Comparative Study of Selected Diameters Among National Winners, National and State Runners Up Male Wushu Players

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ABSTRACT

The purpose of the present study was to analyze the differences in selected anthropometric variables among Wushu players i.e. national medalists, national and state runners up. The study was conducted on 158 male Wushu players i.e. n=45 national medalists, n=76 national runners up and n= (35) state runners up. The data were collected in the 24th Senior National Wushu Championship (Men and Women) held at Punjab University Chandigarh,from 25th to 30th Dec. 2015 and from H.P. State Wushu Championship held at ITI Mandi, from 12th to 13th September 2015. Each athlete was tested for various diameter measurements necessary for estimation of humerus bicondylar diameter, wrist diameter, femur bicondylar diameter and ankle diameter of Wushu players. To test the significance of mean difference the data was analyzed by adopting the technique of one way analysis of variance followed by multiple comparisons for three groups of Wushu players with respect to the selected variables using Scheffe's Post Hoc t Test. From the findings, it may be interpreted that in the variables of humerus bicondylar and wrist diameter three groups of Wushu players do not differ significantly. In Femur bicondylar diameter medalists at national level are significantly better as compared to runners up at state level and runners up at national level. It was observed that runners up at state level possess largest value for ankle diameter among the Wushu players followed by medalists at national level ;whereas, runners up at national level possess smallest value among the Wushu players.

BACKGROUND

The sports structure in India is fast changing because of the availability of increased facilities and sports environment. Awareness among the coaches and physical educationists towards the recent advances in sports sciences is growing rapidly. The role of an emerging scientific discipline known as sports anthropometry is of great significance. The knowledge of this science is increasingly being appreciated by the sports administrators. Assessment of human physical performance through Kin-anthropometry helps to evaluate the physical structure and functions of individuals. The knowledge of this science equips us with the techniques of various body measurements like length, height, body weight, diameters, circumferences and skinfolds thickness which ultimately deal with the assessment of human physique, body composition, physical growth, maturation and gross functions of the human body. The inter-relationship

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between each of these above mentioned variables with the success in sports can be regarded as a proven fact today (Tanner, 1964; Singh & Malhotra; 1989 Singh et al, 2003; Sidhu et al,1990).

Performance in sports competitions at various levels have become a sign of prosperity, development and innovations of new techniques in the field of sports. It is gaining momentum day by day and high level research in the field is going on day to explore the possibilities of investigating the ingredients responsible for the enhancement of sports performance and facilitating the talent selection for competitions. The investigator, in the underline study, would like to assess linear anthropometric measurement of three groups of Wushu players.

Objectives

To study and compare the state runners up, national runners up and national medalists Wushu players in concern with anthropometric variables i.e. humerus bicondylar diameter, wrist diameter, femur bicondylar diameter and ankle diameter.

METHODOLOGY

This study had been designed to investigate the anthropometric variables of national medalists, national and Himachal Pradesh state runners up Wushu players. The data were collected in the 24th Senior National Wushu Championship (Men and Women) held at Punjab University Chandigarh, from 25th to 30th Dec. 2015 and from H.P. State Wushu Championship held at ITI Mandi, from 12th to 13th September 2015.

S.No.		National Medalists	National Runners up	State Runners up
1	Sample Size	45	76	37
2	Sex	Male	Male	Male
3	Age Group	18 to 25 years	18 to 25 years	18 to 25 years
4	Educational Qualification	Graduation	Graduation	10+2/ Graduation
5	Demographic detail	Rural (44%) Urban (56%)	Rural (44.5%) Urban (55.5%)	Rural (49%) Urban (51%)

* Significant at 5% Level, ** Significant at 1% Level.

In the present study, the data was collected from 158 Wushu players consisting of 45 runners up at state level, 76 runners up at national level and 45 medalists at national level. Each player was tested for various anthropometric measurements necessary for estimation of humerus bicondylar diameter, wrist diameter, femur bicondylar diameter and ankle diameter by following standard techniques and instruments (Sodhi, 1991).

To test the significance of mean difference the data was analyzed by adopting the techniques of one way analysis of variance followed by multiple comparisons for three groups of Wushu players with respect to the selected variables using Scheffe's Post Hoc tTest.

RESULTS & DISCUSSION

In this present study, four anthropometric parameters were tested and analyzed. The results obtained from this

study are tabulated and interpreted as given below.

Humerus Bicondylar Diameter

Table1 has shown four anthropometric measurements under consideration of three groups of Wushu players with statistical analysis.

