

Determination of Standard Levels for some Physical and Skill Variables Among Professional Youth Football Players in the West Bank (Palestine)

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ABSTRACT

This study aimed to identify standard levels for some variables of physical fitness components and technical skills among youth football players of professional teams in the West bank (Palestine). The investigation was conducted on 145 players registered in the Union of the Palestinian soccer professional clubs for the year 2010/2011. Eight clubs have been chosen randomly, while three physical tests and three skill tests were used for the evaluation. Data were expressed as mean values and standard deviations (SD) using SPSS program (statistical software packages for social sciences), standard levels were identified using percentile ranks of physical and skill variables. Results showed that levels of physical and skill capacities among youth teams of professional football in the West bank (Palestine) were inferior than ideal proportions and standard levels set previously in this study. The researcher recommended the need to adopt these standards levels for the evaluation of physical abilities and basic skills among youth football players in west bank in order to secure the future of football in Palestine.

Keywords: Soccer, physical and skill variables, standard levels, professional youth soccer players, Palestine

INTRODUCTION

Football is by far the world's most popular game considered as a social part in all countries and described as a school of life through which valuable skills can be taught, such as teamwork, dedication, perseverance and healthy lifestyles (Williams., 2013).

In recent decade, players reached high development of physical fitness components, technical skills and tactical

performance thanks to scientific efforts that contribute the development of new methodologies, the validation of fitness testing and training protocols, setting match and training injury profiles, the understanding and development of perceptual-cognitive expertise which contribute to raise the level of the physical and skill abilities among players (Weston and al., 2012).

This is the reason that recently, teams with poor development of scientific research levels and unqualified players has no place in the contemporary football game and they are more susceptible to injury during match and training.

In order to reach football players to high levels of physical performance, obtain the best result and compete against teams with advanced levels, attention must be focused to the application of scientific

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evaluation within clubs and among various stages, especially youth coaching and training (Stratton and al., 2004), in order to secure the continuity and the success of football activity in the future.

In fact, youth stage is considered as the most important stage for building new players, discovering talented people and during which players receive basic tactical formation in order to transform them from amateur status to elite, therefore, interest in this stage plays a fundamental role in harvesting the best products in the future of football game.

While, Al-Yassiri and Ali. (2018) indicate that interest in the training process is not sufficient unless if it is accompanied by a process of selecting players who have the capabilities and high preparations for practicing football and reaching the best results.

The selection process is not an easy process because today it is not relying on the self-assessment of the coach, but rather it is relying on the scientific foundation by using the methods of evaluation and measurement in order to determine its indicators, and this is consistent with what Rosch and al. (2000) assert that tests are an important means in evaluating the physical profile of players and identifying their technical and tactical levels using scientific analyses to reach accurate results.

Since the physical performance and the skill ability in football are among the most variables that can be influenced, improved and developed, we found that the importance of this study is to determine standard levels of these variables helping coaches in this sports field, to diagnose performances, select footballers, categories players, follow-up the progress and evaluate the training programs by measuring physical and skill abilities based on the correct scientific foundations in order to solve the problem facing youth football in Palestine and to stand on the level of players' performance and monitor their progress during the different preparation periods.

METHODS

Subjects

The study population consisted of 280 professional youth football players age between 14 and 15,5 year registered in the Palestinian Football Association

among the 12 professional clubs in west bank during the year 2010/2011.

After the exclusion of goalkeepers, 145 youth football players were chosen randomly to be contributed in this study from 8 clubs out of 12 clubs, with a percentage of 51.78%.

Table 1 shows the arithmetic mean \pm the standard deviations of the age, body mass and height of all participants in study. The maximum and minimum values of the population characteristics have also been indicated in this table.

Study design

To determine the standard levels of physical and skill variables among youth football players in Palestine, a questionnaire was conducted in this study in which the most important physical and skill abilities can be developed among youth football players were cited with their specific and scientific tests.

The questionnaire was presented to a group of 13 experts and specialists in the field of football, especially in testing, measurement and sports training in order to determine the stability, validity and objectivity of tests and select those who obtained the highest percentage in order to be used in this study and determine the standard levels of physical and skill abilities of youth football players in Palestine.

The Stability of tests was calculated using a test and a retest with a time difference of 3 days among 20 football players who were later excluded from the study sample, with adjusting of all variables and conditions set for the first test, as shown in the Table 2, results indicate a high stability factor for physical and skill variables using the Pearson's correlation coefficient.

