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Special Aspects Of Preparation Of Student`s Teams For Competitions In Rugby.

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ABSTRACT

Purpose: to develop a special program for the preparation of student rugby teams. Methods: The basic method of research is the pedagogical experiment, which provided training to the technical elements of the game with the parallel development of physical qualities and the effects of hypoxic training. In the process of hypoxic training, the parameters of the cardiovascular and respiratory systems. In addition, the percentage of carbon dioxide ($FeCO_2$) and oxygen in the exhaled air (FO_2). In order to establish the interrelation and dependence of the level of special preparedness on physical, technical and hypoxic training, correlation and regression analysis were used, which allowed establishing the role of each factor in achieving the result of competitive activity. Research materials: the conducted studies show that the preparation of student teams of rugby players should be based on the preliminary selection of students with an average, good and excellent level of physical preparedness. Any training should include physical, technical and hypoxic orientation. This is confirmed by a statistically significant increase in all levels of preparedness. Conclusions: the results of the conducted studies revealed the adaptive regularities of the body of rugby students to training influences. Development and inclusion in the training process of a special program of targeted physical, technical and hypoxic effects significantly speeds up the process of preparing student rugby teams for competitive activities.
Keywords: rugby, physical, technical and hypoxic preparation.

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INTRODUCTION

Preparation of sports teams in higher educational institutions causes considerable difficulties, since they are caused by the time limit for the study of special subjects. Therefore, coaches in various sports, including rugby, face a choice of priority areas for the training of athletes (Korsun S.M., Perevoznik V.I., Pyatysotsky D.V. & Shaposhnikova I.I., 2001; Korsun S. M., Pyatysotsky D.V., Marchenko V.A., Shaposhnikova I.I. & Perevoznik V.I., 2002; Kozina ZH.L., Grinchenko I.B., Vaksler M.A. & Tikhonova A.A., 2008; Kozina Zh.L, Kondak N.N., Koval M.V., Paschenko N.A. & Kirsanov N.V., 2011; Kozina Zh.l., Barybina L.N. & Grin' L.V., 2010; Cleary T.J., Zimmerman B.J. & Keating Tedd, 2013 and Delaney J.A., Thornton H.R., Pryor J.F., Stewart A.M., Dascombe B.J. & Duthie G.M., 2017).

Despite the fact that training in game sports, and especially in rugby, is based on subjective approaches, but there are already research materials (Gabbett T.J., Stein J.G., Kemp J.G. & Lorenzen C., 2013; Taylor R.J., Sanders D., Myers T., Abt G., Taylor C.A. & Akubat Ibrahim, 2018 and Rovniy Anatoly, Pasko Vladlena, Dzhym Viktor & Yefremenko Andriy, 2017), which indicate that the training of the rugby teams should be based on the physical, technical and hypoxic orientation of the training sessions in conditions that are as close as possible to the competi- tive qualitative characteristics of competency (Pasko V.V. 2014, 2016; Speranza M.J.A., Gabbett T.J., Greene D.A., Johnston R.D. & Sheppard J.M., 2017 and Dobbin Nick, Hunwicks Richard, Jones Ben, Till Kevin, Highton Jamie and Twist Craig, 2018).

In student teams, these characteristics are significantly different from professional teams, as their composition often changes.

Nevertheless, the selection of players in student teams should be based on the availability of the necessary level of their physical, technical and hypoxic preparedness.

A characteristic feature of rugby is jerking and halting motor activity, which is a manifestation of speed-strength endurance (Podoliaka O.B. & Pasko V.V., 2011; Pasko V.V., 2016; Martyrosyan Artur et al., 2017; Thornton H.R., Delaney J.A., Duthie G.M. & Dascombe B.J., 2018; Hulin B.T., Gabbett T.J., Johnston R.D., Jenkins D.G., 2018 and Filenko L. et al., 2018). In addition, players constantly engage in power combat with an opponent, which requires a high level of development of strength qualities.

Multiple manifestations of motor actions and techniques can be provided only against a background of high level of general and special endurance, vestibular stability and coordination abilities.

The lack of scientific and methodological literature on the preparation of student sports teams has determined the subject matter of our research.

Purpose of the research.

To develop a special program for the preparation of student teams in rugby.

METHODS AND ORGANIZATION OF RESEARCH

Participants. The study involved 20 rugby students, who previously engaged in various sports and physical training. All participants were given informed consent to participate in this experiment.

