

Programming of the training process of qualified football players in the competitive period of the macrocycle

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Abstract

The article deals with the methodical approach to the construction of the training process of qualified football players in the competitive period of the macrocycle on the basis of programming. The purpose of the research is to substantiate the effectiveness of training qualified football players in the competitive period of the macrocycle based on the programming of the training process.

Methods: theoretical analysis and generalization of literary sources, pedagogical observation, chronometration, testing, methods of mathematical statistics. Qualified football players aged 18-26 have participated in the study. Sports qualification - 1st degree, sub-master sportsman.

Results and conclusions. According to the calendar of the competitions the competitive period of the first macrocycle within the three-cycle annual training process lasted 75 days. During this period 14 microcycles were conducted, two of them were competitive and three recovery-maintenance ones. It was established that non-specific (general preparatory) exercises in competitive microcycles comprised 28,1 to 38,6%, special preparatory exercises - from 6,7 to 11,5%, preliminary exercises - from 21,5 to 38,6 % and competitive exercises - from 29,1 to 33,3%. In recovery-maintenance microcycles the largest share was received by the general preparatory exercises - 60,2%. 10,2% were allocated for special preparatory exercises, 29,6% of training hours for the preliminary exercises. Competitive exercises in these microcycles were not practised. It is determined that the average amount of load in the training sessions of the competitive macrocycles ranges from 482 to 1292 points and the intensity index of training sessions - from 5,6 to 9,9 points·min⁻¹. In recovery-maintenance microcycles these indicators are in the range from 264 to 505 points and from 3,9 to 5,6 points·min⁻¹. The training of qualified football players in the competitive periods of macrocycles should be held according to the theory of periodization of sports training. An optimal methodical approach to the construction of the training process for qualified football players is programming.

Key words: football, qualified football players, programs of training sessions and microcycles, the theory of periodization of sports training, competitive period, macrocycle.

Introduction

At the present stage of sport development there is an urgent need to find the best ways to improve the training process of athletes (T.O. Bompa, M. Carrera, 2005; V.B. Issurin, 2008; V.N. Platonov, 2013). First of all, it concerns the training of qualified athletes and athletes of high qualification in the annual training cycle (S.Yu. Tiulenkov, 2007; V.N. Platonov, 2013; N.Y. Shchepotina, 2015; V.M. Kostiukevich, V.A. Stasiuk, N. Yu. Shchepotina, A.A. Dyachenko, 2017). Many experts in the theory and methodology of sport believe that a comprehensive system approach to the precise planning of structural units of the training process in annual macrocycles is of great importance nowadays (M.A. Godik, A.V. Popov, 1993; V.M. Kostiukevich, 2011; V.M. Shamardin, 2012; Shynkaruk, O., 2012). This is especially the case in the competitive periods, in which the sports result of athletes is resolved. The optimization of the training process is a key aspect in the competitive periods. It becomes possible due to the rational planning of stimulating and restorative phases, namely the alternation of the modes of loading and rest, aimed at formation of urgent, retired and cumulative

effects (V.M. Shamardin, 2013; V.A. Stasiuk, 2016; V.Kostiukevych, Ye. Imas, O. Borysova et al., 2018; Imas E., Shynkaruk O., Denisova L., Usychenko V., Kostykevich V., 2018).

Nevertheless, based on the traditional planning, which involves only the distribution of quantitative parameters of the training work in the structural units of the competitive period, it is difficult to consider the process of athlete's preparation in the dynamics, taking into account different aspects of training (I.I. Stasiuk, 2013; Shynkaruk, O., Dutchak, M., Pavlenko Yu., 2013; V.M. Kostiukevich, V.A. Stasiuk, N. Yu. Shchepotina, A.A. Dyachenko, 2017). It should be mentioned that the problem of construction of the competitive periods in the team playing sports is primarily determined by their long-term duration (from 2 to 3-4 months), which complicates the effective maintenance of the phase of stabilization of the competition form of athletes. Consequently, there is a need to choose a systematic approach to constructing a training process in a competitive period. This approach is programming, namely the development of training programs, macrocycles and mesocycles of the competitive period.

