



A study of coordinative abilities, explosive strength and anthropometric characteristics of female taekwondo players

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Abstract

The purpose of the study was to measure and compare the Coordinative abilities, Explosive Strength and Anthropometric Characteristics between National and State Female Taekwondo Players. For the purpose of this study 90 female taekwondo players were purposively selected from different Uttar Pradesh, Haryana and Delhi states of India. The sample were collected from the National level (n =45) and State level (n = 45) female taekwondo players. The age of the players was between 19 and 25 years. This is a survey study under Descriptive Research. The Tools Use for Data Collection were Coordinative Abilities tests, Standing Broad Jump and anthropometric Measurement Tests to measure the Coordinative abilities, Explosive Strength and Anthropometric Characteristics between National and State Female Taekwondo Players. The data was collected from the from state and nationals level competitions of Taekwondo. The data collection of National and State Female Taekwondo Players was compared and analyzed by using the descriptive statistics and independent 't' test. The level of significance was kept at 0.05 to test the hypothesis

Keywords: Coordinative abilities, explosive strength, anthropometric characteristics, national level and state level female players

1. Introduction

Taekwondo is one of the most systematic and scientific Korean traditional martial arts, that teaches more than physical fighting skills. It is a discipline that shows ways of enhancing our spirit and life through training our body and mind. Today, it has become a global sport that has gained an international reputation and stands among the official games in the Olympics. Taekwondo players require well-developed muscular strength, power and endurance, speed, agility, and flexibility, and have a high level of jumping ability, fast reaction time and swift movements.

Coordinative abilities are primarily dependent on the motor control and regulation processes of CNS. The theory of motor coordination therefore is the basis for understanding the nature of coordinative ability (Blume 1978, Meinel and Schnabel 1987). Explosive Strength may be defined as the maximal muscular force or tension used in the creation or prevention of the movement in one maximal effort of a muscle group. Muscular strength is produced by four basic types of muscular contraction. Hence it is the ability to release maximum muscular force in an explosive manner in the shortest duration, For example, standing broad jump or vertical jump performance. In sports we often come across the terms 'explosive power' required in performing certain instant activities like high –jump, shot-jump, shot- put, sprints in athletics, kicking or hitting in team games, power lifting, calisthenics etc. individual sports activities. Such instant power production is relatively unimportant in some sports activities like marathon running, long –distance cross –country skiing, long distance swimming and pure skill events (for example, archery, pistol- shooting etc.) keeping in view the above description explaining the meaning of power, power may be defined in many different ways for instance.

Anthropometry is derived from Greek word anthropos, means "human", and metron, means "measure") refers to the measurement of the human individual. An early tool of physical anthropology, it has been used for identification, for the purposes of understanding human physical variation, in pale anthropology and in various attempts to correlate physical with racial and psychological traits. Anthropometry involves the systematic measurement of the physical properties of the human body, primarily dimensional descriptors of body size and shape.

Methodology

The researcher has chosen the descriptive method for the research purpose. This study deals with the comparison of the Coordinative Abilities, Explosive Strength and Anthropometric Characteristics of Female Taekwondo Players.

Selection of Subjects

For the purpose of this study 90 female taekwondo players were purposively selected from different Uttar Pradesh, Haryana and Delhi states of India. The sample were collected from the National level (n =45) and State level (n = 45) female taekwondo players. The age of the players was between 19 to 25 years.

Collection of Data

Standard tests to measure the Coordination ability, Explosive Strength and Anthropometric variables were administered from state and nationals level competitions of Taekwondo.

Coordinative Ability Test: Numbered Medicine Ball Run Test (orientation ability) suggested by Peter Hertz (1985), Reaction Ability skill Test (Reaction Ability)

Explosive Strength Test: Explosive leg Strength (Standing Broad Jump) Test.

Anthropometric Characteristics Measurement: Standing Height, Body Weight, Thigh Girth, Arm Length

Procedure for Data Collection

First, the researcher took the permission for the collection of data from the authorities of Taekwondo during the ongoing national and state level championships. The schedule and time table for the test conduction was planned in such a manner that the ongoing during the national games were not suffered. Proper time to collect the data was chosen either in the morning and in evening practice hours or fitness session hours. This planning helped the researcher to collect the Data accurately. On the day of the test, the subjects were assembled and they were given proper instructions about the testing program with a view to get systematic response and co-operate from the subjects and no confusion be left in their minds.

Analysis of Data

After data collection, data of Coordinative abilities, Explosive Strength and Anthropometric Measurements of National and State Female Taekwondo players was compared and analyzed by using the descriptive statistics and independent 't' test. The level of significance was kept at 0.05 to test the hypothesis.

