The structural factor of the body components of male high level basketball players as a selection limitans

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Abstract: The studies and scientific researches have getting account to specify the special characteristics of every sport activities and the conditions needed of the players to suit the physical activities as the selection based on scientific principle share in physical performance. Basketball is a sport that is influenced by the body components as it is a good biological marker for the player physical abilities in different positions of play, because every position has a special body components needed for the position. The present distribution of the body component is a marker of the physical and biological state of the player by which rationing the training intensities occur. The aim of the study is to detect the structural factor of the body components of male basketball players.
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Keywords: Basketball players, body composition analysis, selection, structural factor.

1. Introduction and Research problems

Selection is a predictor operation, built on a guide line basis of many abilities and characters such as body composition, anthropometric or morphologic or body composition denoting body type with some measurements of physical fitness and physiological capability and markers of movement levels and skillness of players of high level which lead to activate these factors in a predictor calculation by which it guide to youngsters selection of some individuals or group sports which may realize the human economic effort in sport field (2: 27) (1: 31) (6: 27-33) (23: 34).

By specifying the needs of the practiced physical activity it is the main object for a criteria or a test ruler for the right selection from above to under by identifying the special capabilities and abilities of players of high level as a model (11: 31).

The body composition and anthropometric measurements are of the most important factors sharing in selection and to reach the higher sport levels as there are a relationship between body measurements of each individual as length, weight and circumferences of the bodies and other percent of body measurements to each other and put the center of body weight and to reach the higher levels, by these measurements it can be predicted with important knowledge about the arrival of the youngster to a complete mature phase (11: 32).

The body measurements give the opportunity to study the relation between phenotype and performance in addition to put the light on all connections with body composition as height, width and circumferences and the affinity to reach the sport peak (10).

The attendance of the appropriate sport body composition is a target of many trainers during preparing the preparatory stages of the program which aims to development of the different physical abilities, and then making progress of the skillness and plans efficiencies of different sports, as each physical activity has its needs in physical and physiological specialty for those willing to have medals and championships in their sports (22: 293).

Physical fitness of the individual of different sport is limited by the body composition suitability to the sport, and the efficiency of its content to do the movement. The morphological variables have a role on the physical and motor variables related to the performance and on motion coordination of the player and his motor abilities, also it help in the training process according to individual variation and the type of activity and guide the youngsters to the different physical activities suitable to the need of each activity (20: 279) (24: 12).

The volume, shape and body construction of athletes are important factors to improvement (1: 293), and the skillness performance and body measurements are important components to reach championship level (25).

Fat percent and muscles are related to physical fitness and affect each other, as fat percent increase it affect negatively the physical fitness such as aerobic and anaerobic abilities and flexibility, and muscle affects positively strength increase and endurance and speed, and body composition is important in the sport that need the movement of the body in perpendicular plane and horizontally in space (3: 346-384) (5: 75).

Basketball is one of the sports that is charactered by different skillness and plan performance, also the player must play in different positions and what governs the position of the player are the physical, skillness and body components, and every player has

his special skillness which express his action in performing his target in the play field and in the different positions (17: 362).

The researchers state that basketball is an activity affected by the body composition as it is a marker that is viable for the motion abilities of the player, and the percent of body composition distribution is a marker of the physical and biological state of players by which basketball player is selected.

The different researches agree about the importance of the body composition of the basketball player due to its relation to the skillness, motor, physical and physiological abilities of players. This was the cause to choose the study of the body composition of the basketball players as a marker of selection and guide to the training operations to reach the highest level performance.

The aim of the study is to investigate:

The structural factor of the body components of the male high level basketball players of the Qatar clubs involved in Qatar league.

Study procedures:

The researchers used the descriptive-survey method as it is suitable for the nature of the study.

The sample of the study was composed of 32 basketball players of different clubs in Qatar as noted in Table (1).

