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Articles and Statements

The Adaptation Process to Education among University Students with Various Psychotype and Physical Activity Level

Nuriya M. Kharissova [a, *], Liliya M. Smirnova [b], Andrey F. Kuzmin [b], Farida A. Mindubayeva [a], Yelena G. Komkina [a], Yelena Yu. Salikhova [a], Sholpan Sh. Sarsembaeva [a], Fedor A. Kuzmin [b], Nataliya V. Tikhomirova [b], Ayman Sh. Sarsembaeva [d], Poonia Vikram [a], Dinesh Kumar [a], Shubham Choudhary [a], Fatma Irem Gurbuzer [c]

[a] Karaganda Medical University, Karaganda, Kazakhstan
[b] Kostroma State University after N.A. Nekrasov, Kostroma, Russian Federation
[c] Gazi University, Turkey
[d] Karaganda State University, Karaganda, Kazakhstan

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Abstract

The Problem of Research: In the educational process many students experience the stress, which manifests itself in the form of headaches, fatigue, depression, and in decreasing of academic performance. A little physical activity allows them to get out of this state.

Participants and Methods: There were investigated 100 students (educational directions: “Physical culture”, “Music”, “General Medicine”) (age 19-24) from Kazakhstan, Russia, Turkey with various psychotype and physical activity level in the process of their adaptation to educational process. It was used theoretical analysis of scientific and methodological literature, analysis of normative documents, pedagogical observations, sociological methods of research (the scale neuropsychic tension, Questionnaire (well-being, activity, and mood), Eysenck Personality Questionnaire (EPQ)), methods of assessing physical activity (timing, Framingham technique), and methods of statistical data processing.

Results: It was shown that students with a reduced level of physical activity expressed significant stress of adaptation mechanisms. For students of the educational direction "Physical Culture" adaptation to the educational process passes more effectively than for students of the educational direction "Music".

Conclusions: It is necessary to take effective measures to reduce the negative impact of stress on life, health and student performance. These measures include: a change in lifestyle, activisation

* Corresponding author
E-mail addresses: harisova_nuriya@list.ru (N.M. Kharissova)

of physical activity, harmonization of interpersonal relations of students, reduction of learning loads. It this way necessary to individualize the learning process, based on the types of temperament, psychotype and level of physical activity.

Keywords: adaptation, physical activity, psychotype, stress resistance, university students, educational process.

1. Introduction

The physical and mental health of people is influenced by many factors, such as physical activity, observance of the norms of a healthy lifestyle, communicative norms in society, type of person's temperament (Kondo et al., 2008; Füzéki, Banzer, 2013; Dore et al., 2016; Dinh-Van Phan et al, 2018).

The problem, which we will discuss in our investigation, occupies humanity for more than 25 centuries. Interest in this is due to the individual differences between people. The psychology of each person is different. It is unique in every people due to their different biological and physiological formation and development of the organism. When we talk about temperament, we mean many mental and psychological differences between people's, differences may be there emotional stability, temper, energy of action, thinking power, mental life, behavior and other activity. Temperament is the speed and strength of the processes of excitation and inhibition in the cerebral cortex. It defines not only emotionality and sensitivity, but also the style of study activity, the way of reaction and behavior (Rothbart, Derryberry, 1981; Rothbart, Bates, 2006; Evans et al., 2007; Rothbart, 2007; Gozde Ersoz et al., 2017).

Nowadays, the problem of insufficient physical activity of the population has been noted. This is due to the unprecedented success in many areas of science and the production of material goods. As a result, most of our contemporaries do not satisfy their natural need for physical activity, and thus the effective functioning of human life systems is not ensured. Many studies paid attention to the worldwide decline in physical activity (PA) and increase the sedentary persons and obesity among human. The inactivity at different ages it is a major problem for most countries, approximately 20 % of adults worldwide report persistent fatigue. However, few studies have addressed the dissemination of effective physical activity interventions. Both community settings and healthcare settings are important locations for dissemination of evidence-based programs and policies with benefits in terms of both prevention and management of chronic disease and injury (Proper et al., 2006; Puetz, 2006; Rabin et al., 2006; Kagotho, 2011; Futornyi, 2013; Fagaras et al., 2015).