The problem of working out of the programs of structural units of the training process of sportsmen of team playing sports was studied in basketball T.V. Vozniuk (2006), E.Yu. Doroshenko (2013), in volleyball Y. Imas, O. Borysova, O. Shlonska et al (2017), V.M. Kostiukevich, N.Yu. Shchepotina et al (2019), in football G.A. Lisenchuk (2003), S.Yu. Tiulenkov (2007), V.M. Shamardin (2012, 2013), V.M. Kostiukevych, V.A. Stasiuk, N. Yu. Shchepotina, A.A. Dyachenko (2017), in lawn hockey V. Kostiukevych, N. Lazarenko, N. Shchepotina et al (2019). The authors substantiated in their studies the construction of the training process of athletes-gamers, taking into account the factors of programming, mainly during the training macrocycle. At the same time, the analysis of the literary sources has shown that the programming of the process of preparation of athletes, including qualified football players in a competitive period requires a separate scientific study.

The purpose of the research is to substantiate the effectiveness of training qualified football players in the competitive period of the macrocycle based on the programming of the training process.

Materials and methods of research.

Participants. The research was conducted among the students of the football club "Burevisnik" in Kamyanytsya-Podilsky National University. The study involved 22 qualified football players aged 18 to 26 years. All participants agreed to participate in this experiment.

Organization of the research. The research was conducted during 2016-2017. The working hypothesis of the study envisaged the use of such methods: analysis and synthesis of scientific and methodological literature, pedagogical observation in the process of training and competitive activities, chronometry, testing, methods of mathematical statistics. Based on the systematic analysis of the literary sources, the goal of the study was determined and the working hypothesis of the study was developed (Byshevets N., Denysova L., Shynkaruk O. et al., 2019; Fundamentals of research work for higher education graduates in the field of Physical Culture and Sports, 2019).

Chronometry was conducted in order to identify the time allocated to certain types of training work, motor activity and the amount of training loads of football players. The object of pedagogical observation in our study was the structure and the content of the training process of qualified football players, their competitive activities, as well as an expert assessment of the technical and tactical readiness of players. Pedagogical testing allowed to identify the level of players' preparedness during the competitive period.

It should be also mentioned that the method of determination of the magnitude and direction of training loads based on the methodical approach of V. A. Sorvanov was used in the experimental research (1982). The essence of this approach lies in the intensity of doing exercises, which is appraised by points relative to the heart rate. So, heart rate 114 beats per minute is appraised by 1 point (120 - 2 points, 126 - 3 points, 132 - 4 points, 138 - 5 points, 144 - 6 points, 150 - 7 points, 156 - 8 points, 162 - 10 points, 168 - 12 points, 174 - 14 points, 180 - 17 points, 186 - 21 points, 192 - 25 points, 198 - 33 points). So, if the exercise was performed for 10 minutes with an intensity of 156 hbm, then this exercise was appraised by 56 points. The value of the entire training session or game was determined by the formula:

$$CL = \sum_{i=1}^n t_i \cdot I_i,$$

where CL – coefficient of loading (points); t_i – duration of exercises (min); I_i – intensity of exercises (points).

In addition to the CL such an indicator as the coefficient of intensity of the training load was determined ($CI_{t,l}$).

$$CI_{t,l} = \frac{CL}{T}$$

where T – the duration of the training or game.

On the basis of this indicator the value of the urgent training effect was determined.

Statistical analysis. Common methods of mathematical statistics were used to process the results of the study. The processing of experimental data included the arithmetic mean (\bar{x}), the mean square deviation (S), the coefficient of variation (V). The data processing was carried out with the help of the computer application program "EXCEL".

Results

Based on the calendar of the competitions of the students' football team, the training year was divided into three cycles. The main goal of the first cycle was the preparation and participation of the team in the first round of the championship of Khmelnytskyi region and the Student League of Ukraine. The subject of our study was the programming of the training process of qualified football players in the competitive period.

The competitive period of the first cycle of the annual training of qualified footballers lasted 75 days and consisted of 14 microcycles: one 7-day competitive (preliminary), five 7-day competitive (recovery-preliminary), one 6-day competitive (preliminary), two 5-day competitive (recovery-preliminary), two 4-day competitive (preliminary) and three 3-day (recovery-maintenance).

