
Original Article

Success criteria of the pedagogical pattern of physical training on self-guide basis with individual assignments among futsal referees

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ABSTRACT

The article contains results from authors' provision of rationale for a pedagogical pattern's structure of a self-guided physical training of futsal referees by means of individual assignments. The pattern defines both main points of a self-guided physical training by means of individual assignments amid preparations of futsal referees and training results – development of physical skills required to preside over a game of futsal. We invite to consider the main performance indicators of a self-guided physical training of futsal referees by means of individual assignments to be referees' speed endurance and quickness of recovery upon load. **Key words:** PEDAGOGICAL PATTERN, FUTSAL REFEREES, REFEREE'S READINESS, INDIVIDUAL ASSIGNMENTS, SELF-GUIDED PHYSICAL TRAINING.

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INTRODUCTION

Examination of literature sources and compilation of futsal referees' best practice examples attest to the fact that a speed endurance of each referee has its unique features. That is why when raising the levels of physical readiness of futsal referees the tailoring of a training program is of the utmost importance (Barbero et al., 2008; Bakaev, Bolotin, & Vasil'eva, 2015; Bolotin, & Bakayev, 2017; Schweizer et al. 2011, Bolotin, & Bakayev, 2016; Hopkins et al. 2009).

Individual specifications, level of special motor abilities, psychological attribute of futsal referees take on particular significance amid experimentation and self-guided physical training (Bakaev, Bolotin, & Aganov, 2016; Gomez-Carmona, C., & Pino-Ortega, 2016; Bolotin, & Bakayev, 2016).

Studies show that the peculiarity of activity of referees when officiating a futsal game allows a majority of self-guided training means to be considered as a special conditioning training. Almost every exercise on developing speed endurance was considered to be a special conditioning exercise of a self-guided training program. (Sgrò, Aiello, Casella, & Lipoma, 2017; Bolotin, & Bakayev, 2017). The main objective of a physical improvement of futsal referees was considered to be an achievement of a higher level of physical readiness for presiding over a match. The low level of a physical readiness was recognized as a barrier for rendering right decisions while judging a game. For that matter a number of exercises of a self-guided training, targeted at increasing physical capabilities of futsal referees, was expanded.

MATERIAL AND METHODS

Survey objective

Is to measure a performance of an elaborated pedagogical pattern of referees' self-guided training with individual assignments.

Under preparation of a pedagogical experiment, the futsal refereeing experience was summarized. Control exercises and test indicators to give an appraisal of referees' physical condition were chosen and elaborated.

Structure of a pedagogical pattern of a futsal referees' self-guided physical training with individual assignments has its own unique features (Bolotin, & Bakayev, 2015). The research of a pedagogical pattern of futsal referees' self-guided physical training with individual assignments is driven by increasing requirements to their physical readiness.

The research into the issue demonstrates a complex nature of structure of a pedagogical pattern of a futsal referees' self-guided physical training with individual assignments. The main components of a pedagogical pattern of a futsal referees' self-guided physical training with individual assignments are physical requirements imposed on referees, as well as the purpose and objective of their physical conditioning. In the root of this pattern lies both a development of knowledge and skills of independent training with due consideration of its logic and principles and its reflection in individual assignments. The pattern defines the main points of a self-guided physical training with individual assignments amid preparations of futsal referees as well as training results – development of physical skills required to officiate a futsal game (Figure 1).

The objective of a physical conditioning of futsal referees is to develop physical qualities relevant for effective refereeing of a game. To achieve a physical readiness of futsal referees a self-guided physical training was used. The building of unattended training skills among futsal referees was carried out in a gradual and

consistent fashion. The focused study of this matter shows that a gradual building of self-guided training skills among futsal referees include: clarification of logic and principles of training; referees awareness and understanding of importance to maintain high level of physical abilities; long systematic trainings.