In this regard, great attention is paid to improving the status of the population by adopting a healthy lifestyle. The formation of a healthy lifestyle is effectively promoted by physical culture and sports, regular exercise, and various health practices (Kharissova et al. 2015**;** Graciela Chaves et al., 2015).

The stressors (mental or physical) have a major influence upon mood, our sense of well-being, behavior, and health. Acute stress responses in young, healthy individuals may be adaptive and typically do not impose a health burden. However, if the threat is unremitting, particularly in older or unhealthy individuals, the long-term effects of stressors can damage health. During physical and mental stress, under cognitive load occur changes in respiration, and influence of respiration patterns on activity of cardiovascular system. Many researchers showed in study causes of stress for the people, and gave exit routes of stressful situations (Firth, 1986; Neil Schneiderman et al., 2005; Florina Nechita et al., 2014; Juan Pablo Delfino et al., 2015; Dawit Yikealo et al., 2018).

2. Relevance

The relevance of this study is because due to the modernization of the university system of education in the Russia and Kazakhstan, it became necessary to identify the mechanisms of adaptive behavior of students in the process of their education. For most students, one of the most difficulties is the initial period of study at the university. Different stress factors violate adaptation mechanisms and due to leads to decreasing in physical and mental health (Kharissova et al., 2012; Mindubayeva et al., 2015).

Various psychotype characteristics at person (temperament, structural organization of higher nervous activity and character) determine a different level of adaptive capabilities to rapidly

changing conditions of both internal and external environment. Being divorced from the usual living conditions associated with moving to a new place of residence and moving to a different educational level (secondary school-university), most students experience a state of severe stress, accompanied by a long adaptation period, which can be reduced by various psychophysiological methods (autogenic training, classes sports).

Insufficient physical activity of students leads to their poor adaptation to the changing requirements of higher education. To successfully determine the level of adaptation of students in the learning process, it is necessary to consider the reserve capabilities of the human body as a whole and its different systems.

The purpose of this study was to examine the adaptation process to education among university students in terms of temperament and physical activity level.

3. Materials and methods

3.1. Object of the research, Contingent of students

Object of the research: The adaptation process to the influence of the educational process in groups of students with different psychotype and level of physical activity.

Contingents of Students: Study participants were investigated at Karaganda Medical University (Department Morphology and Physiology) in Kazakhstan; Kostroma State University (Department of Biology and Ecology, Department of Physical Culture and Sports) in Russia; and Gazi University (Turkey). There were exanimated 100 students (testees) (educational directions: “Physical culture”, “Music”, “General Medicine”) of 1, 2 and 3 courses (18-24 years).

There are 3 groups: **First (I) group students** of Faculty Musicians of Kostroma State University (KSU) (25 students). **Second (II) group students** of Faculty Physical Culture of Kostroma State University (KSU) (35 students). **Third (III) group students** of International Faculty of General Medicine of Karaganda Medical University (KMU) and Gazi University (GU) (45 students). Among them were 37 % of female, 63 % of male. In addition, according to their physical activity, the students were divided into the following groups: non-athletes (non-sportsmens) (**subgroup 1**) and athletes (sportsmens) (**subgroup 2**). Subgroup 1 has exercising less than 30 minutes per day and not exercising at study (25 students); Subgroup 2 has exercising more than 30 minutes daily, engaging in sports at study 2–3 times/week and meeting, physical standards (75 students).

Informed consent (Ethical approval): The work was carried out in compliance with the basic bioethical rules and requirements with the scientific justification of the planned studies, analysis of possible risks and discomforts, description of the research for non-specialists and obtaining informed consent from the participants of the investigation.

