

PSYCHOPHYSICAL TRAINING COURSE FOR STUDENTS

¹ T. V. Popova*, ² O. G. Kourova, ¹ Y. I. Koryukalov.

¹ Business and Management Department, the South Ural State University, Russia

² Ecology and Nature Management Department, the South Ural State University,
Russia

(* Corresponding author: tati.popova2010@yandex.ru)

Summary. We have developed psychophysical training and psychophysical self-regulation course to be taught to students. Improved psychophysiological functions, mood, stress tolerance, and health, as well as reduced anxiety and rapider recovery processes have been observed in students, following embedment of the course into the curriculum. The students that have taken the course have also demonstrated higher efficiency in solving cases related to well-being problems of population.

Keywords. University students, psychophysical training, relaxation, self-regulation, psychological training.

Introduction. There has been an increase in the numbers of emergencies observed around the world, caused by natural, industrial, and human factors. Increased numbers of mental disorders and even illnesses are observed in all ages and occupations; people tend to see being “quicker on the draw” as the only solution to their problems. Physicians, psychologists, psychiatrists, and psychophysiologicals are concerned that the populace is unlikely to react adequately to stresses and emergencies, and the tendency is proved by elevated numbers of victims of such emergencies. Psychophysiological and psychological symposiums publish their resolutions that it is necessary to provide trainings to school students and university students to raise awareness of their body reserves, to teach them psychophysiological self-regulation techniques and psychophysiological functions training methods [4].

The body of knowledge in medical and biological disciplines indicates that there is an interrelation between human development factors in an educational environment, which is

highly beneficial to building professional competence. Creating motivation for leading a healthy lifestyle and developing health preservation technologies is one of the criteria for professional qualification estimation and providing “education without loss of good health and education to build up good health” [7].

However, so far, education systems have not demonstrated any changeover from health-destructive education process to health-preserving one [5]. Universities and colleges tend to underestimate courses to teach students how to administer first aid, how to put up psychological defense, and how to handle emergency situations [6].

Professional education of any level must be two-way, including both career education and psychophysical training that is currently obligatorily taught to servicemen, pilots, and athletes [2]. However, soon-to-be teachers, social workers, and managers often face situations of uncertainty and unpredictability; this is why a professional should be able to find the right solution even to an emergency [1, 11].

University education lays particular stress on theoretical knowledge. However, professional knowledge should not be seen as information from scientific articles and manuals only, but that derived from ideas of right and wrong behaviors and of personality traits, and those ideas should be developed each day [3]. Career education must involve personality-oriented approach and include reflexive situations for students to resolve by becoming engaged in self-development and self-realization [12].

The aim of our work is to develop and to test psychophysiological training course for students.

Materials and methods. We have developed and implemented the psychophysical training course in order to enhance efficiency of career education for social work students [8]. The course includes basic theoretical knowledge in body adaptation psychophysiological mechanisms and custom-made trainings to develop optimal behavior skills in unpredictable or emergency situations.

Psychophysiological self-regulation (PPSR) stands among the most important body functions, which account for body reserves mobilization [10]. Teaching PPSR techniques

may protect any person from manipulations and teach them to use psychological defense skills.

Existing PPSR systems offer various psychophysiological techniques to regulate body functional state, behavior, and emotions. The PPSR and relaxation program [9] that we have developed and patented involves PPSR techniques to assist a student in a rapid attainment of deep body relaxation.