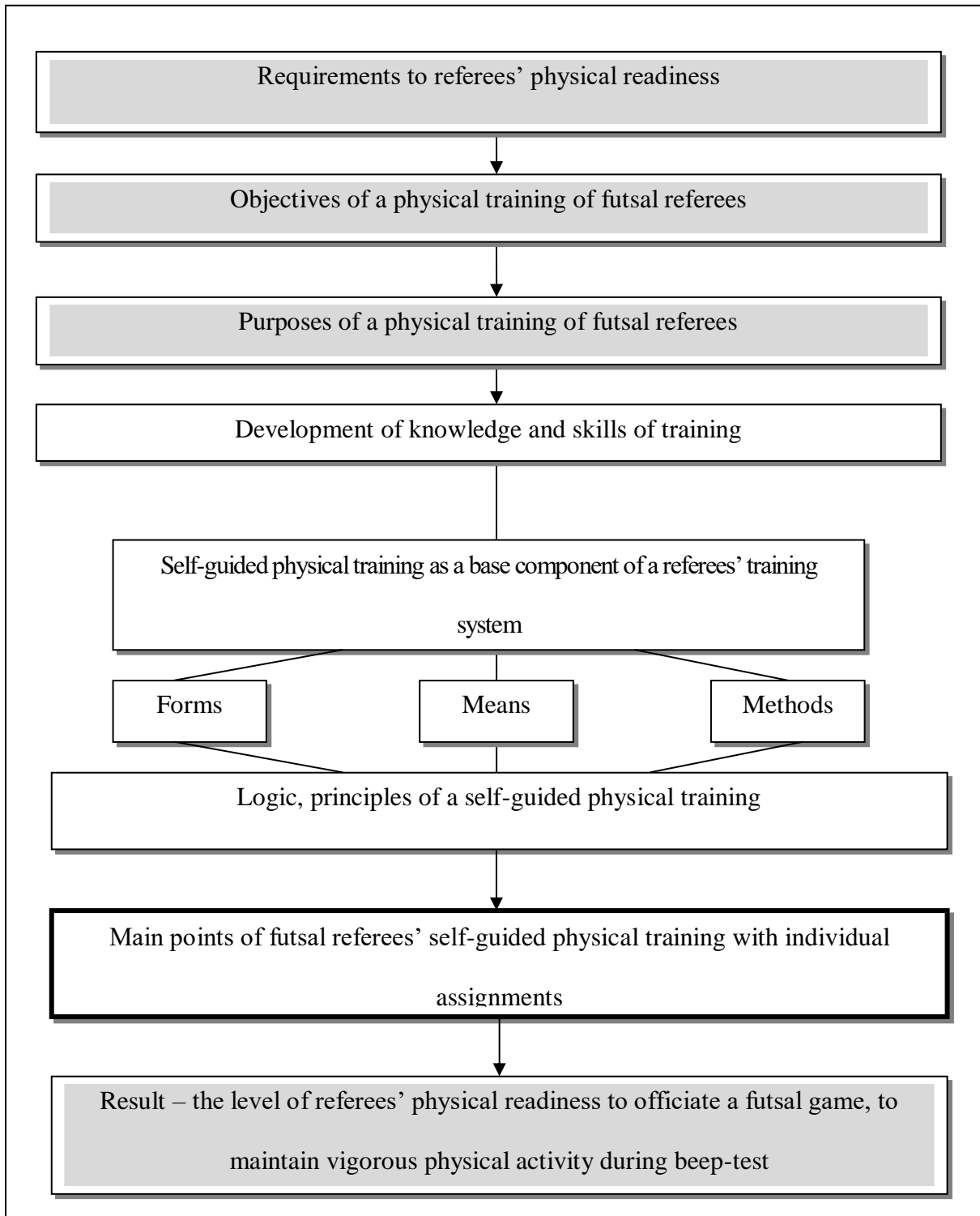


Figure 1. Pedagogical pattern of futsal referees' self-guided physical training with individual assignments

For achievement a relevant physical conditioning among futsal referees effectively the training program was based on an individual approach. For this purpose individual assignments for self-guided training were designed. Long and repeated self-guided trainings developed skills and habits of keeping in good shape and maintaining a high level of physical readiness among futsal referees. As a result – an incremental physical development of futsal referees.

The fact of increase in psychological demands and physical load among futsal referees was taken into consideration. For this reason a particular attention was paid to maintaining a general level of efficiency among futsal referees through resilience to adverse factors of refereeing. Individual assignments were the essential part of a self-guided training of futsal referees. An elaboration of individual assignments would have advantage of easing the workload when achieving a physical readiness of futsal referees for effective refereeing. A self-guided futsal referees' training suggested an employment of different means of unsupervised training.