3.2. Research Methodology

There were used theoretical analysis of scientific and methodological literature, analysis of normative documents, pedagogical observations, sociological methods of research (the scale neuropsychic tension, Questionnaire (well-being, activity, mood), Eysenck Personality Questionnaire (EPQ)), methods of assessing physical activity (timing, Framingham technique), methods of statistical data processing.

We used determination of temperament according test Eysenck. Using such methods, we can determine extraversion (the orientation of the personality to the outside world) and neuroticism (the result of unbalance of the processes of excitation and inhibition) properties underlying temperament. That method has 57 questions. Students should be answered "Yes" or "No". The obtained results are compared with the key, which has three scales: extroversion – introversion; neuroticism, the lie scale. Belonging to the type of temperament is detected by using a coordinate system where the results are marked on a scale of "neuroticism" and the scale "extraversion”. The study of memory was carried out according to the methods described in the methodological recommendations of N.M. Kharissova.

3.3. Method for determining the level of anxiety

1. The scale neuropsychic tension. The Perceived Stress Scale (PSS) is the most widely used psychological instrument for measuring the perception of stress. It is a measure of the degree to which situations in one’s life are appraised as stressful. Items were designed to tap how

unpredictable, uncontrollable, and overloaded respondents find their lives. The scale also includes several direct queries about current levels of experienced stress. The PSS was designed for use in community samples with at least a junior high school education. The items are easy to understand, and the response alternatives are simple to grasp. Moreover, the questions are of a general nature and hence are relatively free of content specific to any subpopulation group. The questions in the PSS ask about feelings and thoughts during the last month. In each case, respondents are asked how often they felt a certain way. The measurement of anxiety as a personality trait is particularly important, since this property largely determines the behavior of the subject. A certain level of anxiety is a natural and obligatory feature of an active person. Each person has his own optimum, or desired level of anxiety - this is the so-called useful anxiety. Man's assessment of his condition in this respect is for him an essential component of self-control and self-education. For definition anxiety we used Teilor's Manifest Anxiety Scale (Questionnaire assessment of neuro-emotional stress). The Taylor's Manifest Anxiety Scale is designed to measure anxiety manifestations. The considered scale consists of 50 statements, to which the subject must answer "yes" or "no." Assertions were selected from a set of statements from the Minnesota Multidimensional Personality Questionnaire (MMPQ). Testing lasts 15-30 minutes. For ease of use, each statement is offered to the subject on a separate card.

2. Questionnaire (well-being, activity, mood). The test is designed to quickly assess the state of health, activity and mood (according to the first letters of these functional states, the questionnaire is named). Students are asked to correlate their state with a range of signs on a multistage scale. The scale consists of indices (3 2 1 0 1 2 3) and is located between thirty pairs of words of opposite meaning, reflecting mobility, speed and rate of performing of functions (activity), strength, health, fatigue (well-being), and characteristics of the emotional state (mood). The subject must select and mark the number that most accurately reflects his state at the time of the survey **(Spielberger-Anfimov Questionnaire WAM (Well-being, Activity, Mood)).**

3. Eysenck Personality Questionnaire (**EPQ**). In psychology, Eysenck Personality Questionnaire (EPQ) is a questionnaire to assess the personality traits of a person; this is not the same questionnaire as the Eysenck's personality Inventory or EPI which was an earlier instrument also produced by Hans Eysenck. Hans Eysenck's theory is based primarily on physiology and genetics. Although he was a behaviorist who considered learned habits of great importance, he believed that personality differences grow out of our genetic inheritance. He is, therefore, primarily interested in what is usually called temperament. Temperament is that aspect of our personalities that is genetically based, and present from birth or even before. In devising a temperament-based theory Eysenck did not exclude the possibility that some aspects of personality are learned but left the consideration of these to other researchers. Extraversion is manifested in a friendly, talkative, energetic behavior, while introversion is manifested in a more closed and lonely behavior. Extraversion and introversion are usually considered as a single measurement space; therefore high indicators of one characteristic imply low indicators of another.

3.4. Methods of Statistical Data Processing

Data processing was performed using mathematical statistics methods; reliability was determined by Student's t-test, Fisher's F-criterion.