The validity of tests was calculated using the square root of the coefficient of stability, and it is clear through the presentation of the results in Table 2 that tests had a high score indicating self-acceptance.

Table 1: Statistical descriptive of subjects (mean \pm standard deviation) (n=45)

Variable	Mean	Standard deviation	Minimum	Maximum
Age (year)	15,27	0,41	14	15,5
Body mass (kg)	51,81	7,81	35	72
Height (cm)	163,11	7,57	145	181

Table 2: Mean±standard deviations, coefficient of stability and validity of physical and skill tests (n=20)

Physical and skill tests	Test		Retest		Coefficient of stability	Validity
	Mean	S.D	Mean	S.D		
1500 run test (min)	6,34	0,53	6,31	0,53	0,984*	0,991
Sprint 30m (s)	4,75	0,26	4,75	0,28	0,948*	0,973
Sargent jump test (cm)	37,15	5,78	36,95	5,61	0,946*	0,972
Dribbling ball for 1min (n)	92,05	15,22	91,95	12,71	0,963*	0,981
Short pass precision (n)	5,85	1,41	5,81	1,54	0,872*	0,933
Shooting precision (n)	6,85	1,81	6,81	1,76	0,860*	0,927

S.D: standard deviations ; n: number ; *: significant correlation

The objectivity of tests was determined by allocating two judgments to record the results of the tests separately, after collecting results, the researcher processed the data statistically by determining the correlation coefficient (Pearson) between the two degrees of judgments and then extracting the value of correlation coefficients to indicated the objectivity of the tests as showed in Table 3.

Statistical analysis

The researcher used the SPSS program using the following statistical treatments: Mean, standard deviations, maximum and minimum values, percentile ranks, frequencies, percentages and Pearson’ correlation coefficient test.

In order to determine the standard levels, the raw results were converted into standard results for each of the physical and skill variables using the standard percentile degree (percentage), while the standard normal distribution was used to set the standard criteria of levels.

RESULTS

It is clear from Table 4 that the capacity of endurance tested by the 1500 run test is inferior than the standard levels cited in the study, and did not rise to the required level where the arithmetic mean measured by the test is 6,22 ± 0,55 min.

While the results of speed and power capacities tested by the 30m sprint test and Sargent jump test were respectively 4,71 ± 0,29 s and 39,91 ± 7,31 cm and they came out below the required level, this indicates a weakness in these two variables compared to the standard levels and ideal proportions in the study.

Table 3: Mean±standard deviations, objectivity coefficient of physical and skill tests (n=20)

Physical and skill tests	Refree1		Refree2		Coefficient of objectivity
	Mean	S.D	Mean	S.D	
1500 run test (min)	6,33	0,53	6,32	0,54	0,983*
Sprint 30m (s)	4,75	0,26	4,76	0,23	0,956*
Sargent jump test (cm)	37,61	5,54	37,65	5,56	0,999*
Dribbling ball for 1min (n)	90,15	15,24	90,15	15,14	0,999*
Short pass precision (n)	5,60	1,42	5,60	1,42	1*
Shooting precision (n)	6,75	1,81	6,75	1,81	1*

S.D: standard deviations; n: number ; *: significant correlation

Table 4: Mean±standard deviations, best and lowest score of physical and skill tests among Palestinian youth football players (n=145)

Physical and skill tests	Mean	Standard deviation	Best score	Lowest score
1500 run test (min)	6,22	0,55	5,07	7,21
Sprint 30m (s)	4,71	0,29	4,03	5,38
Sargent jump test (cm)	39,91	7,31	55	24
Dribbling ball for 1min (n)	91,56	1,39	136	70
Short pass accuracy (n)	5,78	1,41	8	3
Shooting accuracy (n)	6,06	1,59	10	3

n: number

As for the skill of short pass accuracy and shooting accuracy indicated in table were respectively 5,78 ± 1,41; 6,06 ± 1,59 and they were also under the standard levels and ideal proportions.

Table 4 indicate that ball controlling by youth football players was 91,56 ± 1,93 as a number of dribbling with the ball in one minute and it is also under the standard levels.

It is clear from Tables 4 and 5 that the mean of physical and skill abilities results among Palestinian youth football players (1500m run test (endurance)/30m sprint test (speed)/Sargent jump test (power)/dribbling the ball for a minute (controlling the ball)/number of short pass (pass accuracy)/number of shoot (shooting accuracy)) were respectively (6,22 min, 4,71s 39,91cm, 91,56 times, 5,78 targets and 6,06 targets) corresponding to percentile ranks respectively (50%, 40%, 40%, 50%, 50%, 40%).