Table-1: Mean, SD and ANOVA F values of Anthropometric Diameters among National Medalists, National and State Runners up Male Wushu Players

Players	N	Humerus Bicondylar Diameter (cm)		Wrist Diameter (cm)		Femur Bicondylar Diameter (cm)		Ankle Diameter (cm)	
		Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D
National Medalists	45	7.01	0.62	5.62	0.40	9.90	0.95	7.09	0.61
National Runners up	76	6.80	0.52	5.48	0.54	9.48	0.85	6.94	0.56
State Runners up	37	6.75	0.41	5.51	0.36	9.86	0.66	7.23	0.47
Total	158	6.85	0.53	5.53	0.46	9.69	0.86	7.05	0.56
F Test Values		2.795 (NS)		1.34 (NS)		4.63**		3.78*	

*Significant at 0.05 level of confidence (3.00); **Significant at 0.01 level of confidence (4.61)

Table 1 depicts the mean value of Humerus Bicondylar Diameter of Wushu players. It was observed that runners up at state level possess lowest value for Humerus Bicondylar Diameter (6.75) among the Wushu players followed by national runners up (7.02) and maximum in national medalists Wushu players (7.01). On Apply one way ANOVA, the 'f' value was found non-significant results (2.795 NS) among all three groups.

The mean value of wrist diameter of Wushu players was observed maximum in national medalist (5.62) followed by state runners up (5.51) and minimum in national runners up (5.48) as shown in Table 1. On apply ANOVA test for difference among them, the 'f' value was found non-significant results (1.34 NS) among all three groups.

Table 1 reveals the mean values of knee diameter of Wushu players. It was examined that national medalist possess highest value for knee diameter (9.90) followed by state runners up (9.86) and lowest in national runners up (9.48) among the Wushu players. The ANOVA, 'f' value was found significant results (4.69**) among all three groups at 1% level. On apply Scheffe's Post Hoc t Test, significant value (Mean difference 0.42) of results was observed between national medalist and national runners up Wushu players at 5 % level. There was found no significant results noticed between state runners up vs national runners up and State runners up vs national medalists as depicted in Table 2.

Table-2: Multiple Comparisons for three groups of Wushu Players with respect to the variable of Knee Diameter Using Scheffe's Post Hoc t Test

Groups	Mean Differences	Significance level	Outcome
Runners up at State level Vs Runners up at National level	0.37	.081	Not Significant at 0.05 level
Runners up at State level Vs Medalists at National level	0.05	0.971	Not Significant at 0.05 level
Runners up at National level Vs Medalists at National level	0.42*	0.029	* Significant at 0.05 level

Table 1 reveals the mean values of ankle diameter of Wushu players. It was examined that state runners up possess highest value for ankle diameter (7.23) followed by national medalist (7.09) and lowest in national runners up (6.94) among the Wushu players. The ANOVA, 'f' value was found significant results (3.78*) among all three groups at 5% level. On applying Scheffe's Post Hoc t Test, significant value (Mean difference 0.29) of results was observed between state runners up and national runners up Wushu players at 5 % level. There was found no significant results between state runners up vs national medalists and national runners up vs national medalists as depicted in Table 3

Table-3: Multiple Comparisons for three groups of Wushu Players with respect to the variable of Ankle Diameter Using Scheffe's Post Hoc t Test

Groups	Mean Differences	Significance level	Outcome
Runners up at State level Vs Runners up at National level	0.29*	.031	*Significant at 0.05 level
Runners up at State level Vs Medalists at National level	0.13	0.55	Not Significant at 0.05 level
Runners up at National level Vs Medalists at National level	0.16	0.31	Not Significant at 0.05 level

In the present study, wrist, humerus bicondylar and femur bicondylar diameter are examined better in national medalists followed by the national runners up and state runners up Wushu players. They have wider wrist and wider femur it may be due to the reason that they involve themselves in regular and systematic training, which accelerate the growth process resulting increase in dimensions.

In ankle diameter it reveals that state runners up Wushu players have greater development of bone at ankle than national medalists and national runners up Wushu

players. The results of present study on compared with other study of Mangaldeep Singh of Punjabi University, Patiala. He concluded, in his study, of analysis of anthropometry measurements between high and low achievers of inter college Basketball players that low achievers have high diameters as compared to high achiever Basketball players. Same results are noticed in ankle diameters. The results of the present study are influenced by number of factors like sample size, nature of sample take and restricted to a particular sports.

CONCLUSION

i) It was concluded that humerus bicondylar and wrist diameters have shown non-significant 'f' value of Anova among three groups of Wushu players i.e. state runners up, national runners up and national medalists.

ii) It was found that femur bicondylar diameter has shown significant 'f' value of Anova. It was investigated that the Post Hoc t Test has shown significant value of results between national medalist and national runners up wushu players at 5 % level. There was found no significant results between state runners up vs national runners up and state runners up vs national medalists.

iii) It was examined that ankle diameter was found significant results (3.78*) among all three groups at 5% level. On apply Scheffe's Post Hoc t Test, significant value of results was observed between state runners up and national runners up Wushu players at 5 % level. There was found no significant results between state runners up vs national medalists and national runners up vs national medalists.

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