Table (1): Qatar clubs involved in the study

Club-Name	*No.*	*%*	*Position*		
			Play maker	*Cutter*	*Fulcrum player*
Ahli	6	18,75	2	2	2
Gharafa	5	15,63	1	2	2
Shamal	4	12,00	1	2	1
Wakra	6	18,75	1	3	2
El geish	5	15,63	2	2	1
Qatar	6	18,75	1	3	2
Total	32	100	8	14	10

The basic study issued 1/3/2014 to 10/3/2014. The study was performed in Qatar training club in Gharafa.

2. The research method:

The survey – descriptive method was used as being suitable to this type of research. The sample consists of 32 male basketball players of different Qatar clubs sharing in Qatar league.

Tanita, TBF 300, body composition analyzer was used in the experiment in the period of 1/3/2014 to 10/3/2014, and through the analysis of the building factor of data, and in the light of the research objectives and statistical treatments the following conclusions were reached. The agreement of three main factors of the body composition (fat percent of trunk, free fat mass of the right arm, left leg resistance) in light of these conclusions reached, it is recommended: Taking care of the proceeded body composition of the conclusion as they might be the scientific base of:

The use of the concluded results in the selection of basketball players, the special care of body composition results as a marker of the physical, health state of the players, selection based on sound scientific basis selection of the right material for basketball players guide the training program of basketball players and improve the standard of the national level.

Tools of the study:

- Restameter for length measure.
- Tanita for body composition analysis.
- Scale for weight measure.
- Total body water (TBW).
- Fat – Free Mass.
- Fat – Free Mass of Trunk.
- Fat – Free Mass of Arm (left, Right).
- Fat – Free Mass of Leg (left, Right).
- Fat Mass.
- Fat Mass of Trunk.
- Fat mass of (Left, Right arms, legs).
- BMR.
- Resistance (Left, Right arms, legs).
- Bio-impedance analysis (BIA).
- BMI.

Fat percent, trunk, left, right arms, legs/steps of execution of the study:

The basic study was from 1/3/2014 to 10/3/2014:

- Individual measurements.
- Restameter for length.
- Input of age, length, male, female (sex) athletes or non athletes.
- The athlete step on apparatus without shoes or socks and catch the grisp of the right, left part of the apparatus.
- After a while a cling indicate the end of the measure.
- A report was issued individually.

Statistical Data: The researchers proceed the following:

- Mean.

- SD.
- Skewness.
- Flattening and factorial analysis.

3. Results and Discussion

Table (2): Factorial analysis of body components

Basic Measurements	*Mean*	*SD*	*Skewness*	*Differentiating index*
1. Age (year)	25.33	5.25	0.07	-0.85
2. Height (cm)	194.00	10.33	0.11	-0.68
3. Weight (Kgm)	93.88	16.69	0.53	-0.52
4. BMI (kgm/m^2)	24.74	2.25	0.29	-0.65
5. BMR	2386.63	388.63	0.53	-0.71
6. Fat %	14.48	4.01	0.04	-0.870
7. Fat mass	14.02	5.90	0.66	-0.37
8. Free fat mass	79.87	11.90	0.35	-0.70
9. TBW	58.48	8.71	0.34	-0.70
10. Body Resistance	548.46	44.30	0.19	-0.38
11. R. Leg Resistance	242.12	26.25	0.54	-0.23
12. L. Leg Resistance	243.42	25.66	0.30	-0.35
13. R. Arm Resistance	282.25	25.28	-0.44	-0.73
14. L. Arm Resistance	288.38	25.70	-0.42	-0.57
15. % Fat R. Leg	13.48	2.76	0.14	-0.19
16. Fat mass R. Leg	2.17	78.00	0.81	-0.23
17. R. Legg FF Mass	13.48	2.02	0.27	-0.64
18. % Fat L. Leg	13.46	2.80	0.34	-0.66
19. Fat mass L. Leg	2.17	80.00	0.77	-0.47
20. L. Leg FF Mass	13.49	2.04	0.33	-0.61
21. % Fat R. Arm	10.22	3.34	-0.39	-0.96
22. Fat mass R. Arm	62.00	29.00	0.40	-0.87
23. R. Arm FF Mass	5.26	99.00	0.56	-0.67
24. % Fat L. Arm	10.56	3.73	-0.43	-0.85
25. Fat mass L. Arm	65.00	31.00	0.36	-0.74
26. L. Arm FF Mass	5.21	1.00	0.46	-0.94
27. % Fat Trunk	16.04	5.16	-0.09	-0.79
28. Fat mass Trunk	8.45	3.87	0.58	-0.31
29. FFM. Trunk	42.45	6.01	0.30	-0.75

Skewness (-0.44 – 0.81) less than (± 3), which means right population.