4. Discussion

Stress Data Analysis among students. Survey was gathered by emailing the survey to all the selected students in the University in order to get their responses. Questionnaires were sent to all students in the Russian groups and International groups in English. Russian part of the questionnaire would be translated to English for easy understanding. After which comparison will be drawn and interpreted to know how the students perceive stress impact in their academic work.

According to a survey, 49 % of men and 55 % of women experience stress. Factors contributing stress are poor performance in examinations (87.5 %), difficulty in understanding the subject (68.3 %), lack of recognition to work done (44.2 %), lack of time to revise (95.2 %), and large content to be learnt (99.1 %).

Before the exam, the students 'condition can be described as tense – almost all indicators are indicative of nervousness and anxiety, self-doubt and discomfort. As for these indicators in a period of relative rest, anxiety and self-doubt, stiffness is also present, but to a much lesser extent, the

remaining indicators of this period in comparison have significant differences. It is worth noting that during regular learning, students feel much calmer and more confident than during the examination session.

During the examination session, and during ongoing training, freshmen students try to avoid difficulties and critical situations, for the most part they have high spirits and feel happy, feel a surge of strength and have a desire to work, and they feel calm, collected and calm. During the session, the blues were noted, emotionality and frustration due to trifles were increased, but the desire to be successful, i.e. it can be concluded that the emotional mood of most of the tested students during the examination session, despite anxiety and tension, still remains positive, as in the intersessional period.

In general, it can be noted with confidence that, although the examination session is undoubtedly stressful for freshmen, overall indicators of emotional assessment are elevated, but they do not radically differ from indicators at rest, which gives us the right to conclude that freshmen have relative stress tolerance.

As an important vegetative indicator, blood pressure and pulse clearly characterize the degree of anxiety and the functional state of freshmen. In the study of these indicators, it was found that the values of blood pressure and heart rate during the examination session are also outside the norm for freshmen: resting pressure was 122/66 mm Hg, and before the exam 143/85 mm Hg., which can be called quite high for their age, this clearly shows what degree of excitement they experienced. As for the pulse, then its indicators exceed the norm both at rest and before the exam - 83 beats / min and 94 beats / min.

An increase in pulse and blood pressure data indicates a malfunction of the cardiovascular system, which, if these indicators are stored for a long time, can lead to various diseases of this system and the body as a whole. During the study, heart rate indicators gradually increased; due to this we can conclude that the dynamics of the pulse rate growth reflects the activation of the sympathetic nervous system. In general, the dynamics of growth in heart rate values was observed in all students.

Analysis of the results of the study showed that among the students there were 56.5 % extroverts and 43.4 % introverts. In the group of the extroverts were dominated choleric (50.9 %) and sanguine (41.2 %). Among the introverts were mostly melancholic (86.7 %). Visual memory (57.3 %) and motor memory (38.8 %) were dominated most in the students. Choleric people are more successful in the learning process than sanguine and melancholic. They are capable of completely giving themselves to study, spending all their energy on it.

For successful academic activity of students, the teacher uses different methods, tasks, and style of teaching, corresponding to the student's temperament.

In all, data were collected from students who were from the international and Russian groups, regarding four main factors of stress which were: Relationship, Academic, Environmental and personal factors. Each had sub factors that caused stress and base on the results, working with new people was the highest factor in both groups of people who answered the questionnaire Relationship as source of stress. With regards to academic issues, class load was the highest. Future worry under environmental factors was the main cause of stress to students and financial difficulty came up under personal factors that cause stress. The results show that stress affects the overall school activities of students as well as their social well-being (Figure 1). The results presented in Figure 2 reflect data on the scales of personal anxiety during stress.