Procedure (organization of the study). To study the effect of hypoxic action, the technique of recurrent respiration in a confined space was used using a 30-liter Douglas bag. During the tests, the athlete breathed in this bag to failure, while the time of respiration was recorded. At half-time, the breathing air was pumped through the gas clock. In the course of recurrent respiration, the cardiovascular system was recorded (heart rate, $BP_{systolic.}$ $BP_{diastolic.}$) and respiratory system (respiratory rate, respiratory volume, minute volume of respiration, percentage of carbon dioxide in the exhaled air, percentage of oxygen in the exhaled air, oxygen utilization coefficient). After each series of recurrent respiration, breathing was carried out with normal air for 90 seconds. In total, 10 series of recurrent respiration were performed in one session. The total respiration time for 10 series was determined.

Return breathing was carried out in a mandatory combination with a set of physical activities. The following components were included in the training complex of the student rugby team:

- shuttle run to stretches from 5 to 20 meters;
- development of all types of gear in the construction of "fan";
- outmaneuver 2x1, 3x2, 1x1, 2x2, 3x3;
- all types of takles;
- simplest feints and fraudulent transfers;
- working off the contacts with the shoulder and hand (attacking and defensive);
- all the kicks of the ball and his catch;
- linear and group protection;
- The most simple game combinations, but with a high speed of execution;
- playing in a limited space;
- a game in numerical advantage;
- game in the numerical minority.

For greater efficiency, the active resistance of players with special shields was used to simulate full contact and to avoid injury. In connection with the previously mentioned time deficit, these exercises should be used in a comprehensive manner and with appropriate intensity. Thus, technical and physical training are combined. To do this, it is important to exercise timekeeping and record the pulse of athletes. In addition, at the beginning and at the end of the exercise, flexibility exercises were used and included in the training process of the dexterity exercise with balls (in the intervals of rest between intensive game exercises).

Tactical preparation in the student team, first of all, consisted in using the simplest or already worked out combinations with their development at high speeds. Selection of game schemes is based on the indicators of the preparedness of the team's players, relative to the level of competition and the characteristics of preparedness of potential rivals.

It is known that the positive result at the competitions directly depends on the effectiveness of each individual training session. Thus, the coach must creatively approach the content of each workout. To maintain the necessary dynamics of progress, it is useful to use a positive-demanding style of conducting classes – this combination allows interesting and stimulating students' youth.

One of the features of conducting classes for students is its clearly regulated time. Below is an example of the structure and content of the training session of the student team.

The duration of the lesson is 80 minutes. All inventory and places for doing exercises should be prepared before the session.

Introduction (explanation to the players of the content of the lesson) (2 minutes).

I. Warm up (15 minutes):

1. Easy running with balls transfers in groups of 3-4 players (5 minutes);
2. Stretching of all muscle groups and ligamentous apparatus, warm-up of the joints - from the top down (5 min);
3. Track and field athletics exercises using rugby balls (5 minutes).

II. Main part (58 minutes):

Trial of a technical element (from the previous occupation of the same direction) without resistance or with passive resistance (5 minutes);

1. Working out of the technical element (from the previous occupation of the same direction) with active resistance and using the shuttle run (8 minutes);
2. Testing of the technical element (new) without resistance or with passive resistance (10-15 minutes);
3. Trial of a technical element (new) with active resistance and using a shuttle run (10-15 minutes);

4. Development of the studied technical elements in the plays (2x1 / 3x2 / 1x1 / 2x2 / 3x3) (10 minutes);
5. Game - modeling of competitive conditions regarding the topic of the session (attack or defense, small space, numerical advantage or minority) (10 minutes).

III. Hitch (5 minutes):

1. Jogging to restore the normal state of the pulse and respiration (2 minutes);
2. Respiratory exercises (1 minute);
3. Stretching of the most loaded muscle groups (2 minutes).

Statistical analysis

The processing of the results of the research was carried out using the "Data Analysis" package of Microsoft Excel spreadsheets. Indicators of descriptive statistics (mean arithmetic mean, standard deviation and error of average value) were determined. The statistical reliability of differences in mean values was estimated by the Student's test, the differences were considered reliable when ($p<0,05$).

