

**18<sup>th</sup> PCSF 2018**  
**Professional Culture of the Specialist of the Future**  
**COGNITIVE COACHING**  
**UNDER UNIVERSITY EDUCATIONAL TECHNOLOGIES**

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***Abstract***

In functional fitness individualization of physical activity is carried out under the monitoring of proper values of the most important physiological functions such as arterial blood pressure, heart rate, respiration volumes and so on. Educational technologies of the University allow activating physical development of the student, involving him with psychophysiological monitoring of intensity of own physical activity of competitive level. Consolidation of physical fitness, sport fitness followed by sports game under the University educational programs are more effectively, than trainings the only on track and field, gymnastics, sport fighting and so on for student's physical development. The simplest psychological, physiological, biomechanical students Real-Time self-investigation integrated with physical training exercises are the most effective for positive student's healthy life style advance under such effective rouse slogan "Competitive Advantage". The integration student's education as High Tech specialist and simultaneously as physically development young individuals are the pedagogical technologies of the Institute of Physical Culture, Sport and Tourism of St.-Petersburg Peter the Great University.

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**Keywords:** Physical development, psychophysiological self-examination, University students.



## 1. Introduction

Motivation to physical activity the special condition of the personality directed on achievement of an optimum level of physical fitness and working capacity. The process of formation of interest to physical culture and sports is not a momentary and multi-stage process: from the first basic hygiene knowledge and skills to deep psycho-physiological knowledge of the theory and technique of physical training and intense exercise.

Functional training, functional fitness, sports fitness, etc. - sports and pedagogical technologies of the last time which “are developed by experts for counteraction to the decrease in the general indicators of physical health of student's youth” (Sushchenko, Shchegolev, & Korshunov., 2016, pp. 3-5). The block of disciplines "sports fighting" successfully combines motivation to overcoming, counteraction to any distorting impacts on the individual (model of the competitive relations), and growth of the general physical working capacity, psychological endurance of students and at the same time growth of the academic progress in comparison with peers of an inactive way of life .“Although favorable results have been obtained from cross-sectional and longitudinal studies related to academic achievement, the results obtained from controlled experiments evaluating the benefits” (Josepten, Etnier, Lee, & Szabo-Reed., 2016. p.1197).

Integration of technical elements of different types of sport into paradigm of physical fitness educational program in the University under the “competitive relations concord” as showed in our researches and our colleagues too “contemporary educational organizations propose that children’s experiences in sport and physical education contribute to the mental acuity, skills, and strategies that are important for navigating challenges faced across the life span” (Bolotin & Bakayev, 2018, pp.72-78;),.It is most effective when biomechanical complexes of one of sports kind, used as one of basic element of general physical training in the educational group that has intention to be evolved with sports fighting kind in future as example “The understanding of the relationship between physical fitness and technical-tactical variables can be of great practical importance to coaches and athletes during real or simulated combats” (Sushchenko, 2013, p.65).

A big need for physical activity is available to those with a strong nervous system and the predominance of excitation of "internal" balance. Such persons “are more active in the classroom for physical culture and during training. Therefore they observe the best progress on mastering movement skills and development of physical qualities, and teachers mark their big working capacity” (Solodkov, 2011, pp.66-71).

## 2. Problem Statement

At the same time, development in modern sports and pedagogical process of competence-based educational approach, problem-oriented educational technologies, sets for the teacher-trainer a task of the organization to productive interdisciplinary integration in structure autumn term of the first year’s education under direct students participation in pedagogical process of sports and physical fitness successes. Students with low physical activity “require constant attention on the part of teachers and friends, encouragement, including in working with high-level students. Among engaged in physical culture in this or that form the main motives, according to many studies” (Ignatyeva, 2016, p. 56).

### **3. Research Questions**

In this regard it is expedient to create the programs of the initial stage of training under pedagogical providing with the student's comprehension of definition importance such as "The Competitive Relations", with use of the elementary methods of psychological testing, psychophysiological monitoring, control of physical working capacity, the statistical analysis by students themselves on real time technologies. However big activity of one student in comparison with others doesn't mean that he approaches the duties more consciously that he is more responsible, simply he needs the bigger volume of movements to satisfy need for physical activity. Particular importance in the preparation of the sport fighters.

### **4. Purpose of the Study**

(i)To develop algorithms of an operational assessment of the current trend of functional compliance of an organism of the student of success of performance of a specific physical fitness and pedagogical objective. (ii)To develop algorithms of the sequence of monitoring of parameters of successful events of overcoming by the students' "Competitive Relations" in the teaching physical and sports fitness specifications. (iii)To develop in successful students' self-realization as the individual, both in sports competition, and in the subsequent collisions of household and professional activity.

