

Correlation analysis of indicators of general and special physical preparedness and psycho-physiological indicators of 10-year-old football players

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Abstract. This paper examines the level of interconnection between the various parties of the preparedness of young football players for 10 years. *Objective* The study was conducted among the football players' children's sports schools "Arsenal". It was attended by 34 football players who train under the state program for children's sports schools of Ukraine. *Results:* In 10 years, there is only a tendency for the existence of correlations between various tests of physical and special technical readiness, as well as psycho-physiological indicators, which is caused by the beginning of the formation of motor skills in young football players. *Conclusions:* Thus, with age, the number and strength of correlation links between indicators of general physical, special physical and technical preparedness and psycho-physiological readiness indices increase, indicating the formation of football-specific qualities under the influence of training and training classes under the children's sports schools program. In the process of training young football players of 10 years under the program of the children's sports schools, correlation interrelations between indicators of general and special physical and technical readiness are formed. So, at 10 years, no statistically significant correlation links was found.

Keywords: players, correlation interrelation, psycho-physiological indicators (PPI), technical training (TT), general physical training (GPT), special physical training (SPT).

Introduction.

Relevance of the research

Football - one of the most exciting and popular games of our time. This game is characterized by a variety of actions that are performed with or without the ball. During the match, the advantage is the team whose players interact with each other more quickly (Lebedev S.I. 2013). The current level of football development requires the search for new tools and training methods that will increase the level of training of young football players (Bangsbo J., Lindquist F. 1992; Lebedev S., Abdula A., Bezyasichny B., Koval S., Khudyakova V. 2017). Specifics of motor activity of football players are closely interconnected with various manifestations of psycho-physiological reactions, indicators of general and special physical fitness of young football players (Bogdanis G. C., Ziagos V., Anastasiadis M., Maridaki M. 2007; Golomazov S., Shinkarenko I. 1994; Godick M. A. 2006). The higher the level of development of motor abilities in their optimal relation, the more opportunities there are for perfect mastery of technology and implementation. Conversely, the higher the technical skills, the motor abilities are better realized (Koval S.S. (2018). Therefore, the main feature for optimizing various types of training for young football players is the age-specific feature of the influence of motor abilities on the quality of mastering techniques and tactical actions of football.

Analysis of the latest publications

Not all tests that give an assessment of general and special physical, technical training, as well as technical, tactical actions with the ball of young athletes in the game of football, meet modern requirements. A significant part of the exercises used in the training process does not affect the quality of the performance of actions that guarantee the success of the motor tasks of playing football (Drandrov G.L., Davlyatchina A.R., Kudyashev N.Kh. 2016; Popov A.N. 2014). Thus, the relevance of the research topic is determined by the significant importance of information about the amount of physical activity of football players of both individual players and the team as a whole, to improve the quality of educational and training work.

Purpose of the study was: to determine the relationship between the various parties of the preparedness of young football players of 10 years at the initial training stage of young football players.

Material & methods.

Participants.

Objective: The study was conducted among the football players children's sports schools "Arsenal". It was attended by 34 football players who train under the state program for children's sports schools of Ukraine

Procedure. Data for the study of physical, technical and psycho-physiological training were determined on the basis of pedagogical observations and pedagogical tests conducted in the context of the direct training of young football players.

Statistical data processing. Methods of mathematical statistics are used in accordance with known recommendations with the use of computer programs "EXCEL" and "SPSS" (Antomonov M. Yu., 2006, Togobitskaya G. N., Shamardin G. N., Dolbysheva N. G., 2009).

Results

The implementation of the elements of football technology requires the motor qualities that affect their implementation. Therefore, it is very important to determine the relationship of each technical technique and motor quality, ensuring the effectiveness of its implementation.

We have determined that at the age of 10 years, both positive and negative dynamics of the relationship between indicators of general and special physical fitness can be traced (Table 1).

A weak correlation was found between running 15 meters from the spot and running 30 meters with dribbling the ball ($r=0,38$), strike at a distance ($r=0,41$), reaction to the auditory stimulus ($r=0,34$), in reaction to a moving object ($r=0,31$). Between 15 m running and 30 m running with dribbling ($r=0,37$), slalom ($r=0,36$), juggling the ball ($r=0,31$), reaction to a moving object ($r=0,32$), a tapping test ($r=0,53$), a sense of time ($r=0,43$). Running at 30 meters from the spot with a weak correlation with throwing the ball at a distance ($r=0,40$), dexterity of handling the ball ($r=0,32$). Shuttle running is slightly correlated with ball dexterity ($r=0,33$), prediction ($r=0,34$), and reaction to a visual signal ($r=0,37$). A jump from a place correlates with a strike at a distance ($r=0,47$) and a reaction to a visual signal ($r=0,45$), a standing long jump with a strike at a distance ($r=0,31$) and slalom ($r=0,31$), the reaction to the auditory signal ($r=0,38$) and the tapping test ($r=0,37$).