RESULTS OF THE RESEARCH

Physical preparedness is the basis of competitive activity of athletes in any sport and especially in rugby. High level of development of physical qualities can be effectively realized in competitive activity only under condition of high level of technical readiness (Platonov V.N., 2015). Кроме того, соревновательная деятельность регбистов характеризуется высокой интенсивностью и противоборством, что создает искусственные гипоксические условия (Taylor R.J., Sanders D., Myers T., Abt G., Taylor C.A. & Akubat Ibrahim, 2018 and McLean B.D., Cummins C., Conlan G., Duthie G. & Coutts A.J., 2018). Analysis of literature data and materials of our research in the process of developing a training program aims at combining all three types of training in each training session.

Table 1 shows the results of the study of general and special physical preparedness of rugby players of the control and experimental groups at the beginning and at the end of the experiment.

The presented materials at the beginning of the study did not differ statistically between the groups ($p>0,05$).

Table 1: Indicators of general and special physical preparedness of the student rugby team players before and after the experiment ($n_1=n_2=10$)

Test	Before the experiment		After the experiment	
	Control group (n=10)	Experimental group (n=10)	Control group (n=10)	Experimental group (n=10)
General physical preparedness				
Running 30 m from a high start, s	4,86±0,17	4,87±0,19	4,76±0,14	4,63±0,13
Running 100 m from a high start, s	13,79±0,27	13,78±0,26	13,69±0,31	13,49±0,31
Running 12 min, m	2618,1±38,7	2621,3±40,2	2695,3±33,2	2835,3±31,2
Standing long jump, cm	212,4±3,1	210,4±4,3	214,4±2,3	220,4±3,7
Triple jump, cm	668,3±6,2	666,3±5,9	680,3±4,3	710,3±3,4
Jump up from the place, cm	38,85±1,3	39,7±1,4	42,6±0,7	48,5±0,6
Pull-ups, number of times	5,6±0,4	5,6±0,3	7,5±0,3	8,9±0,21
Benchpress, kg	66,6±2,9	67,6±3,12	78,5±1,32	88,70±1,7
Back squat, kg	92,5±3,1	91,8±2,88	101,4±3,7	110,3±2,9
Special physical preparedness				
Running 30 m with the ball, s	5,32±0,21	5,24±0,19	5,28±0,27	5,03±0,12
Running 5 min, m	1415,5±27,3	1419,4±25,3	1425,4±21,4	1438,4±25,2
Shuttle run (3x10 m), s	7,63±0,19	7,58±0,13	7,47±0,12	7,37±0,17

After the experiment in the control group, there is an improvement in the indices of general and special physical preparedness. However, only in two indicators – back squat and the shuttle run, there are significant changes (4,5%, p<0,05 и 10,9%, p<0,001).

Analysis of the results of the experimental group has established only two indicators that do not have significant changes: run 5 minutes and run 12 minutes (p>0,05). Apparently, running for endurance requires significantly greater loads, which causes considerable fatigue (Slimaker R., 2007). Therefore, in the complex process of training, it is very difficult to develop endurance without reducing the performance of speed-strength qualities (Jansen P., 2006).

The most significant differences are observed in strength indicators: benchpress (23,3%, p<0,001), pull-ups (14,5%, p<0,001), back squat (12,9%, p<0,01).

Significant changes are observed in speed and speed-strength indicators: running 30 m from a high start (14,5%, p<0,001), standing long jump (11,7%, p<0,001), triple jump (10,6%, p<0,01), jump up from the place (12,3%, p<0,001), running 30 m with the ball (4,2%, p<0,05) and shuttle run (4,5%, p<0,05).

Thus, the presented research materials testify to the need for an integrated training system that facilitates the faster achievement of the necessary levels of training for student athletes. The experiment lasted six months and during this period the athletes-students reached 88-92% of the preparedness from the level of athletes of the same age who train in this form for 4-5 years.

Analysis of technical preparedness (Table 2) revealed the positive impact of the developed system of preparation of the experimental group. Thus, the greatest increases are observed in indicators tackle for 30 s (47,8 %, p<0,001). There is a high level of increase in the following indicators: catching the ball after a stroke (29,5%, p<0,001), strike and catch the ball on the move (31,5%, p<0,001), "drop-kick" (22,5%, p<0,001). In other indicators, there is a significant increase at the level of 11,4 – 16% (p<0,05).

