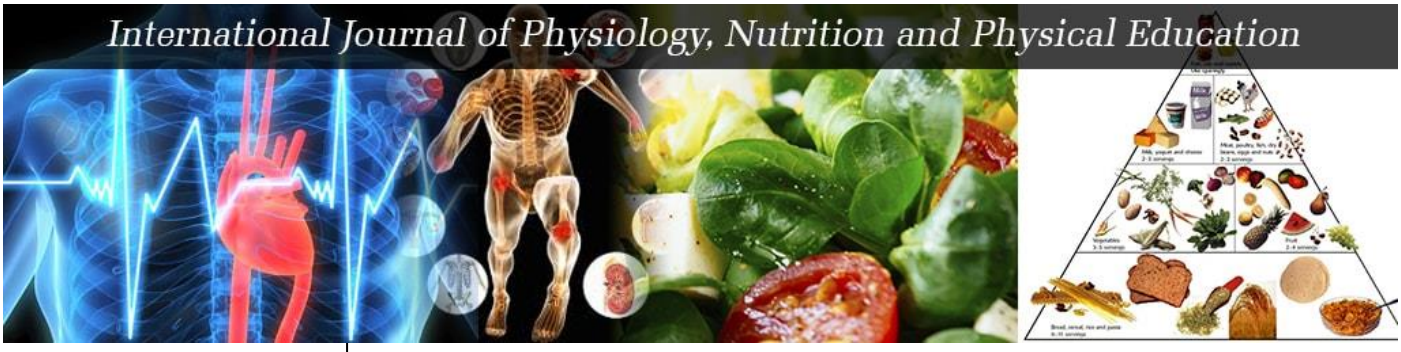

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Relationship of anthropometric characteristics on agility among Kashmir division basketball players

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Abstract
The purpose of the study was to determine the influence of anthropometric characteristics on agility of elite boys Basketball players. To achieve this purpose fifty (n=50) basketball boys who were participate zone level competition were randomly selected as subjects from various schools in Kashmir division, India, and their age ranged from 12 to 15 years. The subjects had past playing experiences of at least one year in basketball and only those who represented their respective school team. The predictor variables selected were body height, sitting height, lower limb length, upper limb length, biacromial breadth and bitrochanteric breadth, Arm length, forearm length, thigh circumferences, medial calf circumferences, abdominal girth, leg lengths, and sum of skin folds(SUM OF SKF) respectively. In addition, the subject carried out agility T-test and zig zag agility drill (dependent variables) .The agility which was taken as the performance factor was subjectively assessed by qualified basketball coaches. The collected data was subjected to statistical analysis explained below. Mean and standard deviation were calculated for each of the selected variables. Based on the results of research we can assume that body weight, height, length of individual limbs cannot affected the kinematic and dynamics of rapid and complex movement (agility). A significant negative influence of the sum of skin fold on the results of all two variables is expected.

Keywords: Prediction, anthropometric, agility, boys

Introduction
The worldwide popularity of basketball is unquestionable; especially among the young. Basketball is a dynamic team sport which involves a pattern of intermittent, dynamic and skilled movement activities. There are complex demands that require a combination of individual skills, team plays, tactics, and motivational aspects (Trninic & Dizdar, 2000). During a basketball game we can see variety of movement such as running, dribbling, shuffling, and jumping. These movements are directional, multidirectional, intense, and short-lasting (Crisafuli *et al* 2002). Ben Abdelkrim *et al*. (2007) [4] have found 1050+51 different actions per basketball game. Because of great number of a typical game situation, which demands multiple rapid changes of direction in the relatively small space of the court, agility has a special importance in basketball. Basketball practice must contain agility exercise with an emphasis on techniques, sprint and strength training and the development of perception and decision making (Young, & Farrow, 2006).
Agility is also important in youth basketball. The age of fourteen represents the second phase in youth sports training: athletic development, talent identification, development of basic technical skills, development of basic tactical skills, and competition (Bompa, 2000) [6]. There are three good periods for developing speed and agility (Holm, 1987); the accelerated run from age of 12 to 15, agility run 13 and interval training of speed at 15 years of age.
Anthropometric characteristics and speed abilities are very important factors selection in basketball. Usually, there are boys with deferent body height and other anthropometric characteristics and also with different agility abilities; it is very desirably to have very tall and very agile players, numerous factors are responsible for the performance of a sportsman. The physique and body composition, including the size, shape and form are known to play a significant role in this regards, by nature human beings are competitive and aspire for excellence in all athletic performance, this is only possible by channelizing them in game and sports according to their potentialities and through scientific, systemic, planned sports training

and also by studying on how the training adaptation takes place in the human machine.

Considering the above mentioned studies Anthropometric variable are very important factor for achieving high level of performance in basketball competitions, the above mentioned variable differ in different sport and game. Hence the research scholar has made an attempt to Prediction of Agility through Selected Anthropometric Characteristics among boys Basketball Players.

Methodology

Selection of Subjects

The Purpose of the study was to determine the influence of Anthropometric Characteristics on agility of elite Boys Basketball Players. To Achieve this Purpose fifty (n=50) boys basketball players who were participate zone level competition were randomly selected as subjects from various Schools in Kashmir division, India, and their age range 12 to 15 years. The subjects had past playing experiences of at least one year in basketball and only those who represented their respective school team.

