

Game method to increase students' motivation to engage in elective disciplines in physical culture and sports

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Abstract

Background and Study Aim A serious problem when using the play method in training sessions is the regulation of physical activity. For students with poor health, high emotionality of classes and intense rivalry between teams can lead to undesirable consequences for health. Purpose of the research: assessment of the effectiveness of the game method to increase the motivation of students to engage in elective disciplines in physical culture and sports.

Material and Methods The study involved first-year students of Sochi State University (Russia) (n=25), with different experience in physical culture and sports. The training sessions (6 hours a week) lasted two academic semesters (9 months) and included outdoor games. A daily «scan» of the current functional state of the students was carried out by heart rate, express scales («Emotional excitement and physical fatigue» and «Well-being-Activity-Mood»). The indicators of general physical fitness of students were registered. The results were analyzed in Microsoft Excel 2010 computer programs. The significance of the change was determined by the Wilcoxon test using the significance level $p \leq 0.05$.

Results The use of a large number of outdoor games and relay games in the classroom contributed to the increase of students' motivation to engage in elective disciplines in physical culture and sports. Which led to almost 100 % of class attendance and improved agility, flexibility and endurance indicators among students ($p < 0.05$). There was a decrease in the indicator in the test «pulling up on a high bar» among young men ($p < 0.05$).

Conclusions: The study showed new prospects for using the game method in the classroom not only with homogeneous groups of students, but also with students with different levels of physical fitness and health. By manipulating the composition of the playing teams, each of the participants was regularly provided with strong and varied emotions. That increased the interest in students attending classes. The use of the «Express-control» system for the current functional state of the trainees (primarily for students with weakened health) ensured prompt correction of the intensity of physical activity.

Keywords: students, outdoor games, relay games, class classification, express control, functional state, physical fitness.

Introduction

A person in the process of his life goes through certain stages of development [1], on the overcoming of which his further well-being and health largely depends. The most critical phase is the end of adolescence, which coincides with the admission of a young person to a higher education institution. At this stage, students become independent and responsible for their own lives, especially if they are far from the parental home [2].

The World Health Organization (WHO) has repeatedly emphasized the need for sufficient physical activity for the health of today's youth [3, 4]. Its certain level contributes to physiological and psychological resistance to stress [5] and mental health [6, 7].

At present, there is a decrease in the attention of society to the physical education of young people, both in Europe [8–10] and America [11–13], and in Russia [14, 15]. Experts point to the need to increase the level of physical condition and motor activity of students by increasing the number of physical culture lessons [16] with a weekly motor regime exceeding 4–6 hours [17–20].

It is advisable to stimulate physical activity by increasing the motivation of students to independent motor activity [21–23].

A significant positive factor can be the use of modern pedagogical technologies and new types of physical activity in the activities of the university. The implementation will allow attracting students to regular physical education and sports classes. To form in them a value attitude towards a healthy lifestyle [24]. Adaptation of high technologies of sports training to the needs and conditions of physical education of young people is perspective. And also the use of the «activity approach» in the process of teaching and upbringing, with a change in the relationship between the participants in the pedagogical process. The authoritarian pedagogy should be replaced by the pedagogy of cooperation [25].

Outdoor games are an effective means of increasing youth motivation for physical activity. Scientific researches of Russian scientists reveal the peculiarities of the use of outdoor games in folk traditions [26–31], in classes with schoolchildren and students [32–34] and sports training [35–37]. The authors note that the use of the game method allows you to diversify the relationship

between those involved (colleagues and rivals), and the application of the rules contributes to the development of moral and ethical standards of behavior. The unpredictable development of the game requires the participants to show initiative and creativity in order to achieve success.

For students of the academic group with disabilities, you can choose feasible roles in outdoor games, which allows you to include in the classroom all, without exception, those present [38]. During training sessions, students are taught to change the content of outdoor games for their further use in various conditions of the resort (on the water, on a sandy beach, etc.) [39, 40].