It should be pointed that the competitive-preliminary microcycle started after the preliminary or recovery microcycles. Competitive (recovery-preliminary) microcycle was planned after the team game of the previous competitive microcycle. As a rule, a restoration of sports performance of football players took place in the first two days of these microcycles. During the subsequent training days of the microcycle the players were prepared for the calendar game, held on the last day of the competitive microcycle. The program of the 7-day competitive microcycle is presented in the table 1.

Table 1. The program of the 7-day competitive (preliminary) microcycle of the competitive period of the first cycle of annual training of qualified footballers

Types and components of training				Training days												Total	Total (%)			
				1st		2nd		3rd		4th		5th		6th				7th		
				MT	ET	MT	ET	MT	ET	MT	ET	MT	ET	MT	ET			MT	ET	
Load value					N		N		H					N		N		H		
Type of load					A-AA		A-AA		A-AG					A-Mix		A-Mix		A-Mix		
Means	non-specific	general preparatory exercises	GPP	AR	8 ³	8 ³	8 ³	8 ⁴	8 ⁴	6 ⁴	46	192 (32,2)	64 (10,8)							
				Str.	6 ²	6 ²	8 ²	8 ²	6 ²	42										
				RE	8 ⁸	8 ⁸	8 ⁸	8 ⁸	8 ⁸	48										
				GDE			20 ⁶			20										
				Ath.		12 ³	12 ³	12 ³		36										
		SPP	ST			22 ¹²														
			SST																	
	SE																			
	specific	special-preparatory exercises	TST	16 ¹²										16						
			TSST		16 ¹²									16						
			SE1			32 ¹⁷								32						
		preliminary exercises	TTP	SP					12 ⁵	12 ⁵					24					
				1-stMCC	12 ⁵	8 ⁵			12 ⁵	10 ⁵	8 ⁵				50					
				2-ndMCC	12 ⁶	14 ⁸								12 ⁶	38					
3-rdMCC				8 ¹⁰								8								
competitive exercises	GP	20 ⁸	25 ¹⁰					40 ⁸			85									
	CP						45 ¹⁰			90 ¹²	135									
Recovery, min				15	15	75		15	15	15	150									
Theoretical and psychological preparedness, min				45	45	30	90	45	90	45	60	30	480							
Training duration, min				90	97	88		105	86		130	596								
CL, points				664	730	804		718	512		1292	4720								
CL _L , points·min ⁻¹				7,2	7,4	9,1		6,8	5,9		9,9	7,9								

Notes: MT – morning training; ET – evening training; GPP – general physical preparedness; SPP – special physical preparedness; TTP – technical-tactic preparedness; AR – aerobic running; Str. – stretching; RE – running exercises; GDE – general development exercises; Ath. – athleticism; ST – speed training; SST – speed-strength training; SE – speedendurance; GE – general endurance; TST – technical speed training; TSST – technical speed-strength training; SE1 – special endurance; SP – static position; MCC – mode of coordination complexity; GP – game preparedness; CP – competitive preparedness; CL – coefficient of loading; CL_L – coefficient of loading of intensity of the training load; loading value: H – high, N – normal, L – light; type of loading: A – aerobic, Mix – mixed, AA –

anaerobicalactic, AG – anaerobicglycolic; record look «8⁴» – where 8 – exercise duration in minutes, 4 – exercise intensity in points according to V. M. Sorvanov (1978)

Compared to the striking and the preliminary microcycles one training session was as a rule conducted per day in the competitive microcycles. During the 7-day competitive (preliminary) microcycle 5 training sessions and one calendar game were conducted (fig. 1). The intensity of the training loads within this microcycle ranged from 5,9 to 9,9 points·min⁻¹. In the first three days of the microcycle aerobic, mixed and anaerobic loads were used, including alactic (the first and second days) and glycolic (third day). On the fourth day there was a planned rest from motor activity; on the fifth and sixth days normal aerobic and mixed (aerobic-anaerobic) loads were planned. Consequently, the program of the 7-day competitive (preliminary) microcycle consisted of load (the first three days), preliminary (the fifth and the sixth days) and competitive (calendar game) phases. Such a program of the microcycle envisaged the optimal alternation of urgent and retired training effects.