Selection of variables

The present study mainly focus on predictor variables selected were bodyheight, sitting height, lower limb length, upper limb length, biacromial breadth and bitrochanteric breadth, Arm length, forearm length, thigh circumferences, medial calf circumferences, abdominal girth, and leg lengths, respectively. In addition, the subject carried out agility T-test and zig zag agility drill (dependent variables). Anthropometric measurement included anthropometric dimensions. bogy height was measured by means of stadiometer (Seca 220, UK). Breadths were measured by means of a pelvimetter (Martin Scientific Pelimeter, SUI). Skin fold were measured using a skin fold calliper.

Performance Evaluation

The criterion variable, agility of the selected boys basketball players were assessed by qualified basketball coaches which were taken as the performance factor. The guidelines for assessment were provided by the investigators. Each coach will rate the agility of the selected boys in 100 points scale for each.

Statistical Analysis

The elementary descriptive parameters: mean (M), standard deviations (SD), and minimum (Min) maximum (Max) were calculated. Stepwise method was applied. The statistical analysis was performed using the SPSS16 statistical program

Results

Table 1 display the basic descriptive parameters of all the variables: means (M), Standard Deviations (SD), and minimum (Min), and maximum (max) values.

Table 1: Mean (M), Standard Deviation (SD) Minimum values (Min) And Maximum values (Mix) for all the variables

SI. No.	Variables	M	SD	MIN	MAX
1	Agility T-test (sec)	10.95	0.83	9.49	13.37
2	Zigzag agility drill (sec)	7.18	0.58	5.93	8.37
3	Body height (cm)	1.86	9.754	163.00	205.00
4	Sitting height (cm)	91.98	4.847	80.50	102.00
5	Lower limb length (cm)	99.33	5.907	87.00	112.00
6	Upper limb length (cm)	81.94	4.361	72.00	90.00
7	Biacromial breadth (cm)	42.24	4.117	36.00	65.00
8	Bitrochanteric breadth (cm)	31.24	2.336	26.00	38.00
9	Arm circumference (cm)	24.34	1.972	21.00	28.50
10	Fore arm circumference (cm)	24.58	1.972	21.00	28.50
11	Thigh circumfence(cm)	51.17	4.045	44.00	61.00
12	m.calf circumference(cm)	35.21	2.674	30.50	43.00
13	Leg length (cm)	14.59	0.96	12.77	13.37
14	SUM OF SKF(mm)	37.22	9.310	23.30	68.20

The result of the regression analysis –the stepwise method, dependent variable –agility T-test and anthropometric variables are shown in table 2. The value of the regression coefficient(R=0.53) and determinant coefficient (R2=0.28) Indicate the influence of anthropometric variables on the agility T-test results.

Table 2: The results of the regression analysis, stepwise method

Model summary					
model	R	R2	Adjusted R2	Std.err.. of estimate	
1	0.53	0.28		0.71	
coefficients					
Model	B	Std error	Beta	t	sig
Constant	9.157	0.42		21.838	0
SUMSKF	0.05	0.01	0.53	4.350	.000

The influence of anthropometric variables on the Zigzag agility drill results is shown on table 3. There was two steps: in the first step the sum of skin folds (SUMSKF) was extracted (R=0.55; R2=0.30), and the forearm circumference variable was extracted in the second step (R=0.60; R2=0.36).

Table 3: The result of the regression analysis, stepwise method: dependent variable –zigzag agility drill predictor –anthropometric variable

Model summary	Point A	Point B	Point C	Point D	Point E
Model	R	R2	AdjustedR2	Std.err.of the estimate	
1	0.55	0.3	0.29	0.49	
2	0.6	0.36	0.34	0.47	
coefficients					
Model	B	Std,error	Bata	t	Sig..
(Constant) first step	5.901	0.29		20.479	.000
SUMSKF	0.04	0.01	0.55	4.572	.000
(Constant) second step	7.573	0.84		8.981	.000
SUMSKF	0.04	0.01	0.67	5.175	.000
Forearm circumference	-0.08	0.04	-0.27	-2.101	.041

Discussion

According to the anthropometric measurement, the subject of this study belong to the schools population of boys basketball players.12 to 15 years old players were of similar body height compared to Australian players of the same age (Pattison, 1989). According to means of body height the 12 t0 15 years old players were in the 95th percentile, when compared to the American population (Malina, Bouchard, & Bar- or, 2004) [11]. The results of two regression analysis indicate a moderate but significant influence of anthropometric variables on the results of two applied agility tests.

Agility represents one of the most complex motor abilities. Most coaches believe that the different motor characteristic represent the foundation of agiliy or change in the speed/direction of motion. (Rooney 2005) indicates the following motor characteristics are the basis of agility; relative strength (compared to the athletes body mass), linear speed, motor coordination (timing), balance (stability) and motor programs (technique).

An interesting finding is that the variable forearm circumference has a positive effect on the expression of the agility test zigzag agility drill. It can be assumed that increased volume of the upper arm indicates a greater ability to manifest power. Since this test contains more variety of movement (change direction) than the other two tests, it can be assumed that efficient arm work helped the players to more easily overcome the force inertia of arms the entire body.

Conclusion

Based on the results of research we can assume that body weight, height, length of individual limbs cannot affected the kinematic and dynamics of rapid and complex movement (agility). A significant negative influence of the sum of skin fold on the results of all two variables is expected. Further investigation in this field could be directed towards broadening the numbers of variables in both sources, especially agility variables.

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