



INCREASING THE EFFECTIVENESS OF PRE-COMPETITIVE TRAINING IN SOCCER ON THE STUDENT TEAM EXAMPLE

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Abstract

Introduction. In sports practice, the urgent issue is the use of a comprehensive load program and special ways to athletes recovery.

Aim is to determine the strategy of increase level in special training of soccer players during pre-competition training by optimizing the load and using special means for athletes recovery.

Material and methods. Theoretical analysis and generalization of scientific and methodological literature's data, questionnaires, pedagogical observation, pedagogical testing, pedagogical experiment, methods of mathematical statistics.

Results. During the study the forms, methods and means of athletes recovery in pre-competition training were analysis; the most accessible for the student soccer team were identified as sauna, sports massage, recovery and apparatus massage, contrast shower. The pre-competitive training program for the soccer student team of the University of Grinchenko was developed.

Conclusions. It is shown, the training of soccer players in the precompetitive mesocycle should be comprehensive, include loads and appropriate recovery; the use of special preparatory, technic-tactical exercises, control games to stabilize the optimal state of individual players and the entire team.

Key words: soccer, students, pre-competition training, recovery means.

Introduction. Improvement of the training process in football is one of the current issues on today's stage of development of the kind of sports. One of the ways to solve this problem is searching for rational forms of planning the training workloads during precompetitive period of training [5, 7].

The precompetitive period is the final stage of preparation for performance competitions. It has the

task to keep the achieved level of special physical fitness, improve the footballers' technical and tactical skills, master special knowledge and skills in tactics and strategy of the game, and define the optimal team's line-up [6].

Planning of the preseason periods which allow the athlete to accustom to the physiological conditions minimizing the injury risks and increasing the players' accessibility to



the trainings has to be one of the preseason aims during this period [16].

In fact, we can separate two main periods: competitive and non-competitive ones. The latter is usually subdivided into two phases: off season and preseason ones. The preseason period is determined as the period after off season when training sessions are run collectively and often include friendly matches [15]. To ensure the meeting of these objectives it is necessary to carefully select the relevant forms, methods, as well as the means of training and recovery.

A problem statement. Nowadays some coaches guess the main component of the precompetitive training period should be massive workloads and concentrate their attention on the importance of their players' physical fitness to be able to deal with the upcoming competitive period. But during this period not all of them stick to optimal ratios between workloads and recovery in their training programs which very often results in the athletes' fatigue levels increasing the risks of getting injuries of musculoskeletal system, and the process decreases adaptation to football practice. In this context, the matter of applying complex program of workload optimization and special means of the student team footballers' recovery is relevant.

The aim of the research is to determine the courses of increasing the footballers' special training levels during the precompetitive training period due to workload optimization and applying special means of the footballers' recovery.

Objectives of the research:

1. To determine the most accessible and efficient means of the athletes' recovery during the student team's training.
2. To determine the peculiarities of the footballers' training methodology during precompetitive period in the standard training conditions in the previous season.
3. To develop a training program of the precompetitive stage for the student football team with respect to workload optimization and applying special means of the footballers' recovery.

Material and methods: theoretical analysis and generalization of scientific and methodological literature's data, questionnaires, pedagogical observation, pedagogical testing, pedagogical experiment, methods of mathematical statistics.

The studies were conducted during the year 2019. 14 athletes having a sports qualification took part in the study. At different stages of the experiment identical questionnaires and tests of the athletes' physical fitness were given.

The athletes completed a standard program of physical and other types of precompetitive training during mesocycle period (28 days). Then the first questionnaire and test (May) were given before the precompetitive period. The questionnaire was offered to those athletes presenting the student football team. It was conducted before the assessment of motor qualities levels for determination of the footballers' individual feelings due to training peculiarities on the stage of precompetitive training to reveal the reliance of sporting result on fitness level.