### **5. Research Methods**

The investigations were carried out with 24 healthy volunteers male students 18-20 years old with "SOMATOTYPE", the indicator of somatic development, is presented as the relation of value of student's height in "sm" to body weight in "kg" (an optimum for young men somatotype equals 0,38-0,49). The whole Research Program was performed in accordance with "Helsinki Memorandum of Human Rights" and the University's "Ethics Committee". The researches were carried out at the first semester of the first year of the University education. It consists of the First Introductory (one month), Second the proper Physical Training (two months) and Control (one month) Cycles of physical training education. "Physical fitness program should be given to improving the mental processes that ensure success, especially volitional, physical and technical training" (Volkov, Namazov & Ustinova, 2017, p.284).

#### **5.1. The Block of Psychophysiological Methods**

"Colour marking of Personal Behavioural Preferences" test characterizes the psychoemotional positioning of the person in his current relations with constantly changing environment events, due to so called "Overcoming of the Competitive Relations" – as Life Style behavioural vector – "Initiative", "Stereotype", "Indifference", "Refusing" "Various capacities and physical skills are required during a competition and thus the athletes need to be in excellent physical condition according to aerobic power, muscle power/endurance; the reaction time used to take advantage for the application of attacks ..." (Solodkov, 2011, p. 265); such applied express method of an assessment of the current psychoemotional readiness of the individual for the highest realization of his sports potential was designed as one of numerous variant of well known "Method of Colour Preferences" - "Advances in neuroscience have resulted in linking physical activity to cognitive performance as well as to brain functions. The original evidence for such effects of exercise is obtained from psychological investigations such as Colour

Preference Testing” (Gasyak, Suvorova, Tarasov, & Yaitchnikov, 2016, p.261-264). Our design allows making the urgent forecast for the optimum choice of the competitive and strategy directly in the conditions of sporting events from among acquired in trainings.

“Biorhythm’s Segment of Behavioural Efficacy” test based on the biological importance physiological biorhythms with period close to month period of time by makes calculation of “Physical” biorhythm (the period 23 days), “Emotional” biorhythm (the period of 28 days), “Intellectual” biorhythm (the period 33 days). The functional status of the student was estimated “in parameters of phase segments of a maximum 45-125° and a minimum of a modality 145-225° and particularly of phases of so called “decisive days” 345-15° “The majority of components of sports performance, e.g. flexibility, muscle strength, short term high power output, vary with days in a sinusoidal manner and peak such as “physical”, “emotional”, “intelligence” rhythms and should be recognized by athletic practitioners” (Shaposhnikova & Taymazov, 2005, p. 215).

«ΔP» as “Pulse` Fitness Event Value” is estimated a digit difference pulse in one minute "prior to" and "after", for example, episode of physical activity (Polar RCX5 RUN).

## **5.2. The Block of General Physical Exercises and the Physical Training**

The initial level of physical efficiency of the student was estimated according to the test "PWC170", "Physical Working Capacity" control of level of initial physical working capacity is focused on step test performance on reaching the frequency of 170 heart beat per 1 min., “i.e.: "Low" level 3kgm/min (0,5W) on 1 kg of body mass, "Satisfactory", 6,3 kgm/min/kgbm, "High"-11,5 and 14,3kgm/min/kgbm specific physical activity” “Various capacities and physical skills are required during a competition and thus the athletes need to be in excellent physical condition according to aerobic power, muscle power/endurance; the reaction time used to take advantage for the application of attacks ...” (Solodkov, 2011, p. 265).

The current approaches to the student’s Physical Working Capacity training, his personal achievements in the course of implementation of physical training educational program was controlled in tests “PhysFitn”, “Exercises of the General Physical Training”. By this training block student’s proficiency rise in exercises of the general physical training, studying of technical skills such as development of speed, dexterity, force and endurance, relaxation and endurance, condition of the correct breath, etc. Other part of educational program was controlled in tests “SportFitn”, “Exercises of Special Sport Training”. By this training block student’s proficiency rise in exercises at some extent in the general techniques of sport fighting, accepting of technical peculiarity to work in couple with each other with chosen exercises of the general physical training which promote studying of movements in couple such as ability to prepare attack, training in the speed and accuracy of imitation of blows, timely application of protection under easy game temper. Success of the student’s on exercise on the clearness and speed, and also in couple by initiative and productivity the test result was determined by the general in advance known criteria (Sushchenko, Shchegolev, & Korshunov, 2016, pp.3-5).

Usually students underwent a general standardized 10-min warm-up composed by: moderate intensity run; Jumping jacks and vertical jumps; Joint movements and mobility, and tests’ specific movements. Then, physical fitness tests were separated by 5 min rest periods. Flexibility (Sit and reach test) Upper Limbs Power (Medicine Ball Throw) Upper Limbs Endurance (Push-ups test) then High

intensity, Low intensity actions etc. A lot of these physical exercises are able to be executed much more attractive with more rich variety and emotional attraction such as sport game.