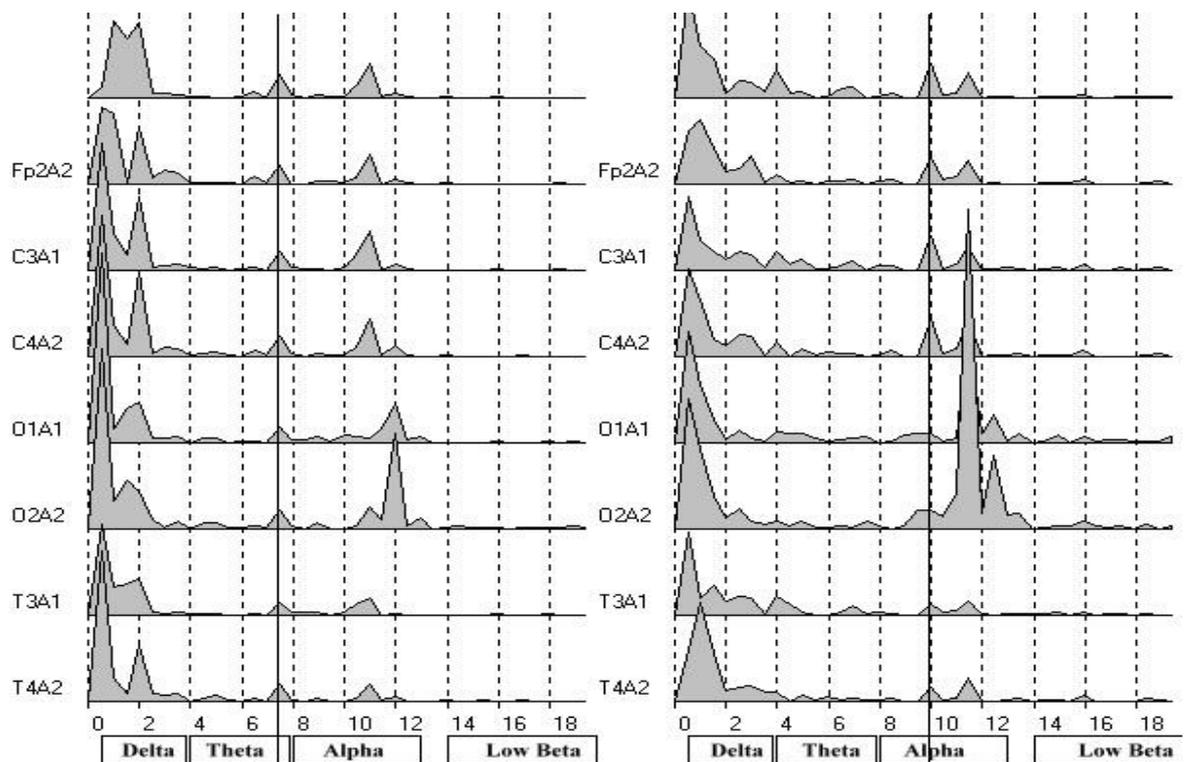
The occupational psychophysiology course includes three stages. Stage 1 includes basic training to build up a student's theoretical knowledge in psychophysiological body functions. Stage 2 widens the basic training knowledge taught at Stage 1, and forms skills at applying epy PPSR means to both cognitive and academic activities. Stage 3 forms systematic approach to understanding the meaning of professional tasks to perform, creative capabilities of soon-to-be specialists, and basic culture of independent scientific cognition based on effective use of psychophysiological body resource.

We have studied a group of students who practiced epy PPSR relaxation program 2 or 3 times a week in 1 or 2 years, and a group of students who practiced no PPSR. To estimate psychophysical state of the subjects, we used EEG, computer-assisted neurodynamics analysis, psycho-emotional self-estimation techniques, as well as heartbeat rate and blood pressure measurements.

The research was conducted on a voluntary informed consent basis in compliance with the protocol approved by the Ethics Committee of the Russian Academy of Sciences.

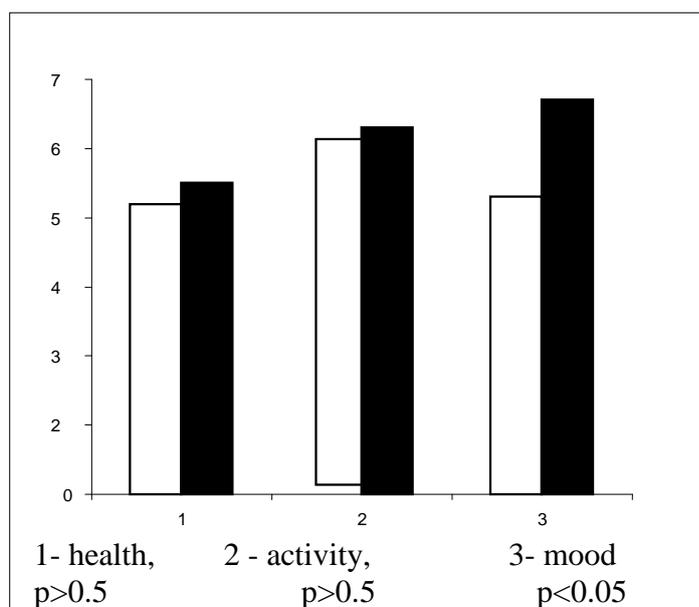
Findings. Our research has found that EEGs taken from subjects aged 18 to 22 as they performed relaxation exercises show certain changes, e.g., elevated pronouncement of the power and the index of alpha rhythm in all the deflections (see Picture 1). Coming out of the state of relaxation, the subjects say they feel refreshed, full of life and energy.