Therefore, a development of independent training skills among futsal referees suggested development of cognitive abilities and a number of physical and psychological qualities relevant for effective professional engagement.

RESULTS AND DISCUSSION

A comparative analysis considered a physical readiness of TG and RG of futsal referees during the experiment. The findings are shown in Tables 1 and 2.

Table 1. Pedagogical experiment' benchmarking of futsal referees' readiness

Subjects in the test	Stages of experiment		
	1	2	3
RG (n = 28)	3.68±0.17	4.05±0.23	4.12±0.21
TG (n = 28)	3.67±0.18	4.14±0.17	4.47±0.19

(TG and RG 28 persons each) in scores ($\bar{X} \pm m$)

The use of individual assignments during relevant physical load gave a vast improvement in physical conditions of TG of futsal referees', especially after a year of self-guided training. The greatest improvement of physical condition among futsal referees was observed in 400 m running and in 40 m quick side step.

Even more inspiring change was observed in running coordination of referees while moving across a playing area. The fact was taken into consideration that a running manner of referees across a playing area might be multidirectional and with a significant acceleration of pace. This had effects on coordination mechanisms of muscle activation. It is found out that a variability of certain elements in the structure of running movements of futsal referees is far from even. It was also considered when planning a self-guided physical training of futsal referees and testing them. That is why the testing included 40 m of quick side step exercise.

Table 2. Level of physical readiness among experimental groups of futsal referees before and after the experiment

Exercise routine	Groups	Average results		
		Before the experiment	After the experiment	P
		$\bar{x}_1 \pm m_1$	$\bar{x}_2 \pm m_2$	
Running, 400 m (sec)	TG	64.2 ± 1.14	59.1 ± 1.12	<0.05
	RG	64.1 ± 1.18	62.3 ± 1.19	>0.05
Quick side step, 40 m (sec)	TG	9.12 ± 0.11	8.15 ± 0.11	<0.05
	RG	9.02 ± 0.19	8.92 ± 0.12	>0.05
Running, 100 m (sec)	TG	13.5 ± 0.31	13.1 ± 0.29	>0.05
	RG	13.4 ± 0.27	13.3 ± 0.32	>0.05

(TG and RG 28 persons each) ($\bar{x} \pm m$)

The organizational and methodological development of physical qualities focused both on structure of movements while running across a playing area and on the strength/speed preparedness. Therefore is obligatory a systematic and sustained process of futsal referees' training. It is worth emphasizing that an independent training of futsal referees targeted at development of physical abilities. It was carried out progressively varying a training load, specific to peculiarities of running activity on a playing area. This is a reflection of a comprehensive approach on organization of a self-guided physical training of futsal referees' treatment group.

A self-guided training was focused on treatment of particular muscle groups, most actively involved during refereeing. Futsal referees' training was built on strength/speed abilities' enhancement. In this context the components of strength/speed abilities reflecting qualities like absolute movement speed, starting muscle force, accelerating muscle force in sprint were examined. Their development was recognized as relatively independent of each other (Bolotin, & Bakayev, 2016).

The study has found that futsal referees' activity is a complicated phenomenon calling for special approach and understanding. This is a special type of activity fraught with great physical effort and neuro-emotional tension. The development of refereeing laws is still ongoing. The modern fast-paced game has fundamentally changed the nature and conditions of futsal referees' activity. For many futsal referees it acquired features of a vigorous activity associated with reception and processing of game information, selection of on-the-fly relevant decisions. It has been established, that futsal referees' activity is mainly characterized by a fast-paced movement across a playing area, with a majority of intellectual, psychological and emotional load.

When officiating a game and after a game there were significant changes of futsal referees' central nervous system resulting in decrease of external irritants' response. Visual simple and complex reactions' time when subjected to professional activity increased among TG by 22.1%, among RG – by 43.3% and among TG – by 11.4, among RG – by 27.8%, relatively. However, by the end of the pedagogical experiment these showings have been significantly improved (Table 3).