“FRAUDBALL” as “Competitive Advantage Attitude” is the test-game designed as Handball but with three teams (yes, three!). Two usual teams have the Goal and Goalkeeper. But third unusual team has nothing. There are two periods. One of the usual team with minimum number of points after the first period leaves the game. After the second period again the team with minimum number of points leaves the game and the Winner is defined. For “unusual” team the physical activity is the vigorous.

### **5.3. The Block of Statistical Analysis**

Experimental data were aggregated by statistical recommendations. All data analyses were executed in “STATISTICA” software version 10.0 and statistical significance was set at 5% ( $P \leq 0,05$ ). After Shapiro-Walk’s test for normality and Levine’s for equality of variances, statistical methods were applied as follows: Descriptive data are presented by  $M \pm mt$  (where “mt” is confidence interval “M” is the “mean”, “m” is the “mean error” and “t” is Student's Criterion). So students` intention to enhance their physical endurance and sport experience for systematic, subsequent trainings form has the excellent basis for realization their actual life position as “Competitive Advantage” under sport fighting disciplines during subsequent education.

## **6. Findings**

In the analysis of research results it must be kept in mind that the physical training, sports and pedagogical problem of adaptation of the first year student, his self-sufficiency are jointed with physical education technologies. Firstly – the development by students of equipment, skills of strengthening and development of the general physical training, secondly, formation of motivation, strong-willed qualities, aspirations to be improved in development of complexes of special physical training of the chosen sport, and, at last, thirdly ability of everyone in the unique originality, personal safety, to apply the received skills of self-checking in dynamics of changeable habitat throughout the subsequent household and professional activity – “culture of psychophysical development or briefly "Physical culture" (“Regular practice of sport can influence many functional aspects, leading to positive effects on both personality and cognitive factors, with implications in psychological well-being, and in the educational field.” (Namazov, Evseev, & Kushelev, 2018, p.294-5). Similar pedagogical installation can be solvable in interdisciplinary integration of educational technologies of sports and pedagogical disciplines, applied psychology and, to a certain extent, ontogenesis philosophy. In this regard synthesis of paradigms of fighting sports (individually), sport games (collectively) and sports physiology (scientifically) represent that integrated sports and pedagogical environment which most corresponds to the successful solution one of the global trainer tasks to imprint into student’s mentality the principal “Competitive Advantage” as his everyday instrument for “Life Success”.

### **6.1. Introductory physical training cycle**

Our physical training program for the first educational semester includes four months. That is Introductory (one month), Coaching Proper (two months) and Outcome Period of trainings. The aim of the Introductory Training Cycle was to investigate of student’s characteristics and to give him a key to the

advantage, with hands-on training on psychophysical overcome of any situational decision threshold to be the Winner through participating in sport team.

So, at the Introductory Training Cycle on group of 24 students initial pulse before training was equalled  $67 \pm 3$  in 1 min. ( $M \pm mt$ ) and at the end of training it was equalled  $91 \pm 5$  in 1 min., i.e. « $\Delta P$ » as “Pulse` Fitness Event Value” of training was equalled 18 in 1 min. to value of pulse ( $P \leq 0,05$ , t). The specific size of physical working capacity on group in general was equalled  $4,8 \pm 0,9$  kg/min/kg\*bm (test PWC170) “The experimental evidence must be presented in the position of summarizing via evidence category ratings age normal parameters adapted. Exercises must be planned, structured, and has the improvement or maintenance of physical fitness as a final or an intermediate objective” (Yaitchnikov, 2009, p. 54). Among the variety of the physical training exercises the most universal should be chosen.

At physical exercise with burdening can be used as means of complex improvement of speed of reaction and muscular movements. Physical training process can become even more specific and efficient when considering the pattern of motor gestures from sport fitness technologies. The understanding of the relationship between physical fitness and technical-tactical variables can be of great practical importance to coaches and students. In this context, the present investigation aimed at studying the relationship between physical fitness variables and huge varieties of athlete’s experiences. Students underwent a general standardized 10-min warm-up composed, for example, by: (i) moderate intensity run; (ii) Jumping jacks and vertical jumps; (iii) Joint movements and mobility, and; (iv) tests’ specific movements. Then, physical fitness tests were separated by 5 min rest periods and so on “only scientific researches dealing with the major fitness components of athletes (i.e. body composition and somatotype, aerobic and anaerobic profiles, muscular strength and power) and using accepted methods that provided relevant practical applications for a athlete’s fitness training and/or performance” (Yaitchnikov, 2009, p. 54). The combination may be recommended as alternation high intensity: actions in which the students tries to advance, progress or evolve with clear force, muscular strength or power with low intensity: actions with slow movements, with an apparent low level of applied force and power. During the analysis it was considered that the tactical actions to advance are not necessarily carried out in high intensity. In this sense, the effort & pause ratio was individualized, where effort has being considered as the periods between strength and pause command. The high & low intensity ratio could be also calculated “Therefore, previous information on the match status, reinforced by the knowledge that the exercise has a short duration, would enable prediction of changes in the context of the match, and consequently, in players’ pacing behavior (Ferraz, Gonçalves, Coutinho, & Ardigò, 2018) and so on.