Also, a weak correlation was found between running 15 meters from the spot and throwing the ball into the distance ($r=-0,36$), dexterity of handling the ball ($r=-0,42$), juggling ($r=-0,36$), reaction to visual signal ($r=-0,37$). There is a weak correlation between running at 15 meters from flying start and dexterity of handling the ball ($r=-0,41$), strike on accuracy ($r=-0,43$), and response to a visual signal ($r=-0,58$). Somewhat less interrelationship exists between running at 30 m and slalom ($r=-0,33$), operational memory ($r=-0,32$), reaction to a moving object ($r=-0,35$), and a tapping test ($r=0,36$), a sense of time ($r=0,34$). Running 300 m weakly correlates with dribbling and tracing the ball ($r=-0,39$), dexterity with the ball ($r=-0,31$), juggling with the ball ($r=-0,41$), tapping test ($r=-0,36$).

The run time of the shuttle run has a different level of correlation with juggling with a ball ($r=-0,38$), a reaction to the auditory signal ($r=-0,52$), a reaction to a moving object ($r=-0,48$), a tapping test ($r=-0,54$), a sense of time ($r=-0,42$). The high jump correlates with a 30 m run with dribbling ($r=-0,37$), slalom ($r=-0,34$), dribbling with a stroke of 5 laps ($r=-0,58$), a reaction to auditory signal ($r=-0,37$), reaction to a moving object ($r=0,36$), tapping test ($r=-0,30$). The indicators in the standing long jump correlate with the reaction to a visual signal ($r=-0,37$) (Table 1)

Table 1

Correlational relationship between GPT and SPT, TT and PPI of young football players 10 years old

№	Tests of general physical preparedness	Indicators of special physical training				Technical training				Psycho-physiological indicators							
		30 m running with dribbling, s	Strike at a distance, m	Throwing the ball at a distance, m	Slalom (ball control), s	Dribbling with a stroke of 5 laps, s	Complex test, s	Juggling, number of times	Strike on accuracy, points	Operational memory, s	Prediction, points	Reaction to a visual signal, s	Reaction to the auditory signal, s	Reaction with a choice, s	RMO, s	Tapping test (10 s)	Sense of time (5 s)
1.	Running at 15 m from the spot, s	0,38	0,41	-0,36	0,25	-0,18	-0,42	-0,36	0,36	0,33	-0,26	-0,37	0,34	0,08	0,31	0,23	0,06
2.	Running at 15 m from flying start, s	0,37	0,24	0,16	0,36	0,29	-0,41	0,31	-0,43	-0,02	-0,16	-0,58	0,39	-0,27	0,32	0,53	0,43
3.	Running at 30 m from the spot, s	-0,25	-0,21	0,40	-0,33	-0,26	0,32	-0,19	0,57	-0,32	0,28	0,27	-0,24	0,13	-0,35	-0,36	-0,34

4.	Running at 30m,s	0,06	0,27	-	-	-	-	-	0,19	0,22	0,23	0,26	0,17	0,33	-	-0,36	-0,25
5.	Shuttle running 3x10m,s	0,40	-	0,13	-	-	0,33	-	0,27	-	0,34	0,37	-	0,05	-	-0,54	-0,42
6.	Jump up from a place,cm	-	0,41	0,02	-	-	0,20	-	0,47	0,26	0,24	0,45	-	0,25	-	-0,30	-0,29
7.	Standing long jump,cm	0,13	0,31	0,31	0,31	0,14	-	-	-	0,19	-	-	0,38	0,14	0,16	0,37	0,17

That is, in 10 years there is only a tendency for the existence of correlations between various tests of physical and special technical preparedness, as well as psycho-physiological indicators, which is caused by the beginning of the formation of motor skills in young football players.

Correlation analysis of indicators of technical and special physical preparedness have a different level of interrelation (Table 2). Thus, a weak positive relationship was found between running 30 meters with dribbling and dexterity of handling the ball ($r=0,36$) and predicting ($r=0,39$) a tapping test and slalom ($r=0,35$) slalom and complex test ($r=0,46$), the reaction to the auditory signal ($r=-0,56$), the sense of time ($r=-0,48$) the throw-in of the ball and the reaction to the visual signal ($r=0,51$) by hitting the ball at a distance running for 30 m with dribbling and dribbling and stroking ($r=0,55$), juggling the ball ($r=0,37$), operational memory ($r=0,36$), reaction to a moving object ($r=0,37$).