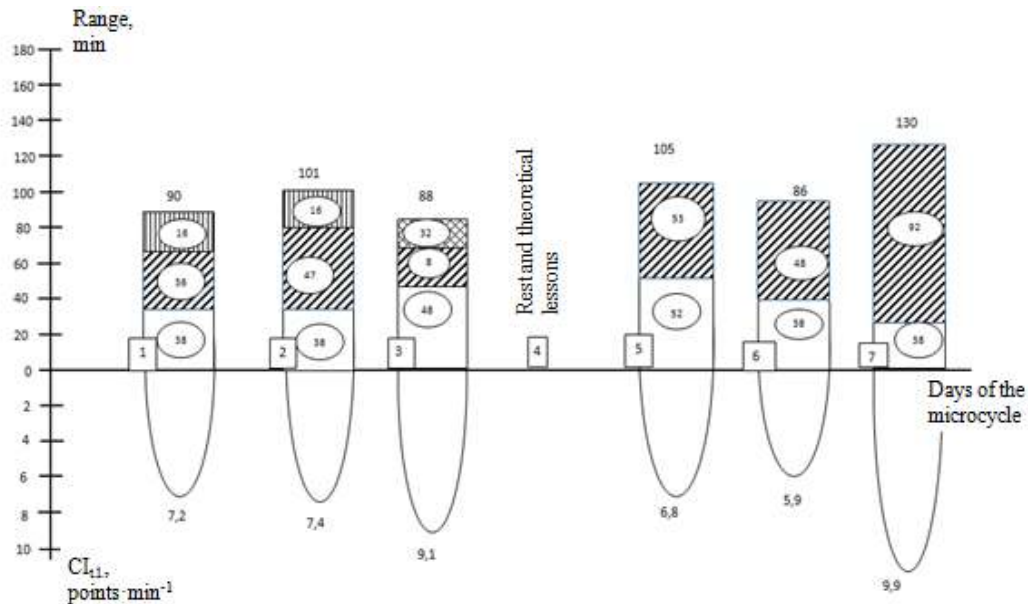


Fig. 1. The range, intensity and type of load of the 7-day competitive (preliminary) microcycle of the competitive period of the first cycle of the annual training of qualified football players at the stage of the formative experiment:

□ – aerobic load; ▨ – mixed load; ▩ – anaerobic-alactic load; ▪ – anaerobicglycolic load

Optimal planning of training loads during competitive microcycles of football teams allows to conduct a calendar game in the phase of supercompensation (retired training effect) (M.A. Godik, A.V. Popov, 1993; S.Yu. Tiulenkov, 2007).

The structure of the 7-day competitive (recovery-preliminary) microcycle was conditioned, on the one hand, by the need to restore the performance of the players after the calendar game, and on the other hand - to plan training loads optimally in order to prepare football players for the calendar game in the best possible way. Consequently, unlike the 7-day competitive (preliminary) microcycle, in the 7-day competitive (recovery-preliminary) microcycle, the first two days were assigned to the recovery phase, the third, the fourth, the fifth, and the sixth days were characterized by the preliminary phase of the training effects, that means that only normal loads of different types were used. The game was scheduled for the final day of the microcycle. The intensity of the loads during this microcycle ranged from 3,9 to 9,9 points·min⁻¹. The most intense loads were planned for the fourth (9,1 points·min⁻¹) and the seventh (9,9 points·min⁻¹) days of the microcycle (Fig. 2). As well as in the previous microcycle besides aerobic and mixed loads, anaerobic (alactic and glycolic) loads were used in this microcycle.