As for the best standard levels of physical and skill tests of all players, which correspond to the percentile rank (90%) or higher were respectively (5,41 min or less, 4,29s or less speed, 50 cm or higher for vertical jump, 110 times of dribbling with ball, 8 short pass with precision and 9 shooting with precision on the wall).

For the lowest standard which corresponds to the percentile rank 10 or less for these variables were respectively (7,07 min or higher, 5,08s or higher speed, 30cm or less vertical jump, 74 times or less dribbling, 4 short pass and 4 shooting with precision).

Table 6 shows the ideal proportions and percentage of the standard levels that were determined using the physical and skill variables among young players in the Professional Football Clubs in Palestine, where results from this table indicated that the mean of the 1500 m run test is (acceptable), the general average of the 30m sprint test is (acceptable), the mean of the Sargent jump test is (acceptable), thus, the general mean of the physical and skill abilities of youth football players in Palestine is (acceptable).

DISCUSSION

The aim of this study was to determine standard levels and ideal proportions of some physical and skill abilities among youth football players using specific tests and scientific methods of measurements, then, investigating the level of these physical and skill capacities among youth Palestinian football players registered in professional clubs and comparing them with the standard levels.

Results in this study show that all physical and skill abilities (endurance, speed, power, controlling ball, short pass accuracy, shooting accuracy) among youth football players in Palestine were inferior than standards levels and ideal proportions respectively as follows (6,22 ± 0,55 min; 4,71 ± 0,29 s; 39,91 ± 7,31 cm; 91,56 ± 1,93; 5,78 ± 1,41 and 6,06 ± 1,59) endurance is an important co-determinant of football performance, as it is a key feature of physical capacity and an important regulator of football-specific tasks (Hoff and Helgerud., 2004), this aerobic capacity among youth Palestinian football players was lower than standard levels and did not rise to the ideal proportion, this might be explained that there are some football coaches are not interested in developing endurance capacity during the training season and this does not agree with what Helgerud and al. (2001) indicate, that improving the aerobic capacity is important to a reach a higher level of performance because it is the basic component for developing the rest of the fitness capacities.

As Mcmillan and al. (2005) also found that endurance training among professional youth football players improve the mean of Vo_{2max} significantly from 63.4 (5.6) to 69.8 (6.6) ml kg⁻¹ min⁻¹. therefore, aerobic training

Table 5: Percentile degree of physical and skill variables among Palestinian youth football players (n=145)

Percentile	1500 run test (min)	Sprint 30m (s)	Sargent jump test (cm)	Dribbling ball for 1min (n)	Short pass accuracy (n)	Shooting accuracy (n)
90+	-5,41	-4,29	+50	+110	8	+ 9
80	5,54	4,43	47	104	7	8
70	6,05	4,53	44	99	7	8
60	6,15	4,61	42	94	6	7
50	6,24	4,71	40	91	6	7
40	6,37	4,81	38	87	5	6
30	6,46	4,87	36	82	5	6
20	6,58	4,97	33	79	4	5
10-	+7,07	+5,08	-30	-74	- 4	- 4

*(+) Is higher than/(-) less than

Table 6: Standard levels, ideal proportions, number of players in each standard level and the percentages achieved in tests of physical and skill variables (n=145)