It may be recommended from our practice also to carry out exercises with stuffed balls for development of speed & force qualities, and also in various imitating movements of various throws and pushes, as additional burdening as elements of physical fitness. The number of repetitions of each exercise is defined with the level of background physical fitness, specific features which are engaged. The quantity of series in one occupation 1-2, the weight of stuffed balls are from 0,5 to 2 kg. Exercises were carried out as certain students, and in couples, also in groups. The main objective of work with a stuffed ball is to develop speed and speed of reaction, endurance, accuracy, dexterity at the engaged students “require constant attention on the part of teachers and friends, encouragement, including in working with high-level

students. Among engaged in physical culture in this or that form the main motives, according to many studies” (Ignatyeva, 2016, p. 56).

Starting positions were like this: sitting, standing, being kneeling, standing on the left (right) knee. The following exercises are carried out from the listed starting positions with a ball in hands as: inclinations, turns, rotations of a trunk with various amplitude and rate of movements; squats; tossing and throws of a ball, pushing of a ball one and two hands from a shoulder, from breasts; ball throwing sideways one and two hands.

The most common forms of training were exercises in couples. For example, methodical instructions were as: speed fast and maximum, performance of exercises in a definite time, intensity increase. When performing exercises in couples the pass is carried out from standing positions, sitting, lying. In the course of training the following methodical receptions are applied as throws in couples on the maximum force; throws in couples on the maximum speed; throws or passes from various starting positions (standing, sitting on a floor, from a squat, etc.) “Regular practice, regular activity has a differential positive effect on some aspects of cognition can influence many functional aspects, leading to positive effects on both personality and cognitive factors, with implications in psychological well-being, and in the educational field” (Josepten, Etnier, Tomporowski, & Szabo-Reed, 2016, pp.1197–1222).

The usual mistake of beginners is that the student makes a throwing of a stuffed ball mainly at the expense of force of hands and the top humeral belt. Actually, it is necessary to work with all case, connecting muscles of legs, a press and a back throughout all time of performance of a throw as power, the blow in fight, boxing, volleyball and other sports attacking force and an orientation is provided by operation of the case (Coswig, Gentil, Bueno, & Del Vecchio, 2018). The emphasis, first of all, has to be placed on correctness and faultlessness of performance of exercises, with gradual subsequent increase of weight of a shell. Each throw of a ball needs to be done explosive and the most powerful. The second key moment is that the main emphasis of loading has to be directed not to hands, and to strengthening of muscles of a torso, in particular muscles of a press and a back. Exercises with stuffed balls are characterized by dynamism, a variety, availability and positive emotional colouring. We would suggest that the personality of athletes from individual sports could play a major role in the competitive output. This may be due to the omission of support from teammates to reach his/her objective (Andreato, Lara, Andrade & Branco, 2017).

It must be so noted that psychological control of the student’s physical achievements under our educational program that chosen psychological, psychophysiological tests were much more lasting with their beneficial effects in comparison with relevant results of physical exercises. Our long lasted research practice makes us possible to use very fruitful “Method of Colour Preferences” which consists of eight colored stimuli as pieces of paper. Blue, Green, Red, Yellow, Violet, Brown, Black, Grey is the order of the choice of the person which correspond his healthy psychoemotional status in standard opinion (Advances in neuroscience have resulted in linking physical activity to cognitive performance as well as to brain functions. The original evidence for such effects of exercise is obtained from psychological investigations such as Colour Preference Testing” (Gasyak, Suvorova, Tarasov, & Yaichnikov, 2016, p.263). Applied investigatory instrument named as the "Colour Marker of Behavioural Preferences", the express method of an assessment of the current psychoemotional readiness of the individual for the highest realization of his sports potential “The majority of components of sports performance, e.g. flexibility,

muscle strength, short term high power output, vary with days in a sinusoidal manner and peak such as “physical”, “emotional”, “intelligence” rhythms and should be recognized by athletic practitioners” (Shaposhnikova, 2005, p. 218).

Exclusively at the Introductory Training Cycle unfortunately there were not the possibility to classify several segments any of all 24 students with “Biorhythm’s Segment of Behavioural Efficacy” test because of identical continuance of education Cycle and the durations any of three physiological biorhythms periods “Athletes participating in a sport which suits their chronotype are more likely to train and perform optimally compared to athletes participating in a sport that contradicts their chronotype; elite and lower level athletes may take up differently” (Lastella, Roach, Halson, & Sargent, 2016, pp. 219–225).

