The Speed Comparison Between the Left & Right Side Step With Selected Anthropometric Measurements to total Movement time in Running to the Side for Use by Volleyball Female National Players of Rajasthan

DR. HITESH CHANDRA RAWAL
Assistant Professor,
B.N. College of Physical Education, Udaipur- Rajasthan
Gujarat (India)

Abstract:
A study has been conducted on selected Anthropometric variables of National female Volleyball Players of Senior Secondary School Level. The purpose of the study was the comparison between the left and right step with selected anthropometric measurements to total movement time in running to the side for use by the volleyball players. Sample consisted of selected 24 national female senior secondary school level volleyball players. Selected anthropometric variables were used to secure the responses.

Keywords: *Anthropometric, Circumference, Extremity, Speed, Variables*

1. Introduction

The measurements of various dimensions of human body have long been used by different researchers all over the world for different purposes. In their simplest form these measurements are used to describe the human body and to evaluate the increase in the size of the human body during various stages of post-natal development, i.e., from birth to old age, and also to study the changes during pre-natal period of growth, i.e., from conception to birth. The researchers in the field of human growth and development, Axiological Anthropometry as it is referred to at present, uses these anthropometric measurements to study precisely the age specific changes in the main body segments and the components of these segments. Through these changes the amount and rate of growth can be assessed for a specific child or a group of individuals at community or national level to formulate the respective health standards to assess the growth of children at both the levels**. Kumar (1995)** studied the relationship between selected anthropometric variables and performance in athletics programme of high schools and senior secondary school students. He concluded that performance in all running events 100 meters, 400 meters, 800 meters, 1500 meters, and 10,000 meters events have significant relation with age, body weight, height, leg length, thigh, calf, femur biocondylar, biacrominal, fat weight and lean body mass. **Chauhan (2005)** conducted a study on 40 volleyball players in relation to their explosive arm strength and anthropometric variables. Product moment method for correlations and Wherry Do Little method for calculating multiple correlations, and developing regression equation, were used. Linear measurement, i.e. height, sitting height, trunk length, leg length, lower leg length, total arm length upper and for arm length, foot length; body girth, i.e. shoulder, chest, abdomen, hip, thigh; body diameter, i.e. biacromial, bitrochantric, femur biocondylar; and skin folds, i.e. biceps, triceps, sub scapular, supariliac, mid auxiliary, sum of four skin folds and body mass shows positive and significant correlations with explosive arm strength of volleyball players multiple correlation of height, bicrominal and elbow diameter, lean body mass taken together with explosive arm strength has been found significant at 1% level.

2. Objectives of the Study

1. The study focused at the following objective with related to volleyball national female players.
2. To find out the selected anthropometric measurement of left lower extremity and right lower extremity.
3. Comparison between selected anthropometric measurements of left lower extremity with right lower extremity.
4. To find out the speed of movement of left side step and right side step.
5. Comparison between the speed of movement of left side step with right side step.

3. Hypothesis

For the present investigation the investigator has formulated the null hypothesis that there is no significant difference between left and right foot of the volleyball national female players of senior secondary schools with anthropometic measurement and with total movement time in performing the side steps to either side.

4. Methodology

4.1 Sampling

A total of 24 female national volleyball Players constituted the sample for the investigation. This sample was selected from national volleyball players who represented Rajasthan state last 3 years. Volleyball female Players having the age range of 18 to 25 years were taken as subjects for the present study. The subjects were measured for anthropometric variables i.e. left and right side step, total movement time in running to the side for use by players during the game.

4.2 Tools Used

The investigator has used (1) Score card sheet (2) Flexible steel measuring tape (3) Stop watch (4) Hard scale and (5) Standing height stand for the present study.

5. Method for Analysis

To test the hypothesis; t-test has been applied to find out the significance difference. Administration of Test and Collection of Data Researcher has undertaken twenty two selected anthropometric variables which cover the entire lower extremity of the players and the skill test of measuring the speed of left and right foot of the female volley ball players. Twenty four female subjects were used to determine the side step. It was the most effective technique in starting a distance of nine meter to the right and left side in order to determine where the difference existed in the two methods of lateral movement. The relationship between leg length, foot length, foot breadth and relationship between movement times were also measured. Each subject performed the total movement time test a total of one time in the left and right side step. Time was recorded only once for both sides. The study was further delimited to female volleyball players who had represented Rajasthan state in national Championship. Subject took a position behind the starting line. The starter used the commands set. On the sound of whistle subject started side running to the left side and again to the right side. Sound of the whistle was a signal to stop. Watch operator had to note down the timing. Two parallel lines were drawn on the floor nine meter apart, one line was used as a starting line and other line was used as a finish line. The score was the time taken by the subject to cover the distance of nine meter to the nearest of second.