Stress is the insistent outcome caused by various stable and strain routine tasks of every part of our life. The changeover from adolescence to adulthood is a complicated journey in academic life of college students. In this stage, college students face fast physical, social and mental changes along with they may experience unsuitability and adaptableness. College students constantly have more multifaceted inconvenience due to academic pressure, adaption to new environment, fear of failure; struggle to create uniqueness, inferiority, attaining social familiarity, etc. The transition from secondary school to university is often accompanied by unhealthy behaviour changes such as decreasing physical activity and increasing sedentary behaviour. The concept of 'Freshman 15' is a popular term that describes dramatic weight gain of college students (Pariat et al., 2014; Crombie et al. 2009; Vella-Zarb et al., 2009; Mohammad Reza Sharif et al., 2018).

"Students reported that both physical and sedentary activities were influenced by individual factors (e.g. perceived enjoyment, self-discipline, time and convenience), their social networks

(e.g. (lack of) parental control, modelling, social support), physical environment (e.g. availability and accessibility, travel time/distance, prices), and macro environment (e.g. media and advertising)" (Deliens et al., 2015).

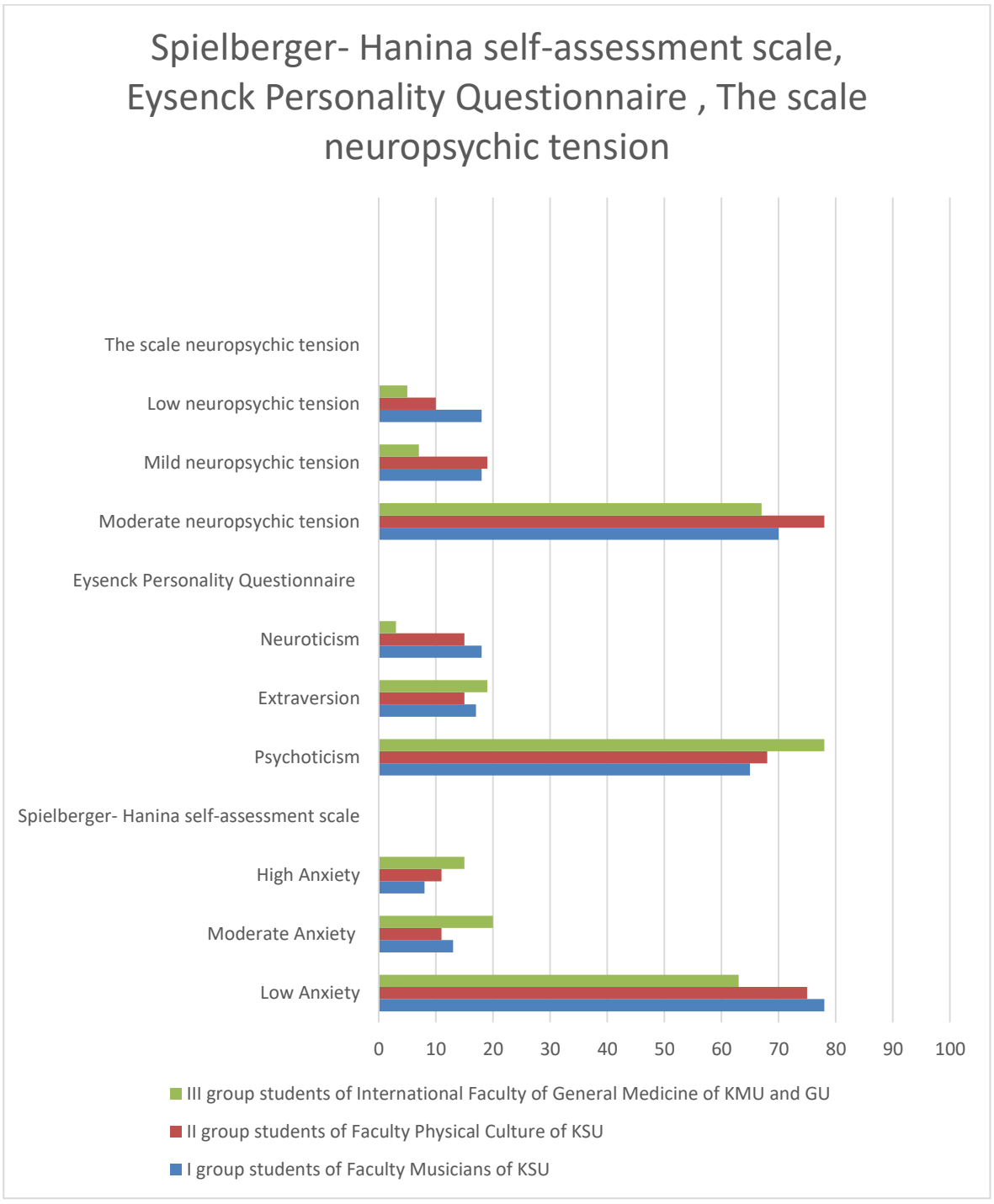

Fig. 1. Spielberger- Hanina self-assessment scale, Eysenck Personality Questionnaire, The scale neuropsychic tension