However the test "Color Marker of Behavioral Preferences" may be defined the four-stage gradation of psychoemotional conditions of the individual immediately; These four gradations from creative and initiative to negative and passive allow expecting the main characteristics of the individual personal behavioural reaction to changes in the environment with big expected confidence. The “a” choice corresponds to behavioural style of the “Initiative, Creative Way to Overcome” any opponent’s initiatives (the first colour of choice is blue, green colour is the second one). The “b” choice corresponds to behavioural style of the “Stereotypic, Aggressive Way to Come to an Agreement” with any opponent’s initiatives (the first colour of choice is red, yellow colour is the second one). The “c” choice corresponds to behavioural style of “Habitual Indifference” to any opponent’s initiatives (the first colour of choice is violet, brown colour is the second one). The “d” choice corresponds to behavioural style of “Initial Aversion, Even Asocial Rejection” of any opponent’s initiatives (the first colour of choice is black, grey colour is the second one) “Advances in neuroscience have resulted in linking physical activity to cognitive performance as well as to brain functions. The original evidence for such effects of exercise is obtained from psychological investigations such as Colour Preference Testing” (Gasyak, 2016, p.263).

In control, reference group of seven students-athletes of high qualification (the Master of Sports and above), in a functional condition of whole rest after successful participation in competitions were characterized by order of colour choice as "a>b>c>d" for each athlete ( $P \leq 0,05$ , t) in the “Colour Marker of Behavioural Preferences” test. These indicators correspond to the most effective psychoemotional position of the certain athlete and all team in reaction to events.

Nevertheless at the Introductory Training Cycle all first year (semester) 24 students were divided into two groups on initial behavioural patterns. The group of 16 students was positioned in "Colour Marker of Behavioural Preferences" test as “a≥b>c≥d” so it is possible to interpret as "self-affirmation by persistence with tendency to the passive relation regarding the planned changes (for example, uneven academic loadings according to lesson schedule)". The students of this group who were initially showing the active relation to physical trainings with high rates in "Colour Marker of Behavioural Preferences" test are awarded ranks of "Favourable". Ranks of "Hesitant" are awarded 8 students with low indicators in "Colour Marker of Behavioural Preferences" test as “a≤b>c≤d”. The students of this group with the passive relation to physical trainings can be presented in characteristics as "inconsistent aspiration to success with tendency to realization of unclaimed properties of the personality (even where rather simple "conscientious learning"; distinctions in positioning of these two groups in a functional condition of absolute rest are reliable ( $P \leq 0,05$ ,t). It is very important to keep in memory that combination of indexes of this very



comfortable and useful test that characterizes Human Being's psychoemotional current state is more or less stable during 0,5-1,0 months before and after testing "Advances in neuroscience have resulted in linking physical activity to cognitive performance as well as to brain functions. The original evidence for such effects of exercise is obtained from psychological investigations such as Colour Preference Testing" (Gasyak, 2016, p.263).

## **6.2. At the proper Physical Training Cycle of semester**

At the proper Physical Training Cycle of semester (two months) students were to put into their operation such exercises as the variety of specific movements that is Flexibility, Upper Limbs Power, Upper Limbs Endurance, Abdominal Endurance (Sit-up test) with the maximum number of correct repetitions in 1-min, then with then High intensity, Low intensity actions etc. among other skills. However in common coordinated actions of the trainer and students made this process more interesting and productive.

For our wide experience of coaching there was the biggest surprise an aspiration of students to take physical activities of "FRAUDBALL" (Competitive Advantage Attitude) as a basis of educational physical training. As a result all subsequent training was based on students' emotions of preferences in development of dexterity, variability of application of game body-checks with consecutive aspiration to apply the got experience in the start-ups of their sports fighting education.

Competitive nature of physical activity performance imposes on the student personally the greatest psychological, emotional, somatic requirements, and from the other hand under command option there is great intellectual workload like dynamic creation of tactical and strategic schemes during all game for achievement of a victory, both for command, and especially personal.

Having taken sports game pithiness of handball "require constant attention on the part of teachers and friends, encouragement, including in working with high-level students. Among engaged in physical culture in this or that form the main motives, according to many studies" (Ignatyeva, 2016, 56P) as a basis we enhanced a factor of uncertainty, unpredictability of game situations to the most maximum level by insertion of the third team was named "SHARP" which has absolutely nothing to protect (Goal in Handball), but which can achieve any victorious indicators the only by overcoming the defence of each of two traditional rival teams named "OWNER".

The method to be The Winner for "SHARP" is the only to use natural game antagonism against each other of two traditional rival teams; therefore the initial name for our created investigatory game which is so complex, extreme combinatory, situational physical loading turned out is "FRAUDBALL", "Competitive Advantage Attitude".