Table 2: Indicators of technical preparedness of the student rugby team players before and after the experiment (n_1=n_2=10)

Test	Before the experiment		After the experiment	
	Control group (n=10)	Experimental group (n=10)	Control group (n=10)	Experimental group (n=10)
Transfer of the ball in pairs for 1 min, number of times	35,4±1,2	35,2±0,96	37,8±1,2	39,9±0,9
Tackle for 30 s, number of times	6,8±0,17	6,7±0,1	7,2±0,2	9,5±0,3
Strike the ball "high ball", m	24,5±0,5	25,1±0,9	26,6±0,33	29,5±0,4
Catching the ball after a stroke, number of times	6,8±0,3	6,9±0,4	7,4±0,1	8,8±0,1
Strike and catch the ball on the move, number of times	6,6±0,1	6,7±0,2	7,4±0,3	8,8±0,31
Strike on range from a hands, m	34,4±0,8	34,2±0,6	36,9±0,3	38,6±0,4
"Drop-kick", m	30,7±1,2	31,2±1,0	34,2±1,1	38,2±0,9
Strike on goal, m	34,4±0,9	33,9±1,2	36,5±0,6	38,8±0,3

Indicators of technical preparedness of the control group also improved after the experiment, but there were only two significant changes: tackle for 30 s (11,8%, p<0,05) and "drop-kick" (13,2%, p<0,05).

The motor activity of rugby players lasts continuously within 90 seconds and has an anaerobic character. Short-term stops of the game do not eliminate the arisen oxygen debt and therefore the body of athletes should deliberately develop their hypoxic capabilities. Training session itself is constructed in such a way as to develop hypoxic stability. Однако, как выяснилось, для достижения высокого уровня соревновательной деятельности этого недостаточно. There are significant studies (Rovnaya O.A., Ilyin V.N.,

& Rovniy A.S., 2010 and Rovniy Anatoly, Pasko Vladlena & Martyrosyan Artur, 2017), who proved the need for special hypoxic training. In our studies, hypoxic effects were included in each training session of athletes experimental. In the control group of rugby players, hypoxic effects were not included in the training process.

Table 3 presents hypoxic testing of the control group at the beginning and at the end of the preparatory mesocycle. Training sessions for a specific purpose contributed to an increase in hypoxic stability by increasing the functional activity of the oxygen transport system. However, the main indicator of hypoxic resistance - the total time of recurrent respiration in the enclosed space has improved only on 4,1% ($p>0,05$).

Table 3: Dynamics of hypoxic stability under the influence of reverse breathing in a confined space before and after the rugby test of the control group (n=10)

T, min	$FeCO_2$, %	FO_2, %	RR, min	RMV, l/min	HR, beats/min	OUC_2, ml/min
Before experiment						
6,8±0,03	3,8±0,01	18,3±0,07	18,3±0,04	9,4±0,02	68,7±0,07	37,2±0,4
5,8±0,06	4,0±0,03	16,6±0,01	16,5±0,07	10,6±0,01	71,3±0,08	35,1±0,9
5,4±0,01	4,4±0,01	15,5±0,08	19,3±0,02	11,2±0,07	74,5±0,03	33,1±0,1
4,6±0,02	4,8±0,02	14,3±0,09	19,8±0,03	12,6±0,05	82,7±0,09	31,3±0,09
3,2±0,03	6,3±0,04	14,1±0,04	21,1±0,07	11,9±0,09	87,2±0,03	30,7±0,01
3,1±0,04	5,7±0,04	13,8±0,02	23,3±0,06	12,3±0,04	95,5±0,06	31,8±0,03
2,3±0,06	6,2±0,05	13,0±0,04	24,8±0,08	12,8±0,08	100,3±0,03	30,3±0,01
2,2±0,01	6,4±0,02	12,4±0,07	25,2±0,07	13,1±0,04	105,8±0,02	27,4±0,02
1,8±0,02	6,6±0,04	12,0±0,09	25,6±0,08	14,3±0,01	107,7±0,03	26,2±0,04
0,9±0,04	6,8±0,02	11,7±0,04	26,7±0,04	14,6±0,04	109,2±0,04	26,7±0,08
After experiment						
7,2±0,07	3,6±0,04	19,3±0,07	12,7±0,09	9,46±0,01	65,2±0,03	39,1±0,4
6,6±0,03	3,8±0,02	17,0±0,01	13,3±0,06	9,8±0,02	70,2±0,05	38,3±0,5
5,5±0,02	4,1±0,07	15,8±0,06	14,3±0,01	10,9±0,04	71,3±0,09	35,4±0,7
4,6±0,01	5,3±0,01	15,2±0,04	15,4±0,09	11,4±0,07	73,2±0,08	33,7±0,1
4,4±0,07	6,6±0,03	14,1±0,05	16,6±0,08	11,2±0,08	80,2±0,10	30,0±0,2
2,8±0,04	5,8±0,04	13,9±0,02	17,4±0,03	11,3±0,04	91,3±0,04	30,9±0,4
3,4±0,07	6,1±0,03	13,4±0,03	18,5±0,09	11,8±0,05	99,8±0,05	33,4±0,6
2,8±0,03	6,6±0,08	13,0±0,08	19,2±0,02	12,1±0,02	102,2±0,04	28,7±0,1
2,8±0,07	6,8±0,04	12,8±0,05	20,1±0,04	13,4±0,05	104,1±0,05	28,9±0,3
11,9±0,03	6,7±0,02	12,3±0,07	22,5±0,03	13,4±0,03	105,3±0,70	27,4±0,4