Table (3): R of the body Component

Items	*Age*	*Height*	*Weight*	*BMI*	*BMR*	*Fat %*	*Fat mass*	*Free fat mass*	*TBW*	*Body Resist.*	*R. Leg Resist.*	*L. Leg Resist.*	*R. Arm Resist.*	*L. Arm Resist.*	*% Fat R. Leg*
Age	*1.00*														
Height	*0.26*	*1.00*													
Weight	*0.23*	*0.90*	*1.00*												
BMI	*0.16*	*0.58*	*0.87*	*1.00*											
BMR	*0.10*	*0.92*	*0.97*	*0.80*	*1.00*										
Fat %	*0.35*	*0.41*	*0.66*	*0.79*	*0.47*	*1.00*									
Fat mass	*0.32*	*0.66*	*0.87*	*0.89*	*0.74*	*0.94*	*1.00*								
Free fat mass	*0.17*	*0.93*	*0.97*	*0.78*	*1.00*	*0.46*	*0.73*	*1.00*							
TBW	*0.17*	*0.93*	*0.97*	*0.78*	*1.00*	*0.46*	*0.73*	*1.00*	*1.00*						
Body Resistance	*0.15*	*-0.37*	*-0.50*	*-0.55*	*-0.63*	*0.08*	*-0.16*	*-0.62*	*-0.63*	*1.00*					
R. Leg Resistance	*0.22*	*-0.26*	*-0.46*	*-0.61*	*-0.52*	*-0.14*	*-0.28*	*-0.51*	*-0.51*	*0.82*	*1.00*				
L. Leg Resistance	*0.22*	*-0.22*	*-0.44*	*-0.62*	*-0.49*	*-0.16*	*-0.28*	*-0.48*	*-0.48*	*0.81*	*0.98*	*1.00*			
R. Arm Resistance	*0.01*	*-0.35*	*-0.39*	*-0.33*	*-0.53*	*-0.26*	*-0.01*	*-0.54*	*-0.54*	*0.88*	*0.49*	*0.47*	*1.00*		
L. Arm Resistance	*0.05*	*-0.41*	*-0.41*	*-0.31*	*-0.56*	*0.27*	*-0.02*	*-0.57*	*-0.57*	*0.86*	*0.44*	*0.40*	*0.96*	*1.00*	
% Fat R. Leg	*0.39*	*0.54*	*0.75*	*0.81*	*0.62*	*0.88*	*0.91*	*0.61*	*0.61*	*-0.09*	*-0.03*	*-0.06*	*-0.05*	*-0.08*	*1.00*