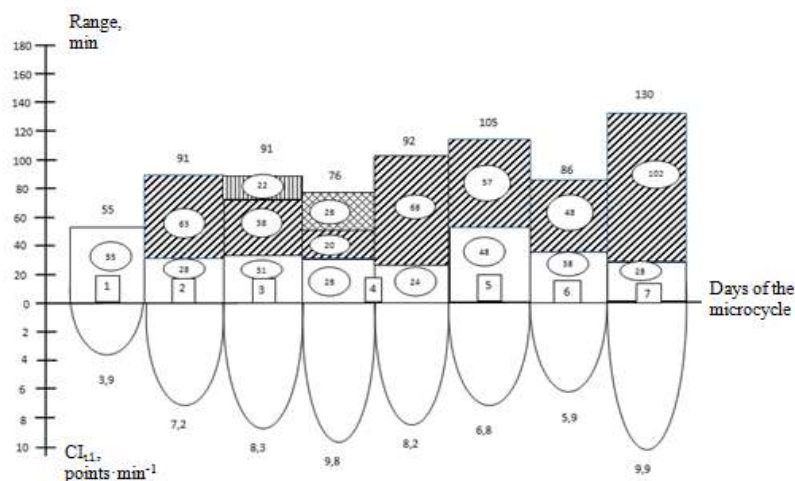


Fig. 2. The range, intensity and type of load of the 7-day competitive (recovery-preliminary) microcycle of the competitive period of the first cycle of the annual training of qualified football players at the stage of the formative experiment:

□—aerobic load; ▨—mixed load; ▩—anaerobic-alacticload; ■—anaerobicglycolicload

The particularity of the program of the 6-day competitive (preliminary) microcycle was that it began after the 3-day preliminary (maintenance) microcycle, that is, the first two days compared to the previous 7-day competitive (recovery-preliminary) microcycle were developmental with the use of aerobic, mixed and anaerobic-alactic loads. The third day was dedicated for a non-specific training session with aerobic, mixed and anaerobic loads. In this as in the previous competitive microcycles the second last and the last days before the calendar game were dedicated for aerobic and mixed loads with the coefficient of intensity ($CI_{t,1}$) in the range of 5 – 7 points·min⁻¹. Thus, $CI_{t,1}$ on the fourth day in comparison with the third decreased by 29,8%, and on the fifth day – by 42,3%. Consequently, the program of the 6-day competitive (preliminary) microcycle assumed that the loading phase (first three days) was programmed with $CI_{t,1}$ ranged from 7,5 to 9,7 points·min⁻¹ (average index – 8,3 points·min⁻¹), and the maintenance phase – with $CI_{t,1}$ ranged from 5,6 – 6,8 points·min⁻¹ (average index – 6,2 points·min⁻¹), that is the intensity of training effects in the maintenance phase decreased at average by 25,3 %.

Unlike the previous 7- and 6-day competitive (recovery-preliminary) microcycles, the program of the 5-day competitive (recovery-preliminary) microcycle was limited in one day. Anaerobic (alactic and glycolic) loads were planned for the second day of the training session and the third and the fourth days were characterized by the supporting nature of the training effects.

According to the 4-day competitive (preliminary) microcycle program the exercises of normal training load were planned for this training session. Exercises aimed at improving the speed qualities were used insignificantly during the first day of the training session. The second and the third days were dedicated to form building exercises, preliminary (optional) and competitive exercises.

Table 2. The program of the 3-day recovery-maintenance microcycle of the competitive period of the first cycle of annual training of qualified footballers

Types and components of training				Training days						Total	Total (%)	
				1st		2nd		3rd				
				MT	ET	MT	ET	MT	ET			
Load value				L		N		N				
Type of load				A		A		A-Mix				
Means	Non-specific	General preparatory exercises	GPP	AR	16 ⁴		6 ⁴		8 ⁴	30	116 (49,2)	
				Str.	16 ⁴		6 ²		6 ²	28		
				RE					6 ⁶	6		
				GDE	20 ⁶					20		
				Ath.	16 ³		16 ³			32		
			SPP	ST								50 (21,2)
				SST								
				SE								
				GE			26 ⁶			26		

Specific	special-preparatory exercises	TST				12 ¹²		12	70 (29,6)	
		TSST				12 ¹⁰		12		
		SEI								
	Preliminary exercises	TTP	SP					15 ⁵		15
			1-stMCC					10 ⁵		10
			2-ndMCC					30 ⁶		30
	competitive exercises		3-rdMCC					15 ⁸		15
			GP							
			CP							
	Recovery, min		90				30			30
Theoretical and psychological preparedness, min		60				45		45	150	
Training duration, min		68				78		90	236	
CL, points		264				504		505	1273	
CL _{tb} , points·min ⁻¹		3,9				6,4		5,6	5,4	