Remark: T_{min} – total duration of respiration in the first session; $FeCO_2$ – percentage of carbon dioxide in the exhaled air; FO_2 – percentage of oxygen in the exhaled air; RR – respiratory rate; RMV – respiratory minute volume; HR – heart rate; OUC_2 – oxygen utilization coefficient.

Table 4 presents the materials of the investigation of the hypoxic training of rugby players in the experimental group. The inclusion of a return breath into the enclosed space increased the hypoxic stability significantly. Thus, the indicator of the total respiration time in the enclosed space increased from 38.5 min after the first series to 43.4 min after the tenth series. There are significant changes in the parameters of the oxygen transport system. After the tenth series, the heart rate decreased during respiration by 12.8% ($p<0.001$). At the same time, the indicator of the minute volume of respiration decreased by 16.6% ($p<0.01$). There is a decrease in the rate of $FeCO_2$, in exhaled air by 8.7% ($p<0.01$) and an increase in FO_2 in the exhaled air by 12.6% ($p<0.01$), which led to an increase in OUC_2 on 12.5% ($p<0,01$).

Table 4:Dynamics of hypoxic stability under the influence of reverse breathing in a confined space before and after the experiment of rugby players of the experimental group (n=10)

T, min	$FeCO_2$, %	FO_2, %	RR, min	RMV, l/min	HR, beats/min	OUC_2, ml/min
Before experiment						
6,6±0,02	8,8±0,03	17,3±0,04	18,8±0,07	10,5±0,02	66,2±0,09	35,3±0,7
6,5±0,04	8,3±0,02	17,0±0,1	17,2±0,03	12,6±0,04	69,4±0,09	32,3±0,4
6,2±0,05	7,7±0,08	16,2±0,07	18,8±0,05	12,9±0,05	73,3±0,09	33,4±0,9
5,8±0,03	4,3±0,04	14,3±0,02	15,8±0,06	13,8±0,06	76,8±0,09	31,7±0,1
4,4±0,07	5,8±0,06	12,8±0,04	20,4±0,01	15,2±0,08	82,3±0,09	31,2±1,1
3,8±0,06	5,2±0,07	12,5±0,03	26,3±0,04	15,8±0,03	87,3±0,4	30,5±0,7
3,9±0,08	4,8±0,01	12,1±0,04	25,8±0,05	16,6±0,07	91,5±0,9	28,7±0,5
2,7±0,04	7,2±0,05	11,8±0,06	26,2±0,07	18,0±0,04	105,0±0,6	26,6±0,7
2,2±0,08	3,4±0,07	11,4±0,09	26,6±0,09	18,4±0,06	109,4±0,4	25,7±0,9
1,4±0,01	1,3±0,03	10,9±0,02	27,3±0,04	18,9±0,08	113,7±0,8	25,2±0,11
After experiment						
7,8±0,01	9,8±0,01	18,3±0,04	15,3±0,07	11,1±0,03	64,4±0,70	37,2±0,40
7,4±0,03	8,4±0,03	17,0±0,09	14,2±0,08	11,8±0,05	68,5±0,12	38,7±0,07
6,8±0,07	4,4±0,09	16,2±0,03	14,8±0,03	12,3±0,02	71,7±0,13	36,4±0,60
5,8±0,09	6,4±0,02	15,5±0,05	15,9±0,04	12,8±0,09	74,8±0,50	35,1±0,80
5,6±0,01	5,2±0,07	14,1±0,07	16,3±0,05	12,7±0,09	75,1±0,70	35,8±0,90
5,3±0,03	4,3±0,06	14,3±0,06	16,8±0,02	13,4±0,07	81,3±0,40	34,6±0,70
4,4±0,02	3,4±0,03	13,6±0,02	17,4±0,01	13,8±0,04	84,7±0,80	31,3±0,90
3,8±0,07	2,8±0,07	13,0±0,04	18,2±0,02	15,6±0,02	87,8±0,30	28,9±0,30
2,8±0,04	7,4±0,04	12,5±0,07	19,2±0,03	15,8±0,01	88,4±0,70	27,6±0,10
2,1±0,07	9,6±0,01	12,1±0,03	19,8±0,04	16,2±0,04	90,7±0,40	27,6±0,90