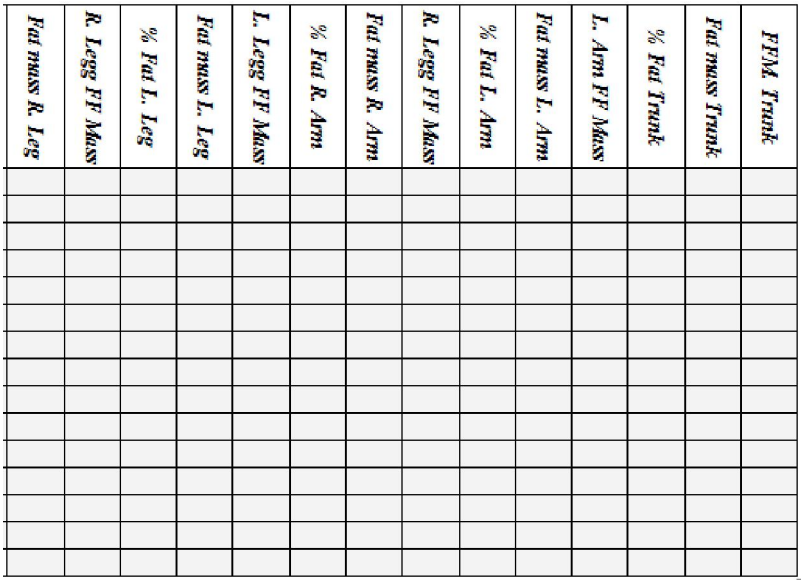

Table (3): R of the body Component

Items	Age	Height	Weight	BMI	BMR	Fat %	Fat mass	Free fat mass	TBW	Body Resist.	R. Leg Resist.	L. Leg Resist.	R. Arm Resist.	L. Arm Resist.	% Fat R. Leg	Fat mass R. Leg	R. Legg FF Mass	% Fat L. Leg	Fat mass L. Leg	L. Legg FF Mass	% Fat R. Arm	Fat mass R. Arm	R. Arm FF Mass	% Fat L. Arm	Fat mass L. Arm	L. Arm FF Mass	% Fat Trunk	Fat mass Trunk	FFM. Trunk
Fat mass R. Leg	0.30	0.75	0.94	0.91	0.85	0.81	0.95	0.84	0.84	-0.35	-0.29	-0.29	-0.27	-0.29	0.93	1.00													
R. Legg FF Mass	0.11	0.88	0.97	0.85	0.98	0.55	0.78	0.98	0.98	-0.63	-0.62	-0.59	-0.46	-0.48	0.61	0.85	1.00												
% Fat L. Leg	0.38	0.58	0.80	0.84	0.67	0.89	0.94	0.66	0.65	-0.14	-0.11	-0.11	-0.09	-0.12	0.99	0.95	0.67	1.00											
Fat mass L. Leg	0.30	0.75	0.94	0.91	0.85	0.82	0.95	0.84	0.84	-0.35	-0.30	-0.29	-0.26	-0.29	0.92	1.00	0.85	0.95	1.00										
L. Legg FF Mass	0.12	0.88	0.98	0.86	0.98	0.56	0.79	0.98	0.98	-0.62	-0.60	-0.58	-0.46	-0.48	0.64	0.86	1.00	0.68	0.86	1.00									
% Fat R. Arm	0.11	0.33	0.61	0.80	0.47	0.87	0.82	0.45	0.45	-0.11	-0.44	-0.48	0.23	0.25	0.64	0.67	0.59	0.67	0.67	0.58	1.00								
Fat mass R. Arm	0.08	0.64	0.88	0.92	0.79	0.84	0.93	0.77	0.76	-0.34	-0.51	-0.52	-0.09	-0.08	0.75	0.88	0.85	0.80	0.88	0.85	0.90	1.00							
R. Arm FF Mass	0.16	0.89	0.90	0.70	0.96	0.32	0.61	0.96	0.96	-0.67	-0.44	-0.41	-0.68	-0.71	0.56	0.79	0.91	0.60	0.78	0.92	0.24	0.62	1.00						
% Fat L. Arm	0.12	0.30	0.60	0.80	0.46	0.85	0.81	0.44	0.44	-0.14	-0.48	-0.52	0.18	0.24	0.60	0.65	0.58	0.64	0.66	0.57	0.99	0.89	1.00						
Fat mass L. Arm	0.15	0.62	0.87	0.94	0.78	0.83	0.93	0.76	0.76	-0.37	-0.53	-0.55	-0.14	-0.11	0.75	0.88	0.85	0.80	0.89	0.84	0.89	0.99	0.90	1.00					
L. Arm FF Mass	0.15	0.91	0.92	0.70	0.97	0.34	0.63	0.97	0.97	-0.66	-0.43	-0.39	-0.65	-0.70	0.58	0.80	0.92	0.62	0.80	0.92	0.27	0.64	0.99	0.63	1.00				
% Fat Trunk	0.35	0.35	0.60	0.73	0.40	0.99	0.90	0.39	0.39	0.16	-0.11	-0.13	0.35	0.37	0.83	0.75	0.48	0.84	0.76	0.49	0.87	0.80	0.85	0.79	0.26	1.00			
Fat mass Trunk	0.35	0.61	0.81	0.85	0.66	0.96	0.99	0.65	0.65	-0.06	-0.22	-0.22	0.10	0.10	0.89	0.91	0.71	0.92	0.91	0.72	0.84	0.91	0.82	0.90	0.54	0.94	1.00		
FFM. Trunk	0.20	0.95	0.96	0.74	0.99	0.43	0.70	1.00	1.00	-0.60	-0.46	-0.43	-0.53	-0.57	0.59	0.82	0.96	0.64	0.82	0.96	0.41	0.73	0.40	0.73	0.97	0.36	0.63	1.00	

