

PSYCHO-PHYSIOLOGICAL CHARACTERISTICS OF STUDENTS-POWERLIFTERS OF DIFFERENT TRAINING EXPERIENCE, WHO HAVE AFFECTIONS OF MUSCULAR SKELETAL APPARATUS

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Abstract. *Purpose:* study of many years' power lifting trainings influence on psycho-physiological and other characteristics of students, who have affections of muscular skeletal apparatus. *Material:* the research covered 73 students of 18-22 yrs. Age, who have different training experience. To exclude influence of previous training on experiment's results, researches were conducted after 2-3 days of rest. The author studied personality's features (by T. Elers). Psychological diagnostic was conducted by methodic of M.V. Makarenko. *Results:* different psycho-physiological characteristics, indicators of psychological state and personality's features were found in students, depending on their power lifting training experience. Improvement of functional and nervous power indicators under influence of systemic power lifting trainings was detected. *Conclusions:* it was determined that improvement of students' sportsmanship is accompanied by noticeable improvement of practically all tested indicators.

Key words: health, personality, power-lifting, psycho-physiological, state, students.

Introduction

As per data of specialists one of the most wide-spread diseases of students is connected with affections of muscular skeletal apparatus [1, 5, 8]. With it the highest threat of these diseases is not so defects as certain psychological discomfort, which appears in process of person's socialization in society [2, 4, 7, 10, 11, 14]. Analysis of recent researches points that one of promising solution of the mentioned problem is working out of appropriate methodic on the base of power lifting physical exercises in extra curriculum work with students [1, 12, 13, 15-19]. With it scientists note that up to the present time peculiarities of this kind of sports influence on psychological characteristics of students with affections of muscular skeletal apparatus has been being unsolved sufficiently [2, 7].

Purpose, tasks of the work, material and methods

The purpose of the work: to analyze dynamic of psycho-physiological characteristics, indicators of psychological state and personality's features of students, who have affections of muscular skeletal apparatus under influence of many years' power lifting training.

Material and methods of the research: 73 students of 18-22 yrs age with different experience of power lifting training, who have affections of muscular skeletal apparatus, participated in the research: 21 students trained power lifting for 1 year, 18- 2 years, 12 – 3 years, 11 – 4 years and 11 – 5 years of training. The methods of the research: theoretical analysis, synthesis and generalization of information, methods of psychological diagnostics and mathematical statistics.

As per the tasks of the research the author studied dynamic of psycho-physiological characteristics, indicators of psychological state and personality's features of students with affections of muscular skeletal apparatus under influence of many years' power lifting trainings.

For psychological diagnostics we used well known methodic by M.V. Makarenko, which permits to register latent period of simple visual-motor response (m.sec), latent period of response to choice of one or two irritators from three (m.sec), functional mobility of nervous processes (sec.) and power of nervous processes (quantity of symbols for 5 minutes). Besides, on the base of express-methodic "Prognoz" we assessed nervous-psychic stability of students and studied personality's features (by T. Elers), their motivation for success and ability to avoid misfortune. In order to exclude influence of preceding trainings on results of experiment, we conducted tests after 2-3 days of rest. In tables 1 and 2 indicators of students' psychological diagnostic are presented.

Results of the research

In table 1 one can see that many years' power lifting trainings facilitate improvement of students' (who have affections of muscular skeletal apparatus) psycho-physiological indicators. For example, in the course of the researches we registered steady increase of indicators of simple visual motor response latent period of students-power-lifters with different training experience: 1 year – 330.5 m.sec.; 2 years – 310.9 m.sec.; 3 years – 295.4 m.sec.; 4 years – 281.6 m.sec.; 5 years – 248.4 m.sec.

With it confident differences ($p < 0.05$) were registered as follows: between data of 1st and 2nd year students; between indicators of 4th and 5th year students.

We also determined that parameters of latent period of simple visual motor response (by M.V. Makarenko's scale) of 1st-3rd year students were assessed as "below middle" and 4th – 5th year students – as "middle". Experiment permitted to detect that characteristics of latent period of visual motor response to choice of one or two from three irritators also increase with increasing of power lifting training experience – from 427.5 m.sec. of 1st year students to 355.9 m.sec. of 5th year students.

Such increase is characterized by confident ($p < 0.05$) increase of indicators of students from 3rd to 5th year of studying. With it indicators of latent period of visual motor response to choice of one or two from three irritators of 1st –

3rd year students were assessed as “below middle” and the same of 4th-5th year students – as “middle”. Analogous – positive dynamic of indicators- was registered in studying of influence of many years’ power lifting trainings on characteristics of latent period of visual motor response to choice of one from three irritators of students, who have affections of muscular skeletal apparatus: 1st year students– 500.2 m.sec.; 2nd year students– 483.3 m.sec.; 3rd year students – 474.9 m.sec.; 4th year students– 462.1 m.sec. and 5th year students– 430.7 m.sec.