Test	Standard levels	Ideal percentage	Number of players	Percentage achieved
1500 run test (min)	Excellent	5.00 and less	0	0%
	Very good	5.01–5.40	13	9.0%
	Good	5.41–5.80	18	12.4%
	Medium	5.81–6.20	38	26.2%
	Acceptable	6.21–6.60	48	33.1%
	Unaccepted	6.61 and higher	28	19.3%
Test	Standard levels	Ideal percentage	Number of players	Percentage achieved
Sprint 30m (s)	Excellent	4.00 and less	0	0%
	Very good	4.01–4.20	6	4.1%
	Good	4.21–4.40	21	14.5%
	Medium	4.41–4.60	30	20.7%
	Acceptable	4.61– 4.80	29	20.0%
	Unaccepted	4.81 and higher	59	40.7%
Test	Standard levels	Ideal percentage	Number of players	Percentage achieved
Sargent jump test (cm)	Excellent	55 and higher	2	1.4%
	Very good	50–54	14	9.7%
	Good	45–49	22	15.2%
	Medium	40–44	42	29.0%
	Acceptable	35–39	30	20.7%
	Unaccepted	34 and less	35	24.1%
Test	Standard levels	Ideal percentage	Number of players	Percentage achieved
Dribbling ball for 1min (n)	Excellent	120 and higher	5	3.4%
	Very good	110–119	11	7.6%
	Good	100–109	26	17.9%
	Medium	90–99	36	24.8%
	Acceptable	80–89	36	24.8%
	Unaccepted	79 and less	31	21.4%
Test	Standard levels	Ideal percentage	Number of players	Percentage achieved
Short pass accuracy (n)	Excellent	8 and higher	17	11.7%
	Very good	7	37	25.5%
	Good	6	27	18.6%
	Medium	5	30	20.7%
	Acceptable	4	30	20.7%
	Unaccepted	3 and less	4	2.8%
Test	Standard levels	Ideal percentage	Number of players	Percentage achieved
Shooting accuracy (n)	Excellent	10 and higher	2	1.4%
	Tery good	9	13	9.0%
	Good	8	36	24.8%
	Medium	7	28	19.3%
	Acceptable	6	24	16.6%
	Unaccepted	10 and less	42	29.0%

during preparation period in football have an important effect on physiological and a positive impact on the cardio-respiratory circulation.

While, Rago and al. (2017) indicate that improving endurance capacity differ per playing position and correlate with the capacity to perform intermittent

endurance exercise. Coaches must take into consideration these positional variations in distance covered in order to design position-specific physical drills.

As for, levels of speed and power capacities among youth Palestinian football players were below the required level compared to the ideal proportions, which affect negatively the performance and the achievement of expected results because football activity is based on movement of velocity and jumping (Wisloff and al., 2004).

The researcher attributes the unacceptable level of speed and power capacities among youth Palestinian football players is due to the lack of use of the exercises and training protocol based on velocity and maximal strength development of muscle contractions such as plyometric training-jumping, bounding, and hopping exercises which have an important effect on the neuronal activity of the muscle and then develop the production of muscle force and power among youth players (Tomas and al., 2009).

Spencer and al. (2011) indicate that speed and power capacity improve differently comparing to the other fundamental fitness tests throughout adolescence in highly skilled soccer players, whereas the stabilization of their levels occurs at the age of 18 years. Junior football coaches should prescribe physical training that takes into account variations in short-term disturbance or deterioration in physical performance during this period of development.

Short passing, dribbling and shooting are the most important and fundamental technical abilities in football, unfortunately, results were also under the required level compared with the standard levels and ideal proportions determined in this study and it is considered to be crucial in determining the outcome of competitive fixtures.

Russell and Kingsley. (2011) indicate that coaches must dedicate a large proportion of time for practicing isolated skills, such as passing, shooting and dribbling by using new methods to simulate and evaluate the demands of soccer match play (focusing on the measurement of soccer skills), explore the effects of exercise on these skills, and to examine the factors that influence skill proficiency during soccer-specific exercise.

The unacceptable level of physical and skill variables among youth football players in Palestine might due to several factors such as the lack of material and tools, the lack of provision of stadiums and gyms and the poor infrastructure, where the stadiums, tools and human capacities are qualifying for the elite team players, and this reflects negatively on the youth without taking into consideration the future of football game.

Also, random training during the preparation season without regard to the principles and scientific foundations and individual differences related to the training process, and without the existence of training programs for the development of physical variables commensurate with the age of young adults, and the physiological, physical and psychological characteristics, lead to adverse results in the training process.

Also, the lack of regularity in the training process (interruption of training for periods) due to players' preoccupation with academic examinations, or stopping training during the month of Ramadan, or the absence of coaches, or sports injuries and lack of proper rehabilitation after injury affect the physiological adaptations of the body and a decrease in physical and athletic achievement (Fleck., 1994).

Besides, the random selection process of players that depends on the coach's personal experience is not sufficient, in fact, the selection is considered one of the most important steps that help to reach the higher sports levels and then the sporting achievements.

CONCLUSION

This study aimed to determine standards levels of physical and skill abilities in order to compare them with the level of youth football players capacities in Palestine.

Results indicate that the mean of endurance, speed and power capacity is under the medium level, thus, the general mean of the physical and skill abilities of youth football players in Palestine is under the medium level.

Results might be explained by several factors such as training condition, lack of material and tools, detraining, selection of players without any scientific foundation.

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