Remark: T_{min} – total duration of respiration in the first session; $FeCO_2$ – percentage of carbon dioxide in the exhaled air; FO_2 – percentage of oxygen in the exhaled air; RR – respiratory rate; RMV – respiratory minute volume; HR – heart rate; OUC_2 – oxygen utilization coefficient.

The carried out researches of influence of hypoxic influences testify that the main indicator of hypoxic resistance is the total duration of recurrent respiration. The application of the regression analysis method shows the role of each factor in the oxygen transport system in providing hypoxic performance.

$$T_{min}=3{,}27\times RMV+3{,}59\times RR+2{,}75\times OUC_2+1{,}43\times FeCO_2+1{,}75\times FO_2, \quad (1)$$

where T_{min} – total duration of respiration in the first session; RMV – respiratory minute volume; RR – respiratory rate; OUC_2 – oxygen utilization coefficient; $FeCO_2$ – percentage of carbon dioxide in the exhaled air; FO_2 – percentage of oxygen in the exhaled air.

Applying the method of reverse step regression (formula 2), two factors of the oxygen-transport system are established in providing the total duration of recurrent respiration.

$$T_{min1}=6{,}58\times RMV+2{,}79\times RR, \quad (2)$$

where T_{min1} – total duration of respiration in the first session; RMV – respiratory minute volume; RR – respiratory rate.

In the tenth session of hypoxic training, a certain change in the combination of the factors of the oxygen transport system is observed (formula 3).

$$T_{min2}=5,47\times RR+2,95\times FO_2+3,05\times RMV-1,25\times OUC_2+0,93\times FCO_2, \qquad (3)$$

where T_{min2} – total duration of respiration in the tenth session; RR – respiratory rate; FO_2 – percentage of oxygen in the exhaled air; RMV – respiratory minute volume; OUC_2 – oxygen utilization coefficient; $FeCO_2$ – percentage of oxygen in the exhaled air.

The inverse step regression equation defines the three main factors in ensuring the duration of recurrent respiration after the tenth session (formula 4).

$$T_{min2}=6,21\times OUC+3,34\times RR+2,18\times FO_2, \qquad (4)$$

where T_{min2} – total duration of respiration after the tenth session; OUC_2 – oxygen utilization coefficient; RR – respiratory rate; FO_2 – percentage of oxygen in the exhaled air.

DISCUSSION

The current level of physical development of university students raises more and more questions to their system of physical education, which does not ensure their proper development. The existing system of physical education does not cause modern students to interest in systematic study and independent studies.

At the present time, the development of sectional studies in off-hour time has begun to attract students' attention to systematic exercise, as evidenced by data from scientific and methodological literature (Druz V.A., Iermakov S.S., Nosko M.O., Shesterova L. Ye. & Novitskaya N.A., 2017).

Currently, one of the popular types of motor activity of students are sports games, which are of some interest in realizing their capabilities and at the same time cause a great emotional upsurge (Boichuk R., Iermakov S., Nosko M., Kovtsun V. & Nosko Y., 2017).

However, there is still no clear system for preparing game teams of universities. Students have a different level of physical preparedness and are not able to quickly master the complex speed-strength movement’s characteristic of certain sports games.

It is characteristic to note that often students give up systematic studies because of not mastering the complex technical methods of the game. Therefore, the issue of preparing student gaming teams attracts an increasing number of researchers (Vorobyova V.O., 2007; Ermakov S.S.; 2003; Bondarev D.V. & Galchinskiy V.A., 2008 and Prusik Krzysztof, Prusik Katarzyna, Kozina Zh.L. & Iermakov S.S., 2013).

Thus, studies (Cleary T.J., Zimmerman B.J. & Keating Tedd, 2013) showed a positive effect of self-regulation of movements in the formation of ball throws in basketball.