P < 0.05 ***T_{tab} = 0.306*** ***Freedom grade = 31***

Table (4): Rotated Component Matrixa Extraction Method: Principal Component Analysis Rotation Method: Varimax with Kaiser Normalization

Body Components	*Factors*			*Values*
	1st	*2nd*	*3rd*	
Trunk Fat %	0.982			0.982
% Fat	0.98			0.948
R Arm Fat %	0.94			0.968
Trunk Fat Mass	0.939			0.987
L. Arm Fat %	0.924			0.967
Fat Mass	0.906	0.407		0.992
R. Arm Fat Mass	0.864	0.408		0.97
L. Arm Fat Mass	0.858	0.413		0.971
L Leg Fat %	0.808	0.439		0.905
R Leg Fat %	0.792	0.403		0.877
BMI	0.768	0.517		0.944
L. Leg Fast Mass	0.754	0.628		0.97
R. Leg Fat Mass	0.747	0.634		0.968
R. Arm FF Mass		0.963		0.99
L. Arm FF Mass		0.958		0.991
Trunk FF Mass	0.387	0.899		0.962
WbW	0.42	0.885		0.975
FF Mass	0.422	0.885		0.975
BMR	0.438	0.873		0.974
Height	0.356	0.837		0.847
L. Arm Resist.		-0.829		0.873
L. Leg FF Mass	0.535	0.797		0.971
R leg FF Mass	0.532	0.791		0.969
R Arm Resist.		-0.784		0.832
Weight	0.621	0.775		0.99
Body Mass Resist.		-0.698	0.66	0.93
L. Leg Resist.			0.894	0.956
R. Leg Resist.		-0.359	0.876	0.94
Age			0.516	0.356
Potential Root	10.809	5.646	2.559	27.014
% of Factor After Rotation	64.859	19.471	8.824	

Table (4) : % Contrast Factor (1) 64.859% % Contrast Factor (2) 19.471% % Contrast Factor (3) 8.824%

Table (5): The factors extracted of factor analysis using rotated Component of body components of basketball players of Qatar League Clubs

Factors	***Measure***	***Absorption value of the factor***
1st	***Trunk Fat %***	0.982
2nd	***R. Arm FF Mass***	0.963
3rd	***L. Leg Resistance***	0.894

Table (5) indicated the factors and value absorptions of body components of the players.

4. Discussion

Of the data of factorial analysis of measurements after the achievement of the inter relationship of the factorial analysis to explain the relation between measuremens in light of the least extracted factors, as these factors are descriptive names denoting some tests or variables of high relationship and which predict common characteristics.

Principle components of Hotling were used in this factorial analysis of the variables as this method is specified in given the highest extract of contrast of the relationship as shown by ***Safwat Farag (1985)*** (7: 99). Also ***Kaiser*** used the application of Gutman for obtaining the gut results as indicated in (7: 129), by the equation:

$$R = \frac{1}{2}\left[(2N+1) - \sqrt{8n+1}\right]$$

R = No. of factors n = no. of tests

Table (6): Degrees of body components of factorial analysis of basketball players of Qatar League Clubs

