Peculiarities of the psychophysiological state of people engaged in mass sport

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Abstract
In modern conditions, the issue of diagnosing the current psychophysiological state of people engaged in mass sports is becoming increasingly relevant and practically significant. The mass involvement of the population in physical fitness also requires a comprehensive consideration of individual psychophysiological characteristics. For effective planning of health-improving and training activities,it is necessary to take into account not only the functional capabilities of the body bur also the features of neurodynamic processes, as well as individual psychological traits, resistance to physical and emotional stress, and adaptation to regular physical activity.
Key words: Mass sport, psychophysiological state, neurodynamic indicators, functional mobility of nervous processes, visual-motor reactions (SVMR,CVMR), sensorimotor coortdination, brain performance level (FPB), recreational fitness, central nervous system adaptation, health-promoting programs, individualized physical load, motor control.

Introduction

Research on the psychophysiological characteristics of individuals engaged in mass sports remains fragmented, and the comparison of results depending on the type of physical activity is often only approximate [3,7]. A systematic analysis of the psychophysiological state of individuals involved in recreational physical activity has practically not been conducted, which complicates the optimization of approaches to health-promoting and training programs for different population groups.

The aim of the research was to study the psychophysiological indicators of people engaged in mass sport with various forms of motor load. Health-promoting and training programs within the framework of implementing state policy to promote mass sports and encourage a healthy lifestyle among different groups of the population.

Methods

The research was conducted during mass sports events involving 42 participants aged 17 to 24 who regularly engage in various types mass sports. The study included representatives of amateur groups and clubs involved in activities such as recreational fitness, amateur football, running clubs, wellness gymnastics, and general physical development through martial arts. All participants in the study, engaged in various types of mass physical activity, were assessed for higher nervous system functioning based on the results of sensorimotor tests of varying complexity.

The following methods were used in the study: analysis of scientific literature, observation, psychological testing with the application of psychodiagnostics techniques, including measurement of the latent period of a simple visual-motor reaction [SVMR] [4], measurement of the latent period of a complex visual-motor reaction (CVMR), assessment of the level of functional mobility of nervous processes according to the method of A.E.Khilchenko, modified by N.V. Makarenko (FMNP), as well as the level of functional performance of the brain (FPB) [6,7]. Using the “PROGNOZ” device, SVMR, CVMR, FMNP, and FPB were studied both at rest and after performing a standardized physical load equal to 80% of the individually determined maximum.

Additionally, the reaction to a moving object (RMO) was assessed, which allows for evaluating the level of sensorimotor coordination in individuals engaged in mass sports. The statistical processing of the obtained data was carried out using the “SPSS v10” software with the calculation of basic statistical indicators.

Results and discussion

The study demonstrated a high level of reliability of the obtained results among participants engaged in various types of mass sports. Data analysis indicates that even among individuals who are not professional athletes, clear patterns are observed in psychophysiological indicators, which depend on the type of motor activity performed and the regularity of physical activity. The study of SVMR and CVMR characteristics

among participants engaged in various types of mass sports revealed high homogeneity and reproducibility of these indicators (P >> 0.01). This may indicate, firstly, the formation of a certain functional optimum of sensorimotor reactions in individuals who regularly engage in physical activity, and secondly, the gradual individual adaptation of the body to a specific type of motor activity as a result of systematic training. The indicators of the level of functional mobility of nervous processes (FMNP) demonstrate a significantly wider range of intergroup differences. However, this fact likely reflects not the heterogeneity of the examined groups, but the approach to the physiological limits of reaction time in individuals adapted to a particular type of mass sport [3].

The research results indicate a higher degree of correlation between SVMR and CVMR in individuals who regularly engage in various types of mass sport, which, in turn, reflects the degree of adaptation of central regulatory mechanisms to the predominant type of motor load [5]. The study of correlation links between simple and complex sensorimotor reactions revealed the absence of a clear linear dependence, which indicates high variability in the interaction of sensorimotor and limbic brain structures. A high significance of the relationship between the type of mass physical activity, the level of development of simple and complex reactions, as well as the peculiarities of the functioning of the energy supply system of the central regulatory mechanisms of motor activity was also established [2]. This emphasizes the need to consider psychophysiological characteristics when developing health-enhancing and training programs for broad groups of the population.

The results of the analysis of functional mobility among individuals engaged in various types of mass sport showed that FMNP indicators are generally significantly lower than FPB indicators (P > 0.01) across all studied groups. These data significantly differ from the indicators of individuals leading a sedentary lifestyle and indicate the positive metabolic effect of regular physical activity on overall brain tone and performance [5,8].