The use of informal sports and game-oriented classes will intensify physical activity in comparison with traditional forms of physical culture in universities, both for students with good physical training, as well as for people with weakened health [41–43]. However, there is a concern that coordinated and physically prepared students will dominate the game-oriented classes, leading to the passivity of other participants in the class. Forming in them an inferiority complex and a decrease in interest in classes.

A serious problem when playing games can be the lack of rationing of physical activity. That, for students with poor health, with high emotionality of classes, and acute rivalry between teams, can lead to undesirable consequences.

It should be noted that students studying in the Sochi region are in a special natural and climatic zone of Russia and in a year-round entertainment and recreational atmosphere. The mastery by students of a large number of outdoor games provides an opportunity to use this experience during outdoor activities with relatives and friends. And also in his future career, applying this experience at corporate events.

At the same time, the population of the Sochi region is historically different in mentality, traditions, ways of earning and resting from the inhabitants of other regions of the South of Russia. This is due to the atmosphere of a constant holiday and a large number of entertainment events for the guests of the resort. Sochi youth, accustomed to this atmosphere, are less interested in physical culture and sports, compared to youth in other regions of Russia. What determines the relevance of our research.

Purpose of the research: assessment of the effectiveness of the game method in increasing the motivation of students to engage in elective disciplines in physical culture and sports.

Materials and Methods

Participants.

The research involved first-year students of Sochi State University (n=25), studying in the profile «Service of engineering systems of hotel and tourist complexes and sports facilities» (10 boys and 15 girls). The formation of the contingent of the subjects took place in a random way: the students were of the same training group, with different experience in physical culture and sports. Among them there are two former highly qualified athletes who have

been engaged in rhythmic gymnastics for 7-10 years, 4 people – young men who are fond of football and strength training equipment. And also 4 students who did not go in for physical education at school for health reasons. The approval of Sochi State University (Russia) Ethics Committee was obtained for the study to be implemented. All procedures conducted were accordance in with the Declaration of Helsinki.

Research Design.

The main part was held with more than 7 dozen outdoor games taken from collections of Russian and Western European folk outdoor games and relay games. Preference was given to games that could be used in the conditions of the water resort [40, 44, 45]. For the convenience of teachers, they were presented in the classification of play-oriented classes (Table 1).

In the classroom, the composition of the playing teams was manipulated so that the students' activities were conducted in different conditions, allowing everyone to feel strong emotions, both from victories and from defeats.

The final part (exercises for strength, flexibility; the simplest exercises from yoga and qigong), with a summary of the lesson, a survey of well-being and a task for self-fulfillment. Duration of classes per week – 6 academic hours.

Particular attention was paid to monitoring the current functional state of the trainees. This is due to the complex relationship between heart rate and subjective perception of load in play [45]. Therefore, we made an attempt to use the technologies of current control of members of the USSR / Russian national teams [46] and tourists at water resorts [47].

Such diagnostics, if possible, should be carried out repeatedly during the lesson, and monitor the condition of the trainees when they perform physical activities. The methodological principle «Obtaining the maximum of information with a minimum of recorded indicators» is used, and the introduction of a multi-level control system:

Level 1 – visual methods of monitoring the state and behavior of a student;

Level 2 – a survey of those in poor health (if necessary) about their health, degree of physical fatigue, mood, etc.;

Level 3 – diagnostics of the current functional state of the body by registering the pulse (resting heart rate, etc.);

Level 4 – diagnostics (if necessary) of individual systems of the human body using the simplest, hardware-based express methods (heart rate dynamics after exercise, blood pressure measurement, etc.);

Level 5 – in some cases, examination of a student using modern instrumental techniques in a sports dispensary, polyclinic or diagnostic center [46, 47].

In our classes, we used daily express scales of visual control of the level of emotional arousal and the degree of physical fatigue of the trainees (Table 2).

If necessary, the subjective feelings of students about their health were specified – «Express-health-activity-mood» (Table 3).