Within eight minutes of the initial first stage of "FRAUDBALL" the "SHARP" team originally may plays four minutes strictly as the member of any team of the "OWNER", and then the "SHARP" team has a transition (CHANGE) to structure of other "OWNER" team. Thus, "SHARP" team becomes the member of this other new "OWNER" team and now plays strictly in new structure all final four minutes of the first period of "FRAUDBALL". Any team of the "OWNER" during four minutes of the first period of game, in the next four minutes according to rules there is a change of a line-up and the "SHARP" team now plays in structure of the second "OWNER" team. Thus, all whole first period of game all the time happens to the relation of forces as 2:1, but unusual manner.

However the CHANGE condition consists of several variants. The CHANGE condition may appear every 2 min. automatically on a sound signal, or CHANGE condition is carried out on a sound signal arbitrarily by the trainer, however, in the sum total interval for each "OWNER" team must be equal to four minutes and, at last, intervals of CHANGE conditions are set by the Captain of "SHARP" team. At this variant the trainer may only control total time four minutes. Students called such third mode of game which is fallen in love by it as «extreme».

One of the "OWNER" teams leaves game upon termination of the first period if it scored in the first period less points, than other "OWNER" team. Thus, in the second, last period of game, the SHARP team becomes the owner of goal and continues fight against the remained "OWNER" team.

In the second, last period of game the "OWNER" team has tactics and strategy of game practically same, as in traditional handball, however for the "SHARP" team it is not so, it is the most interesting for it. It is improbable, but if by the second period the "SHARP" team has more points, than "OWNER" team has, so chance of a victory for the "SHARP" team is very considerable.

The "SHARP" team has to finish the second period of game with the minimum gap on points with the "OWNER" team, the winner of the first period. Otherwise the "SHARP" team will not be able to liquidate a gap on points which was formed in the game 2:1 mode, in the mode of game of the second period 1:1. In the second period both the "SHARP" team and the "OWNER" team play practically by rules of traditional handball.

The initial line-up is formed differently. At the beginning of a semester the line-up is defined by the decision of the trainer, in the second and third month the line-up is determined by personal preferences of students, and at the end of a semester the line-up is defined by a selection competition in indicators of psychological testing, delta pulse of loadings, tests of physical and sport fitness during all semester since all students want to be in the "SHARP" team. This is the magnificent pedagogical success of the detection and selecting true sport fighters.

Thus our students strongly exhibited their main motivation according trainings that is "Competitive Advantage Attitude". As a result there was expedient a fixing of skills of performance by the student of biomechanical patterns of concrete physical exercises to control in time, free from "FRAUDBALL".

Those students at the Control Cycle of the Semester who were regularly carrying out physical activity of FRAUDBALL on an extent of all Cycles and not just exercises of the variety of specific movements were positioned upon termination of the Cycle in the "Colour Marker of Behavioural Preferences" test in such values as  $a \geq b \geq c > d$  or otherwise - "self-affirmation by persistence though is inconsistent, but with confidence in good luck" that corresponds to positive dynamics of psychophysical development ( $P \leq 0,05, t$ ). So those students were included in "Favourable" group in total of 19 students. Their hemodynamic index « $\Delta P$ » ("Pulse` Fitness Event Value") of educational and training occupation authentically decreased on 12-19 blows in 1 min. ( $133 \pm 8$  119 $\pm 8$ mt,  $P \leq 0,05, t$ ).

### **6.3. Outcome Period of trainings**

At the time three students (from group Favourable of the Introductory physical training cycle of the semester) who irregular visited of occupations of a semester of trainings were characterized with the following registered indicators: the pulse cost of occupation remained high ( $145 \pm 7$  139 $\pm 9$ mt  $P \geq 0,05, t$ ),

positioning in the "Colour Marker of Behavioural Preferences" test as  $a \geq b > c \leq d$  or otherwise "self-affirmation situational, inconsistently though to new, but in aspiration to a privacy, to evasion from adoption of obligations" (for example, in regular visit of occupations) that moved them to Hesitant group. To the contrary, six students in Hesitant group of the Introductory Cycle, who were carrying out systematically FRAUDBALL on the semester extent, and not just exercise of the prolog of usual training and other occupation were positioned in the "Colour Marker of Behavioural Preferences" test upon termination of a semester in such values as  $a \geq b \geq c > d$  or otherwise - self-affirmation through recognition (for example, a positive assessment in the magazine of performance of the developing loadings), through obvious success, but at aspiration and manifestation of emotional "merge" to a pedagogical assessment of the carried-out exercises that corresponds to positive dynamics of psychophysical development ( $P \leq 0,05$ , t); at the same time the « $\Delta P$ » of educational and training occupation authentically decreased on 17-22 blow in 1 min. ( $144 \pm 7$  121  $\pm 9$  mt  $P \leq 0,05$ , t); thus these six students moved to Favourable group. In the same group, however, at irregular visit of occupations, the fixed values of indicators were the following « $\Delta P$ » ("Pulse` Fitness Event Value") of occupation decreased to a lesser extent ( $149 \pm 9$  137  $\pm 9$  mt  $P \geq 0,05$ , t) and positioning in the "Colour Marker of Behavioural Preferences" test as  $a \geq b \leq c \leq d$  or otherwise the self-affirmation stereotypic, situational, passive, i.e. for all semester of positive dynamics in a psychoemotional state is not revealed.