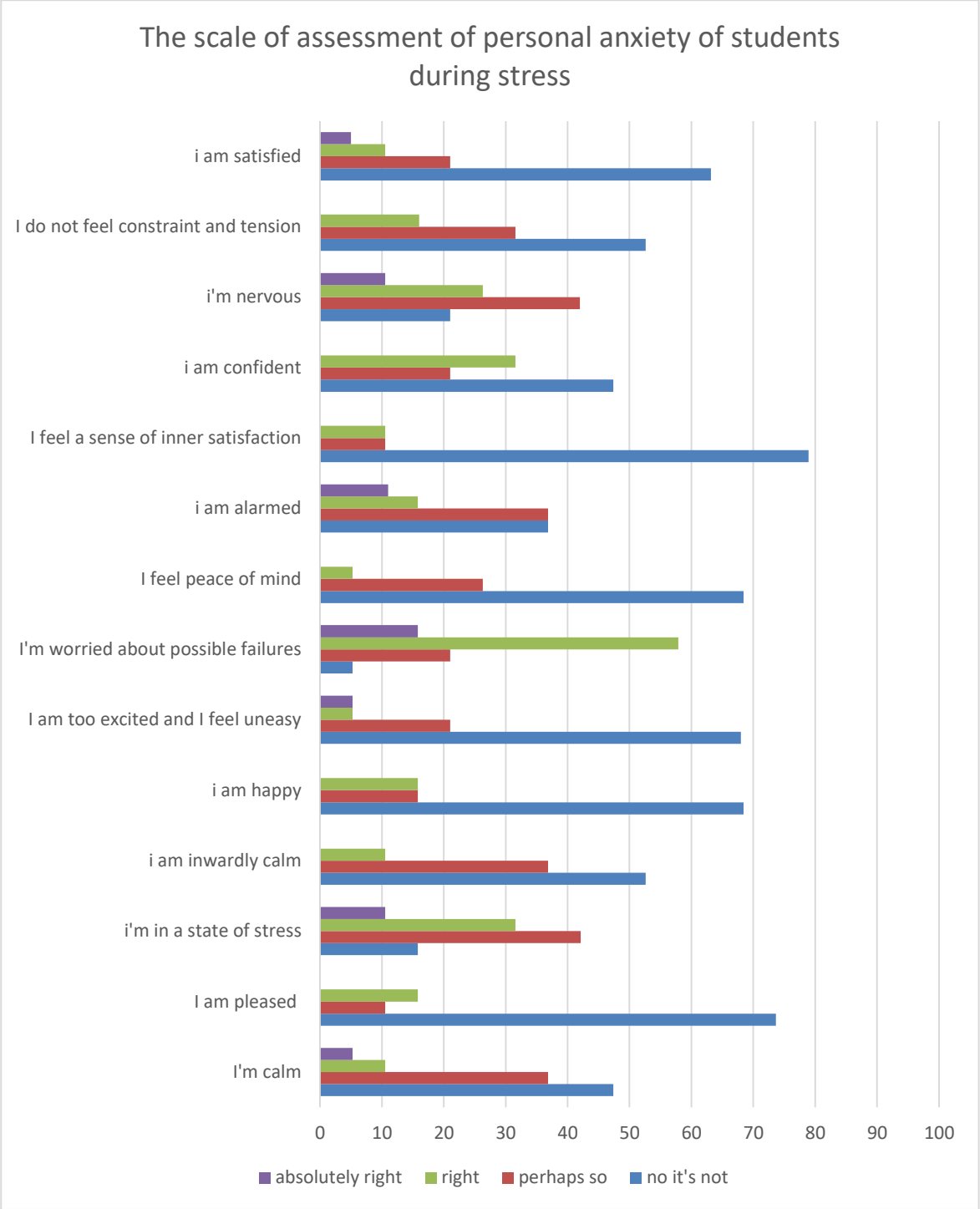

Fig. 2. The scale of assessment of personal anxiety of students during stress

"During the past decade, numerous intervention studies have been published on the effectiveness of programs to promote active living" (Rabin B, et al., 2006). "It is feasible to successfully promote physical activity to groups of people in diverse places, with benefits in terms of both prevention and management of chronic disease and injury" (Proper et al., 2006). "The deficit of motor activity by the students it is advisable to include educational and daily activities of this category of students of various forms of physical education classes of various kinds" (Futornyi, 2013).

"One of such rehabilitation programs is employment by physical exercises and sports. Today there is no necessity to prove huge value of regular employment by physical exercises for strengthening of health, the prevention of diseases, increase of stability and resistibility of an organism. The health

problem has special value for sports. Sports make direct impact on preservation correct integrative reactions of an organism to physical activities" (Kharissova et al., 2012).

"Adaptation to physical activity is a dynamic process, which is based on the formation of a new program of physical development and health. This ability to adapt to the conditions of a regular training activity depends not only on the existing constitutional reserves, but also on the volume of training loads of students involved in cyclic sports, the adequacy, efficiency and stress of regulation mechanisms of the body of students" (Konkabaeva et al., 2016).

To mitigate the stressful situation of the transition of students from the school system of education to the university system and the intensification of their adaptation mechanisms, we recommend the use of preventive teaching methods in the initial courses of the university (increasing the hours in the educational programs devoted to physical education and sports; holding various thematic evenings about active lifestyle; scheduling classes taking according to biorhythms of students; providing a zone of psychological comfort by increasing student appeal for practical psychologists and more time staying in the rooms of students of psycho-emotional discharge). The preventive methods proposed by us will contribute the creation of a general positive emotional background among students during their studies at the university.