Table 1. Classification of game activities of students

Signs	Groupings				
By the number of players	Singles (individual)		Small group (2-4 people)		Mass (group, team)
The nature of motor activity	Low activity (in motor actions actively for a relatively long time, one or two students alternately participate; those involved move freely or perform small calm movements)		Average activity (active participation of all students in motor actions; active participation of individual students or small groups of students in motor actions)		Great activity (active and simultaneous participation of all students in motor actions; active and alternating participation of groups engaged in motor actions)
Game content	Simple (easily surmountable obstacles, elementary student interactions)			Complex (insurmountable obstacles, complex interactions of students)	
Typical actions	Freestyle	Rhythmic		Role-playing	Creative
Manifestation of physical qualities	Agility (quick transition from one action to another; combination of one's actions with the actions of other students; ability to focus on several actions)	Quickness (timely motor responses to visual, tactile, sound signals; overcoming short distances in the shortest possible time, in changing conditions)	Strength (short-term muscle tensions of a dynamic and static nature)	Endurance (repeated repetitions of active, vigorously performed actions associated with continuous intense movements, in which active actions alternate with short rest pauses, transitions from one type of movement to another)	Flexibility (motor actions with a large amplitude; movements to music in combination with dance steps, using objects that help to acquire a sense of rhythm, plasticity of movements, the ability to feel the speed and duration of movements, regulate muscle efforts; climbing and climbing)
Entertainment	Attractions (effectively demonstrated motor actions that require composure and endurance)			Competitions (identifying the best among the participants in the game)	Fights (wrestling of two or more opponents)

Table 2. Scale-questionnaire «Express-FAM» to clarify the current functional state of those involved

Level (points)	FEELING	ACTIVITY	MOOD
10	Best for many years	I am burning with desire move	The most joyful moment in my life
9	Excellent	Very large desire to move	Everything is fine everything works out
8	Very good	I really want train	Great, everything goes fortunately
7	Good, nothing does not hurt	I want to train	Good
6	Good	I wanted a little to practice	Above average
5	Daily, normal	Indifferent	Normal, normal
4	Not very good	Probably no need to train today	Slightly spoiled
3	Bad (malaise)	I do not want train	Bad
2	Very bad	I don't want to even move	Very bad continuous failures
1	Disgusting (is ill)	Extremely negative attitude towards training	Disgusting, major failures
0	Terribly sick, hard to move	One thought of training is disgusting	Catastrophic position, shocked by what has fallen on me

Under unfavorable conditions of students (in the tables highlighted in yellow and red fields, according to the type of «Traffic light»), the physical load decreased. Heart rate measurements (with devices «Xiaomi Mi 4c», Yingu Mansion, China) during the training allowed to control and quickly change the intensity of physical activity. The methods of direct and indirect regulation of the intensity of motor activity were used.

For the training sessions, teachers selected outdoor games and relay games with the maximum number of participants [48]. Guided by the recommendations that play-based learning «may in fact be the dominant technology of education». And by manipulating the composition of the playing teams, so that each of the students regularly has the opportunity to openly show emotions, both from victories and from defeats.

Pedagogical observation made it possible to identify students who showed initiative, providing a variety of exercises, high density and intensity of classes.

Changes in the indicators of general physical fitness of students were recorded (Table 4).

Statistical Analysis.

The indicators were analyzed in Microsoft Excel 2010 computer programs: arithmetic mean (\bar{X}), standard

deviation (σ). The reliability of changes in the results was determined by the Wilcoxon test, using the significance level $p \leq 0.05$.

Results

The first survey in September 2018 (fourth column of Table 4) showed satisfactory (on average for the group) physical fitness of Sochi students. For example, this table (third column) shows the requirements for the «Bronze Sign» of the «Ready for Labor and Defense» (TRP) complex adopted in Russia. However, some young people were completely unaccustomed at school to intense physical activity in physical education classes.

For 9 months of playing activity, an improvement in the indices of dexterity, flexibility and endurance of the trainees was revealed ($p < 0.05$). The indicator of «pulling up on a high bar» in boys decreased ($p < 0.05$) (Table 4, Figure 1).