So the general result of the semester was as follows: in educational group of twenty four students nineteen students were assess as "active" (that is Favourable) and five were assess as "passive" (That is Hesitant) in the relation of a psychoemotional state and physical development and experienced in "competitive relations" enough.

## 7. Conclusion

The first-year student who chose the teacher, the fighter's trainer naturally initially wants to develop in himself qualities of the Leader, of the Winner. The trainer's task practically is in helping this student to reunite instinctive aspiration to the vital purpose with practice of introduction through unity of personal physical development as an absolute condition with a psychological maturity which at each stage of life is shown by means of realization of "Instinct of Purpose" which in psychology is defined as "Purposeful Desire in Realization by Competitive Advantage". And otherwise training complex psychological qualities, which is sometimes called the "Instinct Winner" t. e. education setting for the victory; if the future athlete is adjusted to ensure that "no lose", the chances of it to the big win small. Therefore we designed the set of vigorous physical exercises and complex psychological challenges in a game form of achievement of competitive advantages by designed sports game "FRAUDBALL".

Due to such common enthusiastic efforts of students and trainers excellent results were obtained. Firstly, the students were taught to monitor their current psychoemotional condition which stipulated their ability in the general physical working capacity "right now"; the tests "Biorhythm`s Segment of Behavioral Efficacy" and "Color Marker of Behavioral Preferences" used by oneself and helped them in their Purposeful intention in self-realization by "Competitive Advantage".

At the end of educational semester significant difference was reached in "Physical Working Capacity", "PWC170", it raised up to 6,3 kgm/min/kgbm (Satisfactory Level) and even 9,5 kgm/min/kgbm

for “Favourable” group of students. As for hemodynamic signs by « $\Delta P$ » as “Pulse` Fitness Event Value” it was so marked success and for one lesson equals “minus 8-14” after the semester program of education was over.

In conclusion to the best of the authors’ knowledge, in these innovative pedagogic efforts we’d had propose to design students’ natural ability to self-development be as effective as it may be possible with their initiative under versatile program of education.

## Acknowledgments

The authors warmly thank all the subjects who enthusiastically participated in this study and provided such reliable information and data. As well the authors warmly thank all Institutes and Educational Departments of St.-Petersburg Peter the Great University whose students were educated at the Institute of Physical Culture, Sport and Tourism and used their beginning engineering abilities to help treating obtained experimental data under modern software and hardware.

## References

- Andreato, L. V., Coimbra, D. R., & de Carvalho, T. (2017). High-intensity interval training vs. moderate interval training: the lack of equalization, an ongoing problem. *Obes Rev.* 2017, 18(10), 1223-1224. doi: 10.1111/obr.12583. Epub 2017 Jul 21.
- Anishenko, A. P., Arkhangel'skaia, A. N., Zaborova, V. A., Karganov, M. Y., Alchinova, I. B., Polyakova, M. V., ... Gurevich, K. G. (2018). Three-year dynamics of the changes in the physical fitness, anthropometric development, food preferences, and metabolic changes in the students trained according to the modified methodology of physical culture. *Vopr Kurortol Fizioter Lech Fiz Kult.*, 95(4), 31-40, (in Russian) doi: 10.17116/kurort20189504131.
- Bolotin, A.E., Schegolev, V.A., & Bakaev, V.V. (2014). Educational technology of use of means of physical culture to adapt for future professional work, *Theory and Practice of Physical Culture*, 7, 5, (In Russian).
- Bolotin, A., & Bakayev, V. (2018). Pedagogical practice for development of coordination potential of MMA fighters and estimation of its efficiency. *Journal of Human Sport and Exercise*, 13(1), 72-88. doi: 10.14198/jhse.2018.131.08
- Cowden, R. G. (2016) Mental Toughness, Emotional Intelligence, and Coping Effectiveness: An Analysis of Construct Interrelatedness Among High-Performing Adolescent Male Athletes. *Percept Mot Skills.* Dec, 123(3),737-753.
- Fabio, R. A., & Towey, G. E. (2018). Cognitive and personality factors in the regular practice of martial arts. *J Sports Med Phys Fitness*, 58(6), 933-943. doi: 10.23736/S0022-4707.17.07245-0
- Ferraz, R., Gonzalves, B., Coutinho, D., Marinho, D.A., Sampaio, J., & Marques, M.C. (2018). Pacing behaviour of players in team sports: Influence of match status manipulation and task duration knowledge. *PLoS ONE*, 13(2), e0192399. doi:10.1371/journal.pone.0192399
- Handbook on Human Physiology (6th ed.). (2011), Moscow: “Sovetski Sport” (in Russian).
- Ignatyeva, V. Ya. (2016). *Theory and technique of handball*. Moscow, «Sport». (In Russian).
- Josepsten, E. D., Etnier, J. L., Lee, Tomporowski, S. P., Lambourne, K., & Szabo-Reed, A. N. (2016) Physical Activity, Fitness, Cognitive Function, and Academic Achievement in Children: A Systematic Review. *Med Sci Sports Exerc*, 48(6), 1197–1222.
- Lastella, M., Roach, G. D., Halson, S. L., & Sargent, C. (2016, December 1) The Chronotype of Elite Athletes. *J Hum Kinet*; 54, 219–225. doi:10.1515/hukin-2016-0049
- Lutchenko, N. G., Perevoznikova, N. I., & Ivanov, V. G. (2018) Management of process of game activity. Strategic directions of reforming of high school system of physical culture. In: A. Lipovka (Ed.), *the Fifth Annual Symposium: Institute of physical culture, sport and tourism*, (pp. 42-46). St-Petersburg: Publishing house: Peter the Great Polytechnic University (In Russian).