5. Conclusion

Based on the results obtained and their interpretation, we can conclude:

- Due to the negative impact of stress on the student's life, such as poor learning, poor academic performance and poor general health, effective measures must be taken. This is done by identifying the underlying causes of stress, which includes changes in lifestyle, less workload, better interpersonal relationships. We hope that; based on the analysis, this thesis will be very useful for helping students in their lives.
- The study revealed that academic problems were greater sources of stress in the first-year medical students when com-pared with nonacademic problems.
- Distress among students may influence professional development and adversely impact academic performance contributing to academic dishonesty and substance abuse. Addressing these issues by the institution using professional help would go a long way in ameliorating their stress levels and in making their learning a pleasant affair.
- These conditions direct the mobility, activity and ability to focus on the educational activities of the sanguine person. For the choleric it is necessary to create conditions that helped to overcome excitability, to concentrate attention, to realize the importance of the question for him. It is necessary to shift attention to the forthcoming activity and concentrate on studying the topic in the phlegmatic. For the melancholic must create a situation of success, distract from negative emotions, anxiety, and educate self-reliance. So, for the best organization of the lesson, the teacher must consider the temperament of the students, what will be beneficial for the health of students.
- It can be assumed that the choleric students have good adaptive abilities to the educational process. Students with a sanguine temperament adapt more quickly to the social environment, and melancholy students, whose performance indicators and ability to communicate have improved after physical education and sports, are most difficult to adapt to the rapidly changing living conditions and social environment.

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