Reductions in heartbeat rate from 79 ± 1.9 to 75.1 ± 2.1 bpm, systolic blood pressure (SBP) from 107 ± 3.3 to 97 ± 1.8 mmHg ($P < 0.05$), as well as a tendency towards a decrease in diastolic blood pressure (DBP) were also observed, following PPSR exercises.



Picture 1. Spectral analysis of EEGS taken as PPSR was being performed

Computer-assisted test findings suggest that students demonstrate improved neurodynamics, attention, as well as mood and health, following a PPSR exercise course (see Picture 2).



Picture 2. Changes in psych-emotional state, following a PPSR exercise course (*on a rating basis*)

The psychological test data suggest that the experimental group also demonstrates conclusively lower neuroticism rate compared to the control group, which may indicate that students who practice PPSR have more pronounced emotional stability that contributes to maintaining behavior that is more organized and situational purposefulness combined with good adaptability to both ordinary and stressful situations.

We have conducted a test on university students to study the influence of PPSR on short-term memory. The results of the test suggest that subjects, following a PPSR session, tend to make more mistakes when memorizing figures from the middle line while making fewer mistakes with the bottom lines, which is indicative of rapid memory regeneration.

Computer-assisted tests have also revealed changes in reaction rates in university students, following a PPSR session (see the Table). It appears that basic motoric reaction rates and choice reaction rates, including those under dynamic and static obstacles, and reactions to a moving object are higher in the experimental group than in the control group. It is worth noting that the control group students make considerably more mistakes while doing tests involving complex sensomotoric activities than the experimental group students.

The facts presented herein suggest that PPSR is relaxant on vegetative functions and activating on locomotive apparatus functions, including restorative processes. The data indicate that practicing PPSR causes such change to functional status, which can be described as normalization of vegetative functions, cortical-subcortical interactions, and psycho-emotional state.

Discussion. Our data suggest that practicing PPSR triggers considerable changes in the psychofunctional state of the body. We believe that upperclassmen and university students can use various PPSR techniques as means of mental health, mental fatigue reduction, and restorative processes stimulation. E.g., five-to-ten-minute-long mental relaxation exercise can be done at the end of classes.

Questionnaires and oral evidence suggest that students who have mastered self-regulation skills, demonstrated keener interest in their majors and in getting advanced knowledge, as well as higher confidence, e.g., in situations where they had to administer

first aid. Polls of ten student groups suggest that those of them who have taken the course have demonstrated a reduction in their overall vulnerability to diseases, better mood, better health, and improved relationships with their family members and friends. The students have also mastered mental diagnostics techniques and psychological defense methods, which have proved beneficial to both efficient communication and attainment of goals.

Relaxation exercise improves capabilities of mobilizing body resources in emergencies. The course program included teaching students self-regulation of their state, psychological defense, and maintaining psychical resource. Upon completion of the course, students feel more confident, and the questionnaire data are indicative of reductions in anxiety and increased stress tolerance.

Students have demonstrated higher efficiency in solving case problems related to well-being of population in both general professional and specialized disciplines, and higher creativity in planning a community medical aid center. Now that the soon-to-be specialists have completed the PPSR course, they do not find it impossible to control their states and behaviors, and are confident to achieve professionalism free of occupational personality deformations.

Mastering PPSR techniques means mastering psychological defense, which protects personality from psychological manipulations. It is the aim of the course to provide students with means of handling difficulties and achieving their life goals rather than giving them mechanical or psychic “processes.”

Our research data suggest that students who have mastered the PPSR course involving self-regulation trainings tend to handle psycho-emotional stresses in a more efficient way, have better academic performance, and are deeper involved in social activities in comparison to students who do not have that discipline on their curriculum. Good stress-relieving and restorative effects of PPSR relaxation exercises promise that the course will be embedded universally in education, rehabilitation, and career training.

All in all, our expertise has immersed students in their future work environments and brought them to realize that they are to perfect their personal qualities.

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