Table 1

The mean, SD and 't' Value of Left and Right Lower Extremities (in Inches)

Anthropometric Variable	Left Leg Mean	Right Leg Mean	Left Leg S.D.	Right Leg S.D.	Mean Difference	Std. error Differenc	df	t
Foot length	9.5000	9.6250	.54374	.57729	-.12500	.16188	46	-.772
Foot breadth	3.5917	3.7125	.33090	.34680	-.12083	.09784	46	-1.235
Foot height	3.2667	3.4333	.32660	.36910	-.16667	.10060	46	-1.657
Heel breadth	3.5625	3.7292	.19295	.22550	-.16667	.06058	46	-2.751
In step circumference	9.1292	9.2542	.61959	.61924	-.12500	.17881	46	-.699
Ankle height	3.3833	3.5500	.18337	.18882	-.16667	.05373	46	-3.102
Ankle circumference	8.4125	8.5167	.30690	.33579	-.10417	.09286	46	-1.122
Bowl of foot width	3.6208	3.7625	.35013	.34992	-.14167	.10104	46	-1.402
Bowl of foot circumference	9.2208	9.2958	.28127	.29114	-.07500	.08263	46	-.908
Bowl height	.6792	.7542	.11778	.10624	-.07500	.03239	46	-2.315
Buttock knee distance	19.3167	19.4042	.27923	.31274	-.08750	.08558	46	-1.022
Buttock leg length	34.2458	34.2500	.99912	.96594	-.00417	.28367	46	-.015
Calf circumference	12.4458	12.5292	.34764	.35199	-.08333	.10098	46	-.825
Calf height	12.9542	12.9875	.41070	.43968	-.08333	.12281	46	-.271
Circumference of Knee	12.4250	12.5292	.22116	.21565	-.10417	.06305	46	-1.652
Knee height	17.5667	17.7000	.44200	.52003	-.13333	.13931	46	-.957
Knee height sitting	18.1625	18.2750	35973	.36266	-.1125	.10427	46	-1.079
Knee to knee width	6.5875	6.5875	1.03559	1.03559	-.10833	.29487	46	-.367
leg length sitting	34.1250	34.4583	.97054	1.34808	-.33333	.33907	46	-.983
Length of leg without foot	30.4833	30.5958	.85499	.90144	-.11250	.25361	46	-.444
Length of lower leg	16.6500	16.7208	.42936	.42832	-.07083	.12380	46	-.572
Length of thing	17.3083	17.2708	.81769	.65904	.03750	.21437	46	.175

Table 2 The Mean, S.D. and 't' value of left and right side step movement

Sr. No.	Skill	Mean	Std.	Mean Deviation	Std. error Difference	df	t-value
1.	Sidestep with left foot in lead and right foot trail behind	4.4138	.09234	21125	.02167	46	9.749
2.	Side step with right foot in lead and left foot trail behind	4.2025	.05076	2115	.02167	46	9.749

6. Discussion and Findings

6.1 Findings

Table 1 provides information related to the selected anthropometric variables foot length, foot breadth, foot height, in step circumference, ankle circumference, bowl of foot width, bowl of foot circumference, buttock knee distance, buttock leg length, calf circumference, calf height, circumference of knee, knee height, knee height sitting, knee to knee width leg length sitting, length of leg without foot, length of lower leg and length of thigh all these variables are found statistically insignificant when t test is applied for these variables. Though slight difference lies between these variables. Statistically these variables are insignificant. It may be possible that due to this insignificant difference they have some role in the execution of side step.

Table 2 gives information regarding anthropometric variables of heel breadth, ankle height and bowl height. They have significant difference when they obtained data was analyzed. The right lower extremity has an edge over the left lower extremity. Due to this significant difference the left foot is weaker than the right foot. This fact is further supported by the results given in table 2

in which the performance of left and right step is given and the obtained results are highly statistically significant at 0.01 level of significance.

7. Conclusions

On the basis of obtained results the significant difference is recorded in the variables of heel breadth, ankle height and bowl height. The significant difference is recorded when comparison of speed of movement between left and right foot is made. ·The rest of the selected anthropometric variables have not shown any significant difference between left and right lower extremities of female volley ball players.

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