Table 1. The training methods on the first stage of the student football team’s precompetitive training (May, 2019)

Point of the exercise	Dosage	Task	
Preparatory part – 15 minutes long			
Jogging (slow running)	3 min (400 m)	Bringing HR to operating level	
Stretching	5-7 min	Muscle preparation for running	
Special running exercises	5 min	Improvement of running technique	
Main part – 60 minutes long			
Point of the exercise	Dosage	Task	Encouragement / penalty
«Square» (4:2)	5 min	Complete 15 passes in exercise with two touches «square»	The players standing on the lines of the square (passing) stand into the square after the second tackling
		Tackle the ball by the exact players doing that before completing 15 passes in the exercise «square»	The players who were tackling the ball have to do it once more after being tackled
Holding the ball (with feet)	3x8 min (1 min rest between the series)	Holding the ball due to passing with two touches as long as possible by one team	The whole team makes 10 bounces towards the chest after the other team’s holding the ball for more than 1,5 min
Standing shots on target	8 min	4 and more missed shots by the goalkeepers during a sequence of standing shots on target	10 bounces towards the chest by everyone who were doing the shots
		4 and more missed shots by the goalkeepers during a sequence of standing shots on target	10 jumps pulling the knees towards the chest
Two-sided game	20 min	All the players staying in the defensive half while defense	Counting additional goal for every player not having returned to the defensive half
		All the players of the attacking team staying in the offensive half when scoring a goal (except the goalkeeper)	Not counting the scored goal
		All the players staying in the defensive half while defense. All the players of the attacking team staying in the offensive half when scoring a goal	10 jumps, the knees are being pulled to the chest, the whole team
Final part			
Point of the exercise	Dosage	Task	
Aerobic cool-down	5 min	Recovery after the training	
Final stretching	10 min	Providing trophic processes in muscle tissues	
Additional individual work at technical training not whilst training process			



The mathematical statistics methods were used to count and interpret the results gained during the conducted research, the arithmetic average value of the data was determined; percentage ratio. The research data was processed on the personal computer using the «Exel-2010 Windows» spread sheet application.

To assess the motor qualities levels of development we used the following tests: to assess the special physical fitness – 50 m run, standing long jump, 7 x 50 m run, 60 m run, beep tests – 2 x 5 m; 2 x 10 m; 2 x 15 m; 2 x 20 m; 2 x 25 m, variable 30 m run (jogging 5 m before the start line), to assess the footballers' overall physical fitness the Cooper test was used. The tests were given according to the common methods.

In September, 2019, before the final stage of the competitions our proposed experimental training methods were being completed on the precompetitive stage of training of the student football team. After the completion of the proposed program the second questionnaire was given to the same group of athletes to assess physical, technical and tactical as well as psychological fitness, the levels of fatigue and recovery after workloads modeling competitive activity.

The study was completed in accordance with the main bioethical principles.

Results of the research and discussion. It is known that the training methodology on the precompetitive stage must not contain a great volume of intensive work but take into account the necessity of keeping functional abilities of systems and mechanisms at the initial level [1, 8]. In accordance with such

peculiarities the methods of precompetitive training stage of the Borys Grinchenko Kyiv University student football team were applied getting ready for the Kyiv Championships and Championships of Ukraine (*table 1*).

The methodology of the first stage of precompetitive training included gaining an additional objective – to form team tactical gaming skills in offense and defense using quantitative superiority in the location area of the ball which was gained by means of using penalties such as additional physical exercises for not completing certain gaming settings. In the first method the main training medium was a two-sided game with the task for all the players (except the goalkeeper) to shift to the defensive half while attacking and for all the players to stay behind the halfway line in the defensive half while defense.

After the first stage of precompetitive training the questionnaire assessing the athletes' individual fitness levels was held (*table 2*) in May, 2019.

It is known that using subjective scales for assessment of training intensity's individual perception, such as having been proposed RPE (rating of perceived exertion) [11] were widely used in football. It was checked to ensure these subjective approaches are attributable to different internal and external indicators of training intensity, and the assumption was made that these approaches could lead to significant comparison of data [12].

The issues having interest for analysis of the athletes' individual feelings towards the efficiency of the precompetitive stage training methods used beforehand were observed.