Trunk Fat %		*R. Arm FF Mass*		*L. Leg Resistance*	
Raw Norm	*Standard Norm*	*Raw Norm*	*Standard Norm*	*Raw Norm*	*Standard Norm*
5.4	*51.76*	*3.7*	*48.43*	*200*	*51.79*
8.7	*51.33*	*4.1*	*48.83*	*202*	*51.78*
10.4	*51.31*	*4.2*	*48.93*	*214*	*51.66*
10.5	*51.27*	*4.3*	*49.03*	*215*	*51.15*
11.2	*51.04*	*4.5*	*49.23*	*218*	*50.76*
11.8	*50.83*	*4.6*	*49.33*	*225*	*50.53*
12.6	*50.59*	*4.7*	*49.43*	*226*	*50.45*
12.7	*50.52*	*4.8*	*49.53*	*231*	*50.37*
12.9	*50.5*	*5*	*49.74*	*232*	*50.3*
14	*50.44*	*5.2*	*49.94*	*235*	*50.18*
14.6	*50.19*	*5.3*	*50.04*	*239*	*50.1*
14.7	*49.74*	*5.4*	*50.14*	*244*	*50.02*
17	*49.72*	*5.5*	*50.24*	*246*	*49.83*
18.3	*49.61*	*5.9*	*50.64*	*248*	*49.67*
18.6	*49.39*	*6.1*	*50.84*	*251*	*49.56*
18.7	*49.35*	*6.2*	*50.94*	*253*	*49.52*
19.1	*49.33*	*6.7*	*51.54*	*255*	*49.32*
20.3	*49.18*	*6.9*	*51.65*	*257*	*49.28*
21.4	*49.06*	*7.1*	*51.85*	*263*	*49.01*
22.6	*48.93*			*273*	*48.89*
22.8	*48.91*			*286*	*48.85*
22.9	*48.58*			*289*	*48.39*
25.1	*47.94*			*294*	*48.31*

Table (6) indicated degree of body components of the players

Table (7): The grade of body components of factorial analysis of basketball players of Qatar league clubs

Range	*Trunk Fat %*	*R. Arm FF Mass*	*L. Leg Resistance*
95	*6.23*	*3.8*	200.50
90	*9.55*	*4.15*	208.00
85	*10.48*	*4.20*	214.75
80	*11.20*	*4.30*	218.00
75	*12.00*	*4.53*	225.25
70	*12.65*	*4.65*	228.50
65	*12.85*	*4.70*	231.75
60	*14.00*	*4.80*	235.00
55	*14.63*	*4.85*	240.25
50	*15.85*	*5.10*	245.00
45	*17.98*	*5.28*	246.00
40	*18.60*	*5.30*	248.00
35	*18.63*	*5.43*	251.50
30	*18.90*	*5.70*	254.00
25	*20.00*	*6.05*	256.50
20	*21.40*	*6.20*	263.00
15	*22.65*	*6.75*	276.25
10	*22.85*	*7.00*	287.50
5	*24.55*	*7.10*	292.75

Table (7) indicated the different grade of trunk fat percent. Free fat mass of right arm and left leg resistance.

Orthogonal Rotation

Rotation of axes is an operation that rotate the axes leading to reach a shape more simple and ordered of the extracted factors which help in explaining the factors suitable for the nearest answers of the simple factorial structure, then rotate these extracted factors

orthogonal rotation by using Varimax Rotation (7: 124).

The researchers stated that the orthogonal rotation is one of the most used rotation in researches and factorial studies in Physical education.

Safwat Farag (1985) showed that orthogonal rotation is done in (90°) angle between two axis, as 90° angle equal zero, this means that the relation between two orthogonal factors equal zero, the means that the extracted factors of the rotation are independent factors, not interfered one (7: 261) (3: 295-300).

Table (4) indicated the different factors after rotation by the method of Varimax Rotaton of the sample studied, and the saturation values on the extracted factors which were 3 factors Explanation of factors and determination of special body components: The explanation of the extracted factors by orthogonal rotation on these conditions: by following the instructions of Thurst on and stated by ***Safwat Farag (1985)*** which was exampled by factorial description and amplifying the specific sides and different factorial absorption and specifying on the factors that contain meaning (7: 278).

Safwat Farag (1985) after gilford stated we can know from the factorial data after rotation the characterization of the factor and its identity in this case the factor can be accepted which absorb at least three significant variables on condition that absorption of the factor do not decrease than (±3) (7: 365).