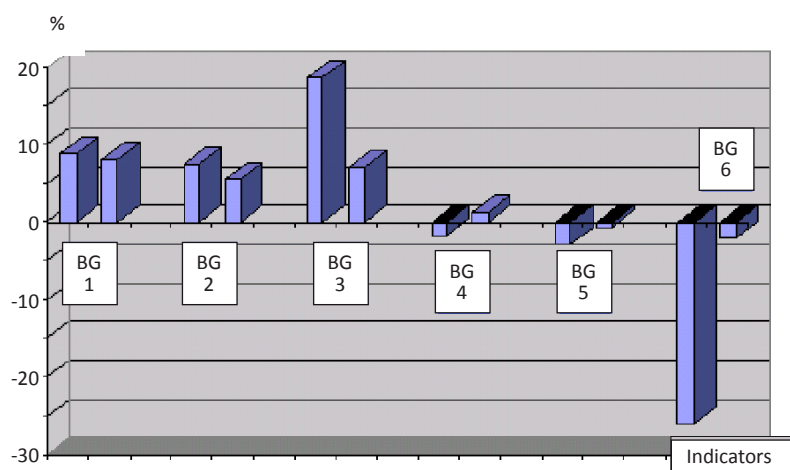
Pedagogical observation allowed the identification of students who showed initiative, providing a variety of exercises, high density and intensity of classes and used by such students as teaching assistants.

Table 3. Visual control of the level of emotional arousal and the degree of physical fatigue involved

Level (points)	Visual symptoms of emotional arousal	Visual symptoms of physical fatigue
10	He is very tense: teeth grin, lips like a «tube», sucking movements, eyes twitch (turns sharply).	Severe redness of the skin (or unnatural pallor); delayed reaction, inattention.
9	Severe stiffness: accompanying movements with the whole body; tremor of arms, legs, face. The speech is scandalous, harsh, breaking down.	Great nervousness. Impaired coordination.
8	Strongly agitated: teeth are clenched, breathing is sharp, anxious look, running; shoulders are raised, awkward movements;	Significant redness of the skin; inattention, uncertain movements (with errors). Reduced susceptibility to new information.
7	tremor of arms, legs. Speech hoarse, rough.	The mood is muffled.
6	Visibly agitated, anxious, teeth clenched. Movements with noticeable effort; slight tremor of the fingers.	Slight redness of the skin. The appearance of errors in movements; decrease in accuracy.
5	Speech is slightly staccato.	The mood is average.
4	The brow is furrowed, the eyebrows are raised, the corners of the lips are lowered.	Slight redness of the skin; confident movements; Follows instructions completely.
3	The movements are normal. The speech is calm.	The mood is joyful and lively.
2	Cheerful, calm, self-confident. Breathing is even.	Excellent coordination. Reducing the pause of rest.
1	Completely relaxed. The speech is calm, lazy.	Great mood.

Table 4. Change of indicators of general physical fitness of students going in for sports and outdoor games

No	Indicators	Contingent	TRP requirements for the «Bronze Sign»	September 2018 ($\bar{X} \pm \sigma$)	May 2019 ($\bar{X} \pm \sigma$)	p
1	2	3	4	5	6	7
1	Shuttle run 3×10 m (s)	Boys	8.0	7.9±0.4	7.2±0.4	p<0.05
		Girls	9.0	8.6±0.5	7.9±0.5	p<0.05
2	Cooper's test (12 min run) (m)	Boys	-	2000.0±429.2	2141.3±346.4	p<0.05
		Girls	-	1887.5±196.7	1992.1±204.0	p<0.05
3	Lean forward from a standing position on a gymnastic bench (cm)	Boys	+6.0	+7.5±5.3	+8.9±6.3	p<0.05
		Girls	+8.0	+18.2±7.8	+19.5±6.2	p<0.05
4	Standing long jump (cm)	Boys	210.0	203.0±22.9	199.6±50.0	p>0.05
		Girls	170.0	159.1±20.4	161.0±22.8	p>0.05
5	Raising the body from a prone position, for 1 min (times)	Boys	33.0	51.6±3.7	50.1±6.9	p>0.05
		Girls	32.0	44.6±6.7	44.3±7.2	p>0.05
6	Pulling up on a high bar, (times)	Boys	10.0	10.0±6.3	7.4±6.2	p<0.05
		Girls	10.0	13.6±7.8	12.9±5.4	p>0.05
	Flexion-extension of the arms, in the lying position, (times)	Girls	10.0	13.6±7.8	12.9±5.4	p>0.05