Table 2

**Indicators student football team athletes' physical fitness
before the first precompetitive stage (April, 2019)**

Athlete	Tests						
	30 m run (s)	Standing long jump (m)	7x50 m run (s)	60 m run	Beep tests - 2x5m; 2x10m; 2x15; 2x20m; 2x25m	Variable 30 m run (jogging 5 m before the start line)	Cooper test, m
1	4.1	2.59	65.1	8.0	31.3	4.0	3010
2	4.0	2.65	64.9	7.9	30.5	3.9	2995
3	4.1	2.55	65.3	8.0	30.9	4.0	2850
4	3.9	2.65	64.4	7.8	30.4	3.6	3005
5	4.2	2.50	65.0	8.1	32.1	4.0	2827
6	4.1	2.57	64.9	8.1	31.9	4.0	2984
7	4.0	2.45	64.1	8.0	31.2	3.9	3014
9	4.0	2.65	63.9	7.9	31.1	3.9	3065
10	3.8	2.65	64.8	7.7	30.0	3.7	3002
11	3.9	2.60	63.9	7.8	30.4	3.8	3017
12	3.9	2.61	65.0	7.9	30.6	3.9	3112
13	4.0	2.52	65.3	7.9	30.7	4.0	2993
14	4.1	2.50	65.5	8.0	32.0	4.0	2791

The athletes were offered the following questions:

- Rate in points (0-10) your physical fitness before the start of the precompetitive period.
- Rate in points (0-10) your technical and tactical fitness before the start of the precompetitive period.
- Rate in points (0-10) the level of your psychological fitness.
- Rate in points (0-10) the degree of fatigue after training workloads.
- Rate in points (0-10) the degree of recovery after the workloads modelling competitive activity (competitions, matches).

Discussion of the results of the research.

The questionnaire of the subjective assessment of the athletes' states before the first precompetitive period revealed

the following results: the Grinchenko University team's footballers rated the level of their physical fitness from 4 to 7 points, the average value was – 5.85; technical and tactical fitness was rated in the range of 4 to 8 points, the average value – 6.07; their psychological fitness the footballers rated from 4 to 7 points with the average 5.57; the degree of fatigue was rated from 5 to 8 points with the average 6.31; and the degree of recovery was rated in the range of 4 to 8 points with the average 6.07.

To assess the physical training efficiency on the first precompetitive stage (May, 2019) the Grinchenko University team's footballers' physical fitness testing was held (see table 2).

The student football team's athletes rated their physical fitness with the points being close to those shown by



their physical abilities' testing results: the marks «good» and «good enough» corresponded to the points from 4 to 8. However, the athletes having shown the «excellent» results in physical abilities' testing did not mark themselves that point in the questionnaire on their physical fitness.

Technical and tactical fitness assessment of a footballer is a complex coach's analysis of all gaming actions during test matches (in the precompetitive mesocycle) [2, 4]. On the top level modern methods of statistics are used for that. If those methods are not available, the technical and tactical fitness assessment may be subjective. This kind of fitness was assessed by the student team's coach. The questionnaire results and the assessment given to technical and tactical actions of the footballers were compared. Due to that, we made a conclusion that 11 out of 14 footballers of the student team give quite an objective assessment to their technical and tactical fitness.

The level of psychological fitness in gaming team sports, particularly football, is determined by the ability to take rational solutions in complex gaming situations [3]. Having the methods for assessment of a athlete's psychological fitness, assessing this ability by means of observation indicates the psychological fitness level exactly during competitive activities. Accordingly, while assessing the student teams' footballers due to this criterion we came to a conclusion that 8 out of 14 players had given themselves an objective mark; 4 of them had overestimated their psychological fitness; and 2 – had underestimated it.

What can tell about the degree of

fatigue after competitive workloads and recovery after those modelling competitive activity is HR reaction (HR increase after completing the same amount of exercises with the same intensity more than usual, as well as slower HR recovery to initial level) to doing physical workloads while training taking place after the competitions (test matches). Also what indicates the degree of fatigue is the ability to complete the exercise in the same amount and intensity after competitive workloads. Using these methods of assessment by means of pulsometry and observation we came to the following conclusions about the degree of fatigue: 7 players had given an objective mark; 3 – had overestimated; and 4 – had underestimated. The comparison of the questionnaire results and observation of the degree of recovery after workloads modelling competitive activity showed that 9 players had given an objective mark; 3 – had overestimated; and 2 – had underestimated it.

