named “*passive dependence*”, which can be described by such personal traits as pronounced diligence, accuracy, seriousness and reliability, as well as strict adherence to group requirements and formalism in the group decision making.

The studied players with low neurotisation are characterized by the positive correlations between hyperthymia ( $r = 0.32$  at  $p \leq 0.05$ ), high reasoning ( $r = 0.37$  at  $p \leq 0.05$ ), high perfectionism ( $r = 0.32$  at  $p \leq 0.05$ ), mood and the negative correlation with social frustration ( $r = -0.31$  at  $p \leq 0.05$ ). The determined correlations between high reasoning and high perfectionism ( $r = 0.25$  at  $p \leq 0.05$ ) and between mood and high perfectionism ( $r = 0.77$  at  $p \leq 0.05$ ) characterize the players from this group as demonstrative and optimistic in sport, composed and highly intellectual in general, cheerful and optimistic, which in general form the neurotic set named “*optimistic independence*”.

**Discussion.** The obtained results allow us to make a conclusion about the content of the volleyball juniors’ neurotisation depending on the compositions of their individual traits. The proposed differentiation of the compositions of their individual traits helped us to describe their neurotic personal traits and unite them into the respective symptomatic sets, such as “*frustration tension*” (characteristic for group 1), “*passive dependence*” (group 2) and “*optimistic independence*” (group 3), although the players’ real neurotic manifestations and corresponding indicators can be changed in the course of sports activities. Therefore, in this context, it is important to keep player’s neurotisation at a low level (or the level of

absent neurotisation), in this case such emotions and behaviour are promoted and stimulated that support inclusion of the world of sports activities into the players' inner world, and the players' interactions become effective and corresponding to sports requirements. The players at the examined stage of sportive realization should show an appropriate set of individual traits and use flexible reactions required at their sport. The absence of neurotic reactions contributes to accumulation of potential energy for emotions and behaviour and helps fulfil long-lasting goals by these athletes.

As for neurotisation of the average and, especially, high levels, the determined corresponding symptomatic sets of individual traits block their adaptive capabilities, deplete the reserve of vital forces and determine such behaviour of the players that is influenced by their dissatisfaction, severe anxiety, feeling of inability to achieve life goals, irreversibility of losses, etc. Neurotic signs for junior athletes are: experience of too high responsibility for their sportive results, fear of mistakes and failures, constant desire for competition.

We should add that the question of non-optimal manifestations of individual traits (at high neurotisation) is quite important given the analysed empirical data on correlation between neurotisation and individual traits. The neurotic characteristics affect the junior players' successfulness : constant dissatisfaction with oneself and own achievements, "paralysed" activities in situations where confidence in the high quality performance is absent, competitive relations with others due to constant comparison with their achievement lead to appearance, with time, of persistent neurotic forms of responses in sportive situations.

**Conclusions.** The proposed theoretical and empirical-diagnostic study on correlation between junior volleyball players' neurotisation and the sets of their individual traits proves that the proposed form of examination is a productive means determining the profiles of junior athletes' performance.

The authors see the prospective directions for further scientific research in studies of the psychological signs of neurotisation of junior athletes involved in other sports, in particular, individual sports, such as tennis, gymnastics or boxing,

as well as in the development of programs for junior athletes' neurotisation prevention and correction by educators, physicians and psychologists.

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