Figure 1. Changes in the indicators of physical readiness of students involved in sports and outdoor games: 1 – shuttle run 3×10 m; 2 – Cooper's test (12 min run); 3 – lean forward from a standing position on a gymnastic bench; 4 – long jump from a place; 5 – raising the trunk from a prone position, in 1 min; 6 – pulling up on a high bar (boys), flexion-extension of the arms, in the lying position (girls).

Discussion

Pedagogical observation and survey showed a high motivation for playing activities, which fully coincides with the results of other researchers [49–52].

The wide use in the classroom of a varied combination of outdoor games and relay games, taking into account the interests of students, ensured an increase in attendance up to 100 %. Students who were exempted from practical physical education classes at school (for health reasons) began to attend systematically. A positive emotional attitude and high physical activity required monitoring the state of the trainees and prompt correction of the intensity of physical activity. The formation of students' social confidence among their peers and in communication with teachers was carried out, as noted in the studies of other authors [28]; the development of the legal foundations of gaming activities took place [30]. The skills and abilities

of playing games were practiced, which they may need even in later family life in contact with children [32, 34].

Gaming-oriented classes contributed to the creativity of the students, which coincides with the data of other researchers [35, 37] and the change in the relationship between the participants in the pedagogical process in the systems «teacher-student» and «student-student». There was a change from authoritarian pedagogy to pedagogy of cooperation. Introducing students to traditions, conducting folk outdoor games [26].

At the beginning of the pedagogical experiment, an increased desire of young men to engage in the development of strength, to the detriment of other physical qualities, was noted. For girls – the development of flexibility. But both of them gladly took part in outdoor games, including students who had not previously been involved in physical culture. That required increased

attention of teachers to this group and regular use of the express control system of their current functional state.

The studies have proved the high efficiency of the game method in increasing the motivation of Sochi students to engage in elective disciplines in physical culture and sports. That, with the manipulation of the composition of the involved teams, and in combination with the use of the «Express control» system for the current functional state of students (for the operative correction of the intensity of physical influences), provided adequate physical activity in the group, both for well-trained athletes and persons with weakened health.

The lack of modern inventory and equipment of the gym and the small amount of time allotted in the curriculum for classes in elective disciplines in physical culture and sports did not allow to achieve the desired improvement in all indicators of physical fitness in full.

Conclusion

The study showed new prospects for using the game method in the classroom not only with homogeneous groups of students, but also with people with different levels of physical fitness and health. By manipulating the composition of the playing teams, each of the participants

was regularly provided with strong and varied emotions. That increased the interest in students attending classes. The use of the «Express-control» system for the current functional state of the trainees (primarily for persons with weakened health) ensured prompt correction of the intensity of physical activity.

Since long-term pedagogical observations have revealed a tendency towards a gradual decrease in the motivation of Sochi students to engage in physical culture and sports, as they move to senior courses of study (change of interests, search for a partner for family relations, employment, etc.), it would be interesting to implement long-term pedagogical observations of students of this group during their studies at the university. To assess the impact on participants in this group of quarantine measures during the coronavirus pandemic. To study the weekly physical activity, and the use of the arsenal of outdoor games learned in the classroom during picnics in nature with relatives and friends.

Conflicts of interest

The authors of the article declare that there is no conflict of interest.

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