The questionnaire of individual states before the second competitive period revealed the following results: the student team's footballers assessed the physical fitness level between 5 and 9 points with the average 7.28; technical and tactical fitness was assessed from 6 to 9 points with the average 7.28; the footballers assessed their psychological fitness from 6 to 8 points with the average 6.92; the degree of fatigue was assessed from 5 to 8 with the average 6.64; and the degree of recovery was assessed in the range of 5 to 9 points with the average 6.57.

After the second precompetitive stage the indicators of the student team footballers' physical fitness were as follows (table 3).



Table 3

**The indicators of the student team footballers' physical fitness
after the second precompetitive stage**

Athlete	Tests						
	30 m run (s)	Standing long jump (m)	7x50 m run (s)	60 m run	Beep tests - 2x5m; 2x10m; 2x15; 2x20m; 2x25m	Variable 30 m run (jogging 5 m before the start line)	Cooper test, m
1	4.1	2.65	65.0	8.0	31.1	4.0	3017
2	4.0	2.67	64.5	7.9	30.5	3.8	3005
3	4.1	2.55	65.1	8.0	30.9	4.0	2950
4	3.9	2.69	64.1	7.8	30.4	3.6	3007
5	4.1	2.56	64.7	8.0	31.9	4.0	2940
6	4.0	2.57	64.2	7.9	31.1	3.9	3041
7	4.0	2.54	63.5	8.0	30.7	3.9	3026
9	4.0	2.68	63.7	7.9	30.3	3.9	3087
10	3.8	2.73	64.8	7.7	29.7	3.6	3021
11	3.8	2.64	63.5	7.7	30.1	3.8	3017
12	3.9	2.61	65.0	7.8	30.0	3.9	3201
13	4.0	2.52	65.0	7.9	30.7	4.0	3004
14	4.1	2.50	65.1	8.0	31.9	4.0	2892

Using the same methods of assessment of questionnaire objectivity among the student football team footballers as before the first precompetitive mesocycle we got the following results:

- The assessment of the physical fitness increased from 5.85 to 7.28. That was caused by the objective factors as physical fitness had increased: 11 players gave themselves objective marks; 1 overestimated his physical fitness; and 2 – underestimated it.
- The assessment of the technical and tactical fitness also changed and increased from 6.07 to 7.28. The comparison of the questionnaire results and objective indicators revealed that 13 out of 14 players give themselves objective marks, and 1 – overestimates his technical and tactical fitness.
- The assessment of the psychological fitness increased from 5.57 to 6.92 points caused by the high level of physical and technical and tactical fitness having mediocre impact on psychological fitness. 12 footballers of the team gave themselves objective marks; 1 overestimated his psychological fitness; and 1 – underestimated it.
- The assessment of the degree of fatigue after competitive workloads increased from 6.31 to 6.34. 8 players gave themselves objective marks; 3 overestimated; and 3 –



underestimated themselves.

- The assessment of the degree of recovery after the workloads modelling competitive activity (competitions, matches) changed by 0.5 points, from 6.07 to 6.67. 10 players gave themselves objective marks; 2 overestimated; and 2 – underestimated themselves.

The analysis of the physical fitness testing results after using the training methods at the first and second stages of precompetitive training revealed the increase of physical fitness after the second stage: 30 m run – minimal indicators increased by 0.1 s; standing long jump – minimal indicators increased by 0.07 m, maximal ones – by 0.08 m; 7x50 m run (s) – minimal indicators increased by 0.4 s, maximal ones – by 0.5 s; 60 m run – minimal indicators increased by 0.1 s, maximal ones – by 0.1 s; beep tests 2x5m; 2x10m; 2x15; 2x20m; 2x25m – minimal indicators increased by 0.1 s, maximal ones – by 0.3 s; variable 30 m run (jogging 5 m before the start line) – maximal indicators increased by 0.1 s; Cooper test – minimal indicators increased by 101 m, maximal ones – by 89 m.