Table 3. Dynamics of futsal referees' psychophysiological state at the conclusion of experiment among experimental groups

Indicators	Subjects in the test	Input	Output at the conclusion of experiment	p	
Mental agility (number of true answers)	RG	43.2±2.3	58.1±1.5	0.05	
	TG	45.5±2.9	53.0±2.2	-	
Switching and allocation of attention (sec)	RG	279.4±4.4	268.1±2.9	0.05	
	TG	282.6±4.8	261.9±4.1	0.05	
Spatial relations and mental agility (number of true answers per minute)	RG	4.4±0.2	4.2±0.1	-	
	TG	4.4±0.2	4.7±0.2	-	
Complex visual evoked response time (sec)	RG	3.72±0.11	3.63±0.18	-	
	TG	3.71±0.14	3.54±0.21	-	
Simple response time (sec)	sound evoked	RG	0.238±0.05	0.256±0.05	-
	visual evoked	TG	0.251±0.06	0.250±0.04	-
	sound evoked	RG	0.248±0.07	0.247±0.05	-
	visual evoked	TG	0.267±0.08	0.228±0.05	0.05

(TG and RG 28 persons each) ($\bar{x} \pm m$)

The specificity of futsal referees' activity is both in continuous and short-term neuro-emotional stress, depending on pace of play amid vigorous physical activity. The defining characteristics of futsal referees' performance were found to be: significant timebound motion activity; big responsibility of decision-making, as it may have significant impact on results of a match; the load fluctuations during a game; being pressed for time giving a thought to disputable questions during a game.

Practice proved the particular importance of maintenance of a high level of physical readiness among futsal referees. Studies show that the problem is inextricably entwined with futsal referees' attitude on physical self-improvement, their status among other referees.

It was in the pedagogical experiment revealing that a self-guided physical training is of considerable importance to boost body systems, enhance neuromuscular apparatus and maintain high standards of efficiency. The workload affected a body function of the referees from the treatment group resulting in a more adequate response in comparison to reference group on probation (Table 4).

During the pedagogical experiment was determined a commitment to gain an enhanced ability of a quick response to external irritants, and specifically to negative factors on the part of coaches and players, which leads to a progressive decrease of physical readiness indicators.

Table 4. Dynamics of futsal referees' functional status at the conclusion of experiment among experimental groups

Indicators	Subjects in the test	Input	Output after 400 m running	p
Systolic blood pressure (mm Hg)	TG	116.9±1.8	118.2±1.0	-
	RG	117.1±1.5	118.2±1.4	-
Diastolic blood pressure (mm Hg)	TG	70.4±1.7	74.0±0.9	-
	RG	69.5±1.6	79.1±1.4	0.05
Stange's test (sec)	TG	71.4±2.4	65.1±1.1	-
	RG	70.0±2.3	54.3±2.0	0.05
Timed expiratory capacity (sec)	TG	37.8±1.8	29.8±1.3	0.05
	RG	37.3±1.8	20.0±1.7	0.05
Maximal Oxygen Consumption (ml·kg/min)	TG	44.1±1.0	44.0±0.6	-
	RG	44.2±1.4	43.8±1.2	-
Heart rate (b/min)	TG	71.6±1.8	74.4±0.8	-
	RG	66.6±1.8	88.5±1.8	0.05
Step test index (units)	TG	93.6±3.5	102.4±1.9	-
	RG	99.0±2.5	102.2±1.8	-

Indicators	Subjects in the	Input	Output after 400 m	p
	test		running	
Endurance ratio (ER)	TG	17.7±0.5	14.5±0.3	-
(units)	RG	17.1±0.5	16.2±0.3	-

(TG and RG 28 persons each) ($\bar{x} \pm m$)

The studies have shown that building of a physical readiness among referees is a complex and contradictory process driven by self-guided physical training. The final result of unassisted training of referees is a high level of a physical readiness to officiate a match.

CONCLUSION

The content of a self-guided training of futsal referees should suggest a development of cognitive abilities, and a number of physical and physiological qualities, relevant for a professional engagement presiding games. Given the levels of development of these are different, the individual approach should be engaged during a self-guided training of futsal referees. For this purpose, there were elaborated individual assignments to be included in a self-guided training program. The main performance indicators of a self-guided futsal referees' training with individual assignments are their speed endurance and quickness of recovery upon load.

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