In the light of the preceeded condition to accept the work, table (5) revealed the three accepted factors in factorial data. It is also noted (Table 4, 5) that absorption of the first factor, the trunk fat percent was in 0,982 degree (% 64,859) of all variables included, the second factor, absorbed free fat mass of the right arm was in 0,963 degree (% 8,824) of all variables. It is noted that the variables that realized the highest absorption of the factors, might be the markers of the selection opperation and the choice of the body composition of the sample. That mean that the measurements of body composition as selection marker, contain the most important indicators of some measurements of the extracted factors, every factor is represented by one test, that is the higher absorption as indicated in Table (3).

The unit choosed is every measurement, of the body composition and extracted of the study are pure units as their absorption on other factors are not significant. They are formed of three factors (Table 5) which are (trunk percent fat, right arm free fat mass, left leg resistance). This is in accordance with ***Ali Fahmy et al., (2002) , Williams and Reilly (2000), Christopher (1995),*** that the body composition affect directly the physical performance level, due to the relation between the structural expressed by the body composition and physiological side expressed by the functional performance (13: 44) (27: 655-656) (21: 115).

Williams and Reilly (2000) stated that the morphological variables affects directly the physical performance, as there are a clear relation between the structural side expressed by the body composition and the functional side expressed by the functional performance (27: 655 – 656).

In the light of that, ***Bob Davis (1997) and Marusak and Lenore (1995)*** agree that the physical fitness differences of the individual are due to the body structure to perform the effort needed and also the effectiveness of his organs to do the motion, they added that the morphological variables have an influencing role on the physical and motion variables related to performance also it affects motions coordination of the player and its motion abilities, also it affect the structure and physical training due to the convenience of individual variations of the individual and the physical activity chosen and direct the youngsters to the physical activities convenient to them due to the need of each activity (20: 279) (24: 12).

Christopher (1995) showed that the body composition contain different tissues of bone, fats and liquids and connective tissues, the body composition structure is so important that it is of vital issues to choose what is suitable to the player according to his body composition to attend the success in the international competitions (21: 115).

Alaa El Din (2006) stated that the change in the body composition of fat, muscle and bones help in the training process and specifying physical loads (12: 104).

Ali Falmy et al., (2002) reported that the body composition and shape help directly in power detection in reaching high level in specific physical activity (13: 44).

Ackland et al., (1997), Ahmed Ibrahim (2005), Esam Abdel Khalek (2005), Adel and Mohamed (2000), Vishaw et al., (2010), Nadir Shalibi (2002), Taha and Ahmed (2002), Ewes Elgebali (2003), Mohamed Elazab (1995) and Ali El Beek (2008) (14: 19) that the morphological, body composition variables are very important to reach the higher levels as there are a relation between the shape of the body and structure (height, weight, circumferences) and the physical performance in different sports fields.

From the preceeded results and discussion, the researchers showed the importance of body composition of basketball players as a basic issue to be used in selection and express the capabilities of the players and the three body compositions extracted from the study (Trunk fat percent, right arm free fat mass, left leg resistance), they are all important variables for selection of youngsters in the primary selection operations.

Conclusion

It may be concluded that:

Three basic factors have been accepted of the body composition of the basketball players of Qatar clubs sharing in Qatar league:

Trunk fat percent, Right arm free fat Mass.

Left leg resistance.

Recommendations

It may be recommended that:

The preceeded three basic factors extracted of the basketball players of Qatar clubs sharing in Qatar league are basic scientific in:

1. Selection basketball players by using the extracted measurement.
2. Taking care of body composition factors as a marker of the physical state and general health of the players.
3. Selection on sound scientific basis.
4. Preferation of the suitable material of basketball player.
5. Direct and guide the special training program of basketball players and making progress of the play at the national level.
6. Proceeding the progress and International championship.
7. More scientific studies to be done on body composition of basket ball players on International teams of basketball and to be compared to the national team.
8. More studies and scientific researches to be done to body composition in other sport activities.

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