It is known that adult and elite athletes take participation in competitions as a complex situation when they are in more pleasant affective states compared to negative states during precompetitive period. This profile is relatively stable during the gaming season, probably due to their competitive experience. It is shown that there is a coherence between psychological and physiological states, and that can give a clue to understanding the stress during competitive period [9].

We differentiated training effects

according to the assessment of individual states having allowed characterizing the methods of the second precompetitive period. Increase of physical fitness is a partial objective of the precompetitive period. However, if the athletes' physical fitness is not high enough, this objective can be solved. Also, the amount of physical workload can be reduced if the athlete is overtrained.

The methods of training during the second precompetitive period had less amount of workloads compared to the first one. Normally, in elite European and even Australian clubs overall distance, run intensity and workload of the players are considerably reduced from preseason to season periods whilst changes in average speed rate remain constant [14].

For example, in four different professional football teams of Denmark and Portugal the differences between the weeks were little, but fluctuations along the week were observed, the workloads related to bigger amount but less intensity were taken into account [10].

Accordingly, the increase of the average value in subjective assessment of physical fitness from 5.85 to 7.28 tells about some kind of fatigue and not enough recovery of the student team footballers during the first precompetitive period. Thus, it was advisable to reduce the amount of physical workloads in the second precompetitive period.

Technical and tactical training during the second precompetitive period was done using bigger group of media. Tasks put before the student team footballers varied more, and the competitive method in exercises allowed technical and tactical skills to grow by



individual students' assessments from 6.07 to 7.28.

Training during the second precompetitive period did not have direct means of psychological training. But the rational selection of media, correct target-setting and methodologically reasonable trainings allowed having impact on the level of psychological fitness, which can be observed in the student team footballers' assessments and shows increase compared to the first precompetitive period from 5.57 to 6.92 points.

The methods of the second precompetitive period included usage of recovery media: contrast shower, sports

revitalizing massage, vibrating hardware massage, and sauna. That slightly differed from the recovery media after training normally used by professional football teams: immersion into cold water, active recovery, compression garments, massage, and electrical stimulation [13].

For doing recovery and vibrating (hardware) massage the corresponding specialists were invited several times a week. Applying of the recovery means during the second precompetitive period by the days of mesocycle are given in the table 4.

Table 4

The recovery means during the second precompetitive period by the days of mesocycle

Recovery means				
Treatments Days of microcycle	Contrast shower (5 min)	Revitalizing massage (up to 20 min)	Vibrating (apparat) massage of the most tires muscle groups (7 min)	Sauna (15 min, 80°C)
1	+		+	
2		+	+	+ (10 min)
3	+		+	
4	+	+	+	
5	+		+	
6	+	+		+ (15 min)
7	+		+	
8	+	+		
9	+			
10	+		+	+ (10 min)
11	+	+		
12	+		+	
13	+			
14	+		+	+ (15 min)

Accordingly, the recovery processes were happening faster, and the degree of fatigue was lower – that was assessed by student-footballers in the questionnaire of their individual feelings giving answers to the questions: «Rate in points (0-10) the degree of fatigue after

training workloads» and «rate in points (0-10) the degree of recovery after the workloads modelling competitive activity (competitions, matches)». The average value of the answers to the first question increased from 6.31 to 6.64, and to the second one –from 6.07 to 6.57.



Conclusions.

1. The analysis of forms, methods and means of recovery during precompetitive training, the most available under the training of a football team and quite effective recovery means were determined: sauna, sports massage, aparat massage, and contrast shower.

2. The precompetitive stage training program for the Grinchenko University student football team was developed including recovery means during the training year.

3. It was shown that training of footballers during precompetitive mesocycle must be complex and include respective workloads and recovery treatments, using specific preparatory as well as technical and tactical exercises and test matches which has to stabilize the optimal level of individual sports state of the players separately and the team as a whole.

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