During the 4-day microcycle mixed (aerobic-anaerobic) loads were predominantly used at every training. On the first day such loads reached 48,2% of the total load, on the second - 38.1%, on the third – 58,1%, on the fourth day – 75,4%. At the same time, it should be also mentioned that the loading influences of practically every calendar game (at the level of 9,5– 10,5 points·min⁻¹) result in a considerable tiredness of the players. That fact obligates recovery measures, namely recovery training session. In particular, it is established that the heart rate of qualified players during the match ranges from 18500 to 22500 bpm, which is characterized by a high load, and recovery processes last at least 48 hours (M.A. Godik, A.V. Popov, 1993; H. Wein, 2004; V. Kostiukevych, 2019). In our study, the heart rate of qualified football players during the calendar game reached on an average 19528 bpm.

During the competitive period of the first cycle of annual training after series of competitive microcycles, a 3-day recovery-maintenance microcycle was planned (see Table 2). Significantly reduced load both in range and intensity and predominant use of general development exercises, including exercises typical to other sports were specified for this microcycle. The coefficient of intensity ranged from 3,9 to 6,4 points·min⁻¹ was planned for the 3-day recovery-maintenance microcycle. It should be noted that in contrast to the 3-day recovery microcycle, in which all training sessions were of restorative character, in the 3-day recovery-maintenance microcycle the first training was restorative, the second and the third – maintenance. On the second day of the training session anaerobic loads were slightly used.

The range of means of training work in the microcycles of the competitive period within the microcycle is presented in Table 3. In the competitive period in comparison with the preparatory one there was a significant decrease in the practice of general training exercises from 72,7 to 37,4% with a simultaneous increase of special-preparatory (from 2,4 to 6,2%), preliminary (optional) (from 16,5 to 37,3%) and competitive (from 8,4 to 23,6%) exercises. In regard to the distribution of training means in different microcycles of the competitive period, it can be stated that in all types of the competitive microcycles the proportion of general preparatory exercises varies from 28,1 to 38,6%, special-preparatory – from 6,9 to 11,5%, preliminary exercises – 21,5 to 38,6%, and competitive exercises – from 28,9 to 33,3% (Table 3).

Table 3. The range and proportion of training means in microcycles of the competitive period of the first cycle of annual training of qualified footballers within the microcycle

Microcycles	quantity	Range of means, min (%)				Total, min
		Non-specific	Specific			
		general preparatory	special preparatory	preliminary	competitive	
7-day competitive (preliminary)	1	192 (34,9)	64 (11,5)	120 (21,5)	180 (32,1)	556
7-day competitive (recovery-preliminary)	5	1285 (35,9)	240 (6,7)	1020 (28,5)	1025 (28,9)	3570
6-day competitive (preliminary)	1	182 (32,2)	63 (11,2)	140 (24,7)	180 (31,5)	565
5-day competitive (recovery-preliminary)	2	358 (38,6)	64 (6,9)	236 (25,4)	270 (29,1)	928
4-day competitive (preliminary)	2	228 (28,1)	–	314 (38,6)	270 (33,3)	812
3-day recovery-maintenance	3	426 (60,2)	72 (10,2)	210 (29,6)	–	708
Total	14	2671 (37,4)	503 (7,0)	2040 (28,6)	1925 (27,0)	7139

In general, in the competitive period of the annual macrocycles of qualified football players training non-specific exercises made 37,4% and specific exercises – 62,6%. The share of special-preparatory exercises was 7,0%, aerobic exercises – 28,6%, and competitive exercises – 27,0%.

Discussion

Almost every research requires, on the one hand, the definition of a methodological approach in solving the actual problem, and, on the other hand, comparison of the data with the results, which were received in the researches of other authors. In our study, during the construction of the training process of qualified football players in the competitive period of the macrocycle, the programming of structural units of the training process was applied. The valid programs of trainings were used as the basis for the development of the program of the competitive microcycle. This methodological approach has allowed to identify not only the components of training work, but also the proportion of training and competitive loads of different types.