Table 1

Psycho-physiological indicators of students with affections of muscular skeletal apparatus in process of power lifting trainings fro first to fifth years of study

Tested indicators	First year (n=21)		p	Second year (n=18)		p	Third year (n=12)		p	Forth year (n=11)		p	Fifth year (n=11)	
	\bar{X}	m		\bar{X}	m		\bar{X}	m		\bar{X}	m		\bar{X}	m
Latent period of simple visual motor response, m.sec.	330.5	6.58	<0.05	310.9	5,98	>0.05	295.4	6.01	>0.05	281.6	5.95	<0.05	248.4	7.01
Latent period of response to choice of one from three irritators, m.sec.	427.5	7.48	>0.05	409.5	6.71	>0.05	403.7	7.26	<0.05	383.2	7.15	<0.05	355.9	7.85
Latent period of response to choice of two from three irritators, m.sec.	500.2	8.43	>0.05	483.3	8.12	>0.05	474.9	7.05	>0.05	462.1	6.78	<0.05	430.7	7.01
Functional mobility of nervous processes, sec.	74.1	1.27	>0.05	70.3	1.32	>0.05	67.8	1.12	>0.05	66.4	0.99	<0.05	62.9	0.85
Power of nervous processes, quantity of symbols per 5 minutes	590.3	9.11	>0.05	605.2	9.15	>0.05	618.3	9.11	>0.05	640.1	9.26	>0.05	648.7	9.31
Nervous-psyhic stability	22.31	0.14	<0.05	18.47	0.18	<0.05	16.51	0.15	<0.05	12.43	0.16	<0.05	8.15	0.10
Motivation for success	9.37	0.08	<0.05	12.15	0.09	<0.05	16.8	0.14	<0.05	17.9	0.20	<0.05	19.0	0.19
Motivation for avoiding misfortune	10.56	0.11	<0.05	13.85	0.14	<0.05	16.91	0.12	<0.05	18.0	0.18	>0.05	18.6	0.21

With it confident distinctions ($p < 0.05$) were found between indicators of 4th and 5th year students. Besides, it was determined that parameters of latent period of response to choice of two from three irritators were fixed in 1st – 3rd year students. As per M.V. Makarenko’s scale they are assessed as “below middle” while in 4th-5th years students – as “middle”.

Analysis of other psycho-physiological characteristics of students (indicators of functional mobility and power of nervous processes) also showed that they improved under influence of systemic power-lifting trainings. As it is seen in table 1, 1st year students’ parameters of nervous system functional mobility are 74.1sec. and 5th year students’ - 62.9 sec. This increase is characterized by confident ($p < 0.05$) improvement of indicators of students from 4th to 5th

years. Quantitative characteristics of nervous system processes' power improved in the following way: 1st year students – 590.3 symbols per 5 minutes; 2nd year students – 605.2 symbols per 5 minutes; 3rd year students – 618.3; 4th year students - 640.1 and 5th year students – 648.7 symbols per 5 minutes.

The data, received in the course of the researches, point at substantial improvement of psycho-physiological characteristics of students with affections of muscular skeletal apparatus under influence of many years' trainings of power lifting. They also coincide with works of some scientists, devoted to influence of different kinds of sports on mental health of pupils and students, who have after effects of cerebral palsy. These authors proved that with specially worked out football and track and fields training methodic such students demonstrate improvements of psycho-physiological characteristics in parallel to improvement of sport results.

In the course of our experiments we determined that permanent power lifting trainings also positively influence on mental state and personality's features of students with affections of muscular skeletal apparatus. As it is seen from table 2 indicators of nervous mental stability increase ($p < 0.05$) with increasing of period of power lifting trainings in the following way: 1st year students-power lifters – 22.31 points; 2nd year students – 18.47 points; 3rd year students – 16.51 points; 4th year students – 12.43 points; 5th year students – 8.15 points. Analogous trend to increasing ($p < 0.05$) of appropriate parameters we found during testing of students personality's features. It is illustrated by materials of table 2. In particular 1st year students demonstrated low motivation for success (9.37 points), that confidently increase ($p < 0.05$) in process of systemic power lifting trainings. 2nd and 3rd year students demonstrate middle level (12.15 and 16.8 points). 4th and 5th year students have moderately high level (17.9 and 19 points). In the same way students' motivation for avoiding of misfortune is characterized (1st year students – 10.56 points) changes up to middle level (2nd and 3rd year students) and high level (4th and 5th year students) under influence of many years' power lifting trainings.

Discussion

It should be noted that together with studying of psycho-physiological characteristics, indicators of psychic state and personality's features we conducted pedagogic observations over students' behavior and their progress in education. They resulted in the fact that 4th-5th year students are better in listed above psycho-physiological indicators. They also differ from 1st – 3rd year students-sportsmen by better average mark in educational process and are more assured in communication with their healthy peers. In our opinion it illustrates complex influence of many years' power lifting trainings on different physiological systems of organism, mental potentials and psycho-emotional sphere of students with affections of muscular skeletal apparatus. It should be noted that obtained in experiments results point at improvement of mental state indicators and personality's features of students with affections of muscular skeletal apparatus in the process of many years' power lifting trainings. They also prove analogous data about positive influence of track and fields and football trainings on organisms of patients with cerebral palsy, substantially ($p < 0.05$) improve characteristics of nervous-mental stability and features of personality.

Conclusions

1. Analysis of the received results of the conducted experimental research permitted to determine quantitative parameters of changes in psychological fitness's characteristics of students with affections of muscular skeletal apparatus in the process of many years' power lifting trainings. In particular, it was detected that increase of students-power lifters' sportsmanship is accompanied by confident ($p < 0.05$) improvement of the following characteristics:

- Parameters of latent period of simple visual-motor response, response to choice of one from three or two from three irritators;
- Quantitative indicators of functional mobility and nervous processes' power, of nervous-mental stability;
- Indicators, characterizing students' motivation for success and avoiding of failures.

2. The characteristics, obtained in our research can be used for control over indicators of psychological fitness of students with different training experience in this kind of sports. The presented results correlate with data of some authors, prove and justify demand in working out and implementation of special extra curricular power lifting's training methodic for students with affections of muscular skeletal apparatus, which would be based on theoretical-methodic approaches and practical experience of sportsmen-power lifters' training.

The prospects of further researches in this direction can be connected with substantiation of appropriate health related power lifting training methodic for students with affections of muscular skeletal apparatus considering already received material.

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Conflict of interests

Author declares no conflict of interests.

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