- Mokha, A. A. (2018) Physical activity and physiological requirement of an organism of students. Strategic directions of reforming of high school system of physical culture. In: A. Lipovka (Ed.), the *Fifth Annual Symposium: Institute of physical culture, sport and tourism*, (pp. 281-285). , St-Petersburg: Publishing house: Peter the Great Polytechnic University (In Russian).
- Namazov, A. K., Evseev, V. V., & Kushelev, S. A. (2018) Actual problems of adaptation of first-year students to training conditions in the University. In A. Lipovka (Ed.), *the Fifth Annual Symposium: Institute of physical culture, sport and tourism*, (pp. 297-299). St-Petersburg: Publishing house: Peter the Great Polytechnic University (In Russian).
- Shaposhnikova, V. I., & Taymazov, V.A. (2005) *Chronobiology in sport*. Moscow: Sovetsky sport. (In Russian).
- Shchegolev, V. A., & Piskun, O. E. (2018) Theoretical and methodical mechanisms of education of student's collectives with use of means of physical culture and sport. In A. Lipovka (Ed.), *the Fifth Annual Symposium: Institute of physical culture, sport and tourism* (pp. 258-264). St-Petersburg: Publishing house: Peter the Great Polytechnic University (In Russian).
- Shchegolev, V.A., Sushchenko, V.P., & Piskun, O.E. (2017). Students' attitudes toward all-Russian physical culture and sports GTO complex (ready for labor and de-fence), *Theory and Practice of Physical Culture, No 3*, 57-59, (In Russian).
- Sukhanov, N. S., Serebrova, T. M., & Yaichnikov I. K. (2017) Applied psychological monitoring of the students' developing under the physical training education in polytechnic university. In A. Lipovka (Ed.), the *Fourth Annual Symposium: Institute of physical culture, sport and tourism*, (pp. 436-443). St-Petersburg: Publishing house: Peter the Great Polytechnic University (In Russian).
- Sushchenko, V. P. (2013). Conceptual approaches in creation of system of physical training of staff of divisions of special appointment. In V. Taymazov (Ed.), *VI International Congress "SPORT, PERSON, HEALTH"* (pp. 85-86), Publishing House of St. Petersburg State University. (In Russian).
- Sushchenko, V. P., Shchegolev, V. A., & Korshunov, A. V. (2016). Features of personal and professional development of various professional categories in physical culture and sport, *Theory and Practice of Physical Culture, 6*, 3-5, (In Russian).
- Vcoswign, V., João, G. P., Bueno, C.A., Follmer, B., Marques, V. A., & Del Vecchio, F. B. (2018) Physical fitness predicts technical-tactical and time-motion profile in simulated Judo and Brazilian Jiu-Jitsu matches. *PeerJ. 2018, 6, e4851*. doi: 10.7717/peerj.4851
- Volkov, V. N., Namazov, A. K., & Ustinova, O. N. (2017) Physical training of the university students under experience of the multidisciplinary approach. In A. Lipovka (Ed.), the *Fourth Annual Symposium: Institute of physical culture, sport and tourism*. (pp. 281-285). St-Petersburg: Publishing house: Peter the Great Polytechnic University (In Russian).
- Yaichnikov, I.K. (2009) *Testing of general physical working capacity in terms of cardio-vascular and thermoregulatory systems: teaching aid*. St. Petersburg: Lesgafit NSU (In Russian)