Rational construction of the training process of qualified athletes should be based through an integrated approach, taking into account the following factors:

- the calendar and systems of competitions of student football teams;
- the construction of the training process of qualified football players at the higher education establishments;
- the structure of competitive activities of qualified football players;
- the level of physical and functional preparedness of qualified football players;
- the development of the structure and content of training sessions, microcycles, mesocycles, training stages;
- the ratio of training means and training loads at different stages of the macrocycle;
- the construction of the training process based on programming as one of the most effective ways of implementation the training influences to form urgent, retired, cumulative effects, as well as more purposeful improvement of the technical and tactical skill of qualified football players.

The materials of our study supplement and expand the data both about the peculiarities of the three-cycle planning of the training process (G.A. Lisenchuk, 2003; S. Yu. Tiulenkov, 2007; V. N. Platonov, 2013), and also in relation to the proportion of training materials and training loads during the competitive period of the macrocycles of qualified football players (V.M. Kostiukevych, 2011; V.M. Shamardin, 2012; V.M. Kostiukevych, V.A. Stasiuk, N.Yu. Shchepotina, A.A. Dyachenko, 2017).

The achieved results of the research can be considered as model indicators during the construction of the training process of qualified football players in the competitive period of the macrocycles. First of all it concerns students' football teams.

Conclusion

1. At the present stage of qualified football players preparation within the framework of the annual training cycle the theory of periodization of sports training is predominantly used.

2. Programming is considered to be one of the most effective methodological approaches to the training of qualified football players in the annual macrocycles in regard to the theory of periodization.

3. Construction of the training process of qualified football players in the competitive period of the macrocycle should base on microcycle programs with such structural units as types of training work and components of the training load.

The directions for further scientific research of the outlined problem will contribute to the experimental substantiation of the construction of a training process for qualified footballers and high-skilled footballers in the annual macrocycles on the basis of programming.

Conflict of interests. The authors state that there is no conflict of interests.

References

- Byshevets N., Denysova L., Shynkaruk O., Serhiyenko K., Usychenko V., Stepanenko O., Syvash I. (2019) Using the methods of mathematical statistics in sports and educational research of masters in physical education and sport. *Journal of Physical Education and Sport*, vol 19 Suppl. Issue 3, 1030 – 1034. DOI:10.7752/jpes.2019.s3148
- Bompa T.O., & Carrera M. (2005). *Periodization Training for Sports*. Champaign, IL. Human Kinetics, 259.
- Doroshenko E. Iu. (2013). Modelling of technical tactical actions as the management factor competitive process and preparation of basketball players of high qualification. *Pedagogics, psychology, medical-biological problems of physical training and sports*, 17 (10), 29-34.
- Godik M. A., & Popov A. V. (1993). *La Preparacion del Futbolista*. Barcelona: Editorial Paidotribo, 395.
- Fundamentals of research work for higher education graduates in the field of Physical Culture and Sports* (2019). For community edit VM Kostyukovich, OA. Shynkaruk. Kyiv: Olympic literature, 2nd form. 613.