Table 1: Statistics of Coordinative Abilities between National and State Female Taekwondo players

Group	N	Mean	Std. Deviation	Std. Error Mean
National Players	45	7.8051	.74303	.11076
State Players	45	9.9560	1.41601	.21109

In the above table there were 45 National Female Taekwondo Players having mean in Coordinative abilities as 7.8051 and with standard deviation.74303 and standard error mean.11076. Similarly there were 45 National Female Taekwondo Players having mean in Coordinative abilities as 9.9560 with standard deviation 1.41601 and standard error mean.21109. (In the table N means: Number of Subjects)

Table 2: Independent 't' test of Coordinative abilities between National and State Female Taekwondo players

t	df	Sig. (2-tailed)	Mean difference	Std. Error Difference
-9.023	88	.000	-2.15089	.23838

In the table mean differences for the Coordinative abilities between National & State Female Taekwondo Players was -2.15089. The 't' test value was found-9.023. Which was highly significant at 0.05 (p=.000). Hence the Research Hypothesis there will be significant difference in Coordinative abilities between National & State Female Taekwondo Players is accepted in this Coordinative ability.

Table 3: Statistics of Explosive Strength between National and State Female Taekwondo players

Group	N	Mean	Std. Deviation	Std. Error Mean
National Players	45	1.6064	.20558	.03065
State Players	45	1.4873	.18804	.02803

In the above table there were 45 National Female Taekwondo Players having mean in Explosive Strength as 1.6064 and

with standard deviation.20558 and standard error mean.03065. Similarly there were 45 State Female Taekwondo Players having mean in Explosive Strength as 1.4873 with standard deviation.18804 and standard error mean.02803. (In the table N means number of Subjects)

Table 4: Independent sample 't' test of Explosive Strength between National and State Female Taekwondo players

t	df	Sig. (2-tailed)	Mean difference	Std. Error Difference
2.868	88	.005	.11911	.04153

In the table mean differences for the Explosive Strength between National & State Female Taekwondo Players was.11911. The 't' test value was found 2.868. Which was significant at 0.05 (p=.005) significance level for 88 degree of freedom. The statistical analysis of Explosive Strength revealed that there was significant difference between National & State Female Taekwondo Players. Hence the Research Hypothesis there will be significant difference in Explosive Strength between National & State Female Taekwondo Players is accepted.

Table 5: Descriptive statistics of Anthropometric Characteristics between National and State Female Taekwondo players

Group	N	Mean	Std. Deviation	Std. Error Mean
National Players	45	174.9111	7.52216	1.12134
State Players	45	165.6889	7.07692	1.05497

In the above table, there were 45 National Female Taekwondo Players having mean in Anthropometric Characteristics as 174.9111 and with standard deviation 7.52216 and standard error mean as 1.12134. Similarly there were 45 State Female Taekwondo Players having mean in Anthropometric Characteristics as 165.6889 with standard deviation 7.07692 and standard error mean as 1.05497. (In the table N means: Number of Subjects)

Table 6: Independent sample 't' test of Anthropometric Characteristics between National and State Female Taekwondo players

t	df	Sig. (2-tailed)	Mean difference	Std. Error Difference
5.990	88	.000	9.22222	1.53959

In the table, mean differences for the Anthropometric Characteristics between National and State Female Taekwondo Players was 9.22222. The 't' test value was found 5.990. Which was significant at 0.05 (p=.000) significance level for 88 degree of freedom. The statistical analysis of Anthropometric Characteristics revealed that there was significant difference between National and State Female Taekwondo Players. Hence the Research Hypothesis there will be significant difference in Anthropometric Characteristics between National & State Female Taekwondo Players is accepted.

Findings and Discussion

The researcher analyzed the collected data as per the objectives set for the research study. The statistical analysis of Coordinative abilities, Explosive Strength and Anthropometric Characteristics revealed that in Orientation Ability, Reaction Ability, Explosive Strength, Standing Height, Body Weight, Arm length and Thigh Girth there was significant difference between National and State Female

Taekwondo Players. Thus the research Hypothesis there will be significant difference in Coordinative abilities, Explosive Strength and Anthropometric Measurements between National & State Female Taekwondo Players is accepted.

Conclusion

Based on the work carried out following conclusions were drawn. In Coordinative abilities, the National Female Taekwondo Players were found to be better than State Female Taekwondo Players. In Explosive Strength, the National Female Taekwondo Players were found to be better than State Female Taekwondo Players. In Anthropometric Characteristics, the National Female Taekwondo Players were found to be better than State Female Taekwondo Players. The overall performance of the National Female Taekwondo Players in terms of Coordinative abilities, Explosive Strength and Anthropometric Characteristics was found better than State Female Taekwondo Players. Finally the researcher concluded that the National Female Taekwondo Players were better in Coordinative abilities, Explosive Strength and Anthropometric Characteristics as compare to State Female Taekwondo Players. This clearly shows that National Female Taekwondo Players have better Coordinative abilities, Explosive Strength and Anthropometric Characteristics as compare to State Female Taekwondo Players.

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