Table 2

Correlation analysis between SPT and TT and PPI of young football players 10 years old

№	Indicators of special physical training	Technical training				Psycho-physiological indicators								
		Complex test, s	Dexterity of handling the ball, m	Juggling, number of times	Strike on accuracy, points	Operational memory, s	Prediction, points	Reaction to a visual signal, s	Reaction to the auditory signal, s	Reaction with a choice, s	RMO, s	Tapping test (10 s)	Sense of time (5 s)	
1.	Running 30 meters with dribbling, s	0,55	0,36	0,37	-0,01	0,36	0,39	-	0,24	-0,43	0,37	0,32	0,30	
2.	Strike at a distance, m	-0,40	-0,55	-0,11	0,09	0,30	-	0,41	0,41	-0,48	-0,46	0,30	0,27	
3.	Throwing the ball at a distance, m	0,08	-0,02	0,02	0,06	-	0,26	0,51	-0,43	0,04	-0,32	0,31	-0,01	
4.	Slalom (s)	0,46	-0,16	0,15	-0,39	0,11	0,35	-	0,56	-0,21	0,31	0,35	0,48	

A weak negative correlation was also found between: slalom and reaction to the visual signal ($r = -0,33$), reaction to a moving object and throwing the ball at a distance ($r=-0,32$), 30 m running with the ball and a reaction to a visual signal ($r=-0,44$), a reaction with a choice ($r=-0,43$), hitting the ball at a distance and dribbling the ball ($r=-0,40$), dexterity of handling the ball ($r=-0,55$), prediction ($r=-0,36$), reaction to a visual signal ($r=-0,41$), reaction with a choice ($r=-0,48$), reaction to a moving object ($r=-0,56$) throwing the ball into the distance and operational memory ($r=-0,39$), reaction to the auditory signal ($r=-0,43$) (Table 2).

Elements of technical readiness also have a weak correlation with psycho-physiological indicators (Table 3). Thus, prediction correlates with dexterity of handling the ball ($r=0,35$), strike on accuracy ($r=0,43$), response to a visual signal with dribbling and tracing the ball ($r=0,45$), dexterity of handling the ball ($r=0,41$), strike on accuracy ($r=0,51$) reaction to a moving object and a complex test ($r=0,32$), juggling the ball ($r=0,30$) of a complex test with a tapping test ($r=0,34$), a sense of time ($r=0,41$).

Correlation between technical training indicators and psycho-physiological indicators of young football players 10 years old

№	Indicators of technical training	Psycho-physiological indicators							
		Operational memory, s	Prediction, points	Reaction to a visual signal, s	Reaction to the auditory signal, s	Reaction with a choice, s	RMO, s	Tapping test (10 s)	Sense of time (5 s)
1.	Complex test, s	-0,32	0,08	0,45	0,007	0,24	0,32	0,34	0,41
2.	Dexterity of handling the ball, m	-0,01	0,35	0,41	-0,40	-0,03	0,11	0,16	-0,10
3.	Juggling, number of times	0,01	-0,46	0,10	-0,24	0,07	0,30	-0,01	0,03
4	Strike on accuracy, points	0,13	0,43	0,51	-0,01	0,20	-0,44	-0,67	-0,32

Discussions.

The results of our research continue a series of studies on the problem of the interdependence of physical, technical, tactical and psycho-physiological indicators of young football players. (Drandrov G.L., Davlyatchina A.R., Kudyashev N.Kh. 2016; Popov A.N. 2014; Koval S.S. 2018).

Zhurid S.M. (2011) in his work notes that correlation relationships exist between technical and tactical and creative indicators of football players 15-17 years old. Thus, enhancing the effectiveness of the creative indicator, the efficiency of the technical and tactical indicator of a football player is enhanced. The findings of our study confirm the opinion (Belenko V.A., Saskevich A.P., Maslovsky E.A. 2005) that the physical and technical training of young football players has different levels of correlation relationships, but not all the exercises that are used in physical training depend on the technical skill level of football players and vice versa. So, in identifying positive and high relationships between the indicators of various types of preparedness of football players, the result will be the construction of an effective methodology for training football players at different stages of the development of football skills of future professional football players.

Summarizing the above, we can confirm the importance of our research to find interrelated indicators of different types of preparedness among young football players, since the tendency of selection in big football is traced in identifying talented players who are able to show high competitive results.

Conclusions.

Thus, with age, the number and strength of correlation links between indicators of general physical, special physical and technical preparedness and psycho-physiological readiness indices increase, indicating the formation of football-specific qualities under the influence of training and training classes under the children's sports schools program. In the process of training young football players of 10 years under the program of the children's sports schools, correlation interrelations between indicators of general and special physical and technical readiness are formed.

Prospects of subsequent researches

Further studies aimed at determining the correlation relationships between the various sides of the preparedness of 11 year old players.

Conflict of Interest. The authors declare that there is no conflict of interests.

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