Table 1. Psychophysiological indicators of individuals engaged in various types of mass sport (before load)

Indicator	Fitness	Amateur Football	Running Clubs	Wellness Gymnastics	Martial Arts for General Physical Development
Simple Visual-Motor Reaction (SVMR), ms	230 ± 15	225 ± 17	228 ± 14	235 ± 16	220 ± 13
Complex Visual-Motor Reaction (CVMR), ms	340 ± 20	330 ± 18	335 ± 19	345 ± 21	325 ± 17
Functional Mobility of Nervous Processes	0.75 ± 0.05	0.78 ± 0.06	0.76 ± 0.05	0.73 ± 0.04	0.80 ± 0.05
Level of Functional Performance of the Brain (FPB), arbitrary units	0.82 ± 0.04	0.85 ± 0.05	0.84 ± 0.05	0.80 ± 0.04	0.87 ± 0.05

Conclusion

The findings of the study reveal significant and distinct features in the neurodynamic profiles of undividuals regularly participating in various types of mass sport. TThese features suggest that even non-professional engagement in systematic motor activity is accompined by measurable psychophysiological adaptations that reflect the functional state and capacity of the central nervous system. The obtained data demonstrate that individuals involved in mass sports exhibit differentiated levels of sensorimotor response and functional mobility, which vary not only with the type of physical activity but also with the intensity, regularity, and individual physical fitness levels of the par-

Table 2. Psychophysiological Indicators of Individuals Engaged in Various Types of Mass sport After Load

Type of Physical Activity	SVMR (ms)	CVMR (ms)	FMNP (units)	FPB (units)	RMO (ms)	NSP (units)
Amateur Martial Arts	256 ± 25	454 ± 61	39 ± 4.2	52 ± 6.4	1334 ± 97	26 ± 5
Wellness Gymnastics	229 ± 27	409 ± 38	33 ± 5.5	32 ± 5.2	1007 ± 109	24 ± 3
Amateur Football	234 ± 23	432 ± 41	56 ± 8.1	48 ± 5.1	981 ± 94	29 ± 5
Fitness & Recreational Running	224 ± 26	378 ± 40	52 ± 5.3	45 ± 5.6	935 ± 79	17 ± 2

ticipants.

The analysis of simple and complex visual-motor reactions (SVMR and CVMR),as well as functional mobility of nervous processes (FMNP)and brain performance level(FPB), confirmed the presence of consistent patterns of adaptation within each subgroup. In particular, the higher degree of homogeneity and reproducibility of reaction time indicators among different types points to the existence of a functional optimum shaped by repetitive, structured physical load. At the time, the diversitty observed in FMNP values indicates the presence of individual-specific regulatory strategies developed in response to unqie motor tasks and training environments. Furthermore, the study emphasizes that regular participation in mass sports leads to developed efficiency in the central regulatory mechanism of movement control. This is evidenced by more stable and accelerated sensorimotor reactions, higher neural performance levels, and better integration of psychomotor systems,especially under conditions of post-load stress. These findings are of particular importance for public health initiatives, as they provide emperical support for incorporating psychophysiological monitoring into the design of health-enhancing and training programs for diverse demographic groups.

In light of these results, it becomes clear that the implementation of mass sport programs should not rely solely on generalized physical load precriptions. Instead, they must be complemented by an individualized approach that considers neurodynamic characteristics and the functional state of the nervous system. Such an approach would enable the creation of more effective,safe, personalized interventions aimed at enhancing well-being, neurocognitive function, and the long-term adaptation potential of the population.

References

Aleksiychuk Yu. N., Kolyadenko G. I., Lizogub V. S. et al. **(1991).** *On the relationship between the main properties of nervous processes and certain psychophysiological indicators and physical fitness results of applicants* // Individual psychophysiological characteristics of a person and professional activity: Abstracts, Cherkassy November 13-15, Kyiv-Cherkassy, 1991. - pp. 3-4.

Voronovskaya V. I. **(1989).** *Relationship between functional mobility, short-term memory capacity, and success in certain types of work and sports activities:* Abstract of dissertation... Candidate of Biological Sciences, - Kyiv, pp. 24.

Lizogub V. S**.(1972).** *Study of the main properties of nervous processes and some indicators of nervous system excitability in athletes:* Abstract of dissertation... Candidate of Biological Sciences. - Kyiv,pp. 24.

Loskutova T. D. **(1978).** *Reaction time as a psychophysiological method for assessing the functional state of the nervous system* // In: Neurophysiological studies in the examination of work capacity. - L.: Medicine, pp. 165-194.

Makarenko N. V. **(1989).** *Time of Complex Sensorimotor Choice Reaction in Individuals with Different Functional Mobility of Nervous Processes* // Journal of Higher

Nervous Activity. - 39, issue 5. - pp. 813-818.

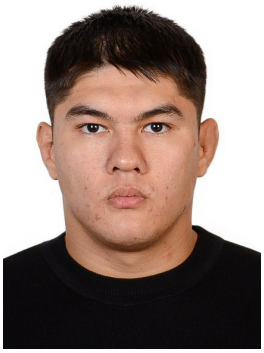
Makarenko N. V. **(1987).** *The role of functional mobility of nervous processes in the formation of psychophysiological functions and their significance in the reliability of operator activity:* Abstract of dissertation... Doctor of Biological Sciences. - Kyiv, 1987. - 40 p.

Marishchuk V. L., Bludov Yu. M., Plakhtienko V. A. et al. **(1984)** *Methods of Psychodiagnostics in Sport*. - M.: Prosveshchenie, p.191.

Pavlov I. P. **(1951)** *General Types of Higher Nervous Activity in Animals and Humans // Complete Works*. - M.; L.: USSR Academy of Sciences Publishing House, - Vol. 3, Book 2. - pp. 267-293.

Rodionov A.V. **(1983)** The *Influence of Psychological Factors on Sports Performance*. - M.: Physical Culture and Sport, 1983. - p.111.

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