The study (Sauls N.M. & Dabbs N.C., 2017) indicates that the use of special jump exercises in the teaching of students in sectional soccer classes contributed to the development of speed-strength qualities and coordination abilities.

The research (Chagas D.V., Ozmun J. & Batista L.A., 2017) showed that teaching student’s volleyball promotes the development of coordination abilities, on the basis of which the technical skills of volleyball players were formed.

Recently, among the student youth, extreme popularity is enjoyed by the extreme kind of sports games - rugby. Rugby is characterized by collective actions, power struggle, a quick solution to complex motor tasks and increased psychological stress. This specificity of the motor activity of athletes attracted the attention of many researchers. Analysis of the conducted studies leads to the conclusion that the system of training students-athletes for rugby games is based more on subjective approaches, rather than on objective laws of adaptation of the body systems to physical loads.

So, in studies (Speranza M.J.A., Gabbett T.J., Greene D.A., Johnston R.D. & Sheppard J.M., 2017 and Delaney J.A., Thornton H.R., Pryor J.F., Stewart A.M., Dascombe B.J. & Duthie G.M., 2017) it is shown that for teaching complex techniques games must be conducted at peak intensity of training sessions. Differences between the positions of players, the intensity of movement are determined by the level of preparedness.

In studies (McLean B.D., Cummins C., Conlan G., Duthie G. & Coutts A.J., 2018 and Hulin B.T., Gabbett T.J., Johnston R.D. & Jenkins D.G., 2018), great attention is paid to strength training and especially isometric strength training, since in the game there are constant strength tackles

The greater importance of the strength of the lower extremities is indicated by studies (Gabbett T.J., Stein J.G., Kemp J.G. & Lorenzen C., 2013) whose materials state that athletes play well during the entire season must constantly maintain the power capacity of the lower extremities. As evidenced in the studies (Thornton H.R., Delaney J.A., Duthie G.M. & Dascombe B.J., 2018).

In studies (Archer David C. et al., 2016 and Taylor R.J., Sanders D., Myers T., Abt G., Taylor C.A. & Akubat Ibrahim, 2018), the possibility of determining the aerobic performance of rugby athletes at different speeds which determine the minimum dose of lactate 2 mmol.

Examining separately various literature data, it can be seen that the presented research materials contribute to the theory and practice of training rugby teams. This research was conducted on student teams. However, in these studies there is no systematic approach to the training of rugby players: how to combine the different types of loads in one class - physical, technical and hypoxic. This issue is especially acute at the initial stage of the preparation of student teams.

Formation of teams of rugby players in universities comes from students who have previously engaged in some kinds of sports games and have a relatively high level of physical preparedness. So, in our studies the initial level of physical fitness corresponded to 88-92% of the level of preparedness of athletes of this age who play in professional teams. Therefore, in our studies, a systematic approach was applied. In one training session included exercises aimed at developing strength, strength endurance, speed, speed-strength qualities in combination with the elements of the technique of the game, since a high level of manifestation of physical qualities makes it possible to demonstrate the accuracy of technical elements against the background of fatigue and opposition of opponents (Taskin Cengiz & Bicer Yonca Sureyya, 2015 and Chagas D.V., Ozmun J. & Batista L.A., 2017).

In our studies, the mandatory condition was the inclusion in the training session interval effects, as in contact sports games, special performance is in anaerobic conditions. This is confirmed by our previous studies in which it was proved that the increase of carbon dioxide ($FeCO_2$) in the exhaled air is a stimulator of increasing ventilation of the lungs due to the frequency and depth of breathing (Rovniy A.S., Pasko V.V. and Grebeniuk O.V., 2016; Rovniy Anatoly, Pasko Vladlena, Stepanenko Dmytro, & Grebeniuk Oleg, 2017 and Rovniy Anatoly, Pasko Vladlena and Galimskyi Volodymyr, 2017).

CONCLUSIONS

The analysis of extensive studies indicates a variety of findings that characterize the adaptive mechanisms of the body systems of students in the process of training and training motor action in rugby. In our opinion, all of them have the right to exist, since they were conducted with different purposes, different methods and under different conditions.

In our studies, the obtained results are confirmed by the literature data on the system approach in the construction of training sessions at the beginning stage of the preparation of student rugby teams.

Inclusion in the training process of hypoxic influences contributed to a significant increase in the special working capacity of rugby students.

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