- Imas Y., Borysova, O., Shlonska, O., Kogut, I., Marynych, V., & Kostyukevich, V. (2017). Technical and tactical training of qualified Volleyball players by improving attacking actions of players in different roles. *Journal of Physical Education and Sport*, 17, 441-446.
- Imas E., Shynkaruk O., Denisova L., Usychenko V., Kostyukevich V. (2018). Physical and mental human health in the contemporary information environment. *Journal of Physical Education and Sport*, Supplement issue 18 (3), Art 261, pp. 1791-1795
- Issurin, V.B. (2008). *Block Periodization: Breakthrough in Sport Training*. Michigan: Ultimate athlete concept, 213.
- Kostiukevich, V.M., Stasiuk, V.A., Shchepotina, N. Yu., & Dyachenko, A.A. (2017). Programming of skilled football players training process in the second cycle of specially created training during the year. *Physical Education of Students*, 21 (6), 262-269. Doi: 10.15561/120755279.2017.06.02
- Kostiukevich, V.M. (2009). Strukture tehniko – [The structure of the technical and tactical activities of highly qualified football players of different game roles]. *Pedagogika, psihologiya i mediko-biologicheskie problemy fizicheskogo vospitaniya i sporta*, 9, 67-70.
- Kostiukevich, V.M. (2011). *Modelirovaniya trenirovochnogo processa v kholke enatrave* [Simulation of the training process in field hockey: monograph], Vinnitsa: LLC "Firma Planer".
- Kostiukevich, V.M. (2019). *Modelitaktiki igry v futbole: Monografiya* [Football tactics models: Monograph], Vinnytsia, 168.
- Kostiukevich, V., Imas, Ye., Borysova, O., Dutchak, M., Shynkaruk, O., Kogut, I., Voronova, V., Shlonska, O., & Stasiuk, I. (2018). Modeling of the athletic training process in team sports during an annual macrocycle. *Journal of Physical Education and Sport*, 18(1), 327-334. DOI: 10.7752/jpes.2018.s144
- Kostiukevich, V., Lazarenko, N., Shchepotina, N., Kulchytska, I., Svirshchuk, N., Vozniuk, T., Kolomiets, A., Konnova, M., Asauliuk, I., Bekas, O., Romanenko, V., & Hudyma, S. (2019). Management of athletic form in athletes practicing game sports over the course of training macrocycle. *Journal of Physical Education and Sport*, 19 (Supplement issue 1), 28-34. DOI: 10.7752/jpes.2019.s1005.
- Kostiukevich, V., Shchepotina, N., Shynkaruk, O., Kulchytska, I., Borysova, O., Dutchak, M., Vozniuk, T., Yakovliv, V., Denysova, L., Konnova, M., Khurtenko, O., Perepelytsia, O., Polishchuk, V., & Shevchyk, L. (2019). Training process construction of the qualified volleyball women players in the preparatory period of two-cycle system of the annual training on the basis of model training tasks. *Journal of Physical Education and Sport*, 19 (Supplement issue 2), 427-435. DOI: 10.7752/jpes.2019.s2063
- Lisenchuk, G.A. (2003). *Upravleniye podgotovkoy futbolistov: Monografiya* [Soccer Player Training Management: Monograph], Kyiv.
- Platonov, V.N. (2013). [Periodization of sports training. General theory and its practical application], Kyiv: Olympic Literature.
- Shamardin, V.M. (2012). *Tekhnologiya podgotovki futbol'noj komandy vysshej kvalifikacii: Monografiya* [Technology training football team of higher qualification: Monograph], Dnipropetrovsk.
- Shamardin, V.M. (2013). [Technology of management by system of highly qualified football teams' long-term training. Doct. Diss.], Lviv.
- Shchepotina, N.Y. (2015). Model characteristics of competitive activity of different skilled female volleyball players. *Pedagogics, psychology, medical-biological problems of physical training and sports*, 2, 80-85. <http://dx.doi.org/10.15561/18189172.2015.0214>.
- Shynkaruk, O. (2012). The concept of formation of a system of training, selection of athletes and their orientation in the process of multi-year perfection. *Pedagogics, psychology and medical and biological problems of physical education and sports*. 12. 144-8.
- Shynkaruk, O., Dutchak, M., Pavlenko Yu. (2013). Olympic training of athletes in Ukraine: problems and perspectives. *Sportivnyy vestnik Prydniprovia*. 1, 82-6
- Stasiuk, I.I. (2013). Construction training process of highly skilled players in mini-football for competition period. *Pedagogics, psychology, medical-biological problems of physical training and sports*, 17(8), 99-106.
- Stasiuk, V.A. (2016). *Programuvanniya treniroval'nogo procesa kvalifikovanikh futbolistiv u richnomu makrocikli* [Programming of the training process of skilled football players in the annual macro cycles]. *Fizichnakuultura, sport ta zdorov'ianacii*, 1, 323-331.
- Tiulenkov, S.Yu. (2007). [Theoretical and methodical approaches to the system of managing the training of high qualified football players], Moscow: Physical Culture.
- Vozniuk, T.V. (2006). [Optimization of the training process of qualified female basketball players by the speed-strength means at the pre-contest stage. Cand. Diss.], Lviv.
- Wein, H. (2004). *Futbolalamedidadelnino*. *Gradagymnos*, 1, 290.