Comparative study of kinanthropometric characteristics between jumpers and throwers

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Abstract
The purpose of the study was to find out the significant comparison of kinanthropometric characteristics between jumpers and throwers u-19 year age group. For present study, total 40 state level male jumpers and throwers (jumpers-20 and throwers-20) with their age ranging under 19 years was selected randomly from Punjab state. T test was applied. To analysis the data statistically found the significant difference between Jumpers and Throwers as mean, standard deviation, t test. The outcome shows that throwers have taller heavier, greater diameters and more circumferences.

Keywords: Taller, heavier, diameters, circumference

Introduction
The variation in human physique is so enormous that it is extremely difficult to classify them with specific criteria. Sometimes both constitutions are considered as the synonymous of physique. The jumpers, hurdlers and pole-vaulter are relatively slim in skeletal build and are taller with longer legs and shorter trunks. The typical throwers (including shot putters) are those with greater arm span/height and greater upper arm length/forearm length. The jumper’ hurdlers and pole-vaulters have relatively greater leg length/trunk length and relatively large forelegs length/high length. Throwers at different level of competition are heavier and taller with long muscular arm and wider shoulders. In shot put, discus and hummer throwing, greater body weight is beneficial because during throwing the object forwards and upward an equal and opposite reactive force is exerted on thrower, pushing him or her backwards and downward. The effect of Newton’s third law is less on a thrower with heavy body weight. The greater height is further advantage to them by making the flight of the implement longer before landing. For jumpers lighter body with less of fat in case of these athletes is advantageous because of the necessity of lifting the body and propelling it forward and upward for better performance creating proportionately greater strength to body weight. The longer lower extremities with smaller and slender trunk in them seem to be an asset for reduction of relative body weight.

Purpose of study
Purpose of the study was to find out the comparison of kinanthropometric characteristics between jumpers and throwers

Method and Procedure
Sample size
The total number of sample size was 40 athletes’ i.e. 20 Jumpers and 20 Throwers

Sampling area
The sample was selected from Punjab state who had participated at state level of competition under 19.

Sampling techniques
The investigator was firstly divided the athletes according to specific events jumpers and throwers
throwers and their age under 19 years. According to the methods of Tanner et al. (1969) than random sampling technique was used to select the samples.

Selection of subjects
The total number of sample size was 40 athletes’ i.e. 20 jumpers and 20 throwers are under 19 year’s age.

Tools
The following tools were used for collection of data
1. Anthropometric rod
2. Weight machine
3. Steel tape
4. Sliding caliper

Test items
The following standardized anthropometric measurements were used by Weiner and Lourie (1969) [10] method for data collection.

<table>
<thead>
<tr>
<th>Event</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>T value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jumpers</td>
<td>20</td>
<td>174.9440</td>
<td>0.8630</td>
<td>7.0718</td>
</tr>
<tr>
<td>Throwers</td>
<td>20</td>
<td>177.0075</td>
<td>0.9788</td>
<td></td>
</tr>
</tbody>
</table>

Statistical techniques
T test was applied and the level of significance at 0.05 percent.

Results
Table 1: Show the comparison of height (cms) between jumpers and throwers.

Table 2: Show the comparison of weight (kg) between jumpers and throwers.

<table>
<thead>
<tr>
<th>Event</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jumpers</td>
<td>20</td>
<td>68.8660</td>
<td>3.5811</td>
<td></td>
</tr>
<tr>
<td>Throwers</td>
<td>20</td>
<td>81.0381</td>
<td>2.1873</td>
<td></td>
</tr>
</tbody>
</table>

Table and figure 2 shows the comparison of weight (kg) between jumper and thrower of under 19 year age group. The mean value of jumper and thrower were found (68.8660 and 81.0381) kg, in statistically result were found extremely significant (t=13.2070) respectively. The result show under 19 year age group thrower were heavier (kg) than jumpers.

Table 3: Show the comparison of humerus biepicondylar diameter (cms) between jumpers and throwers.

<table>
<thead>
<tr>
<th>Event</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jumpers</td>
<td>20</td>
<td>6.4145</td>
<td>0.2363</td>
<td></td>
</tr>
<tr>
<td>Throwers</td>
<td>20</td>
<td>7.2650</td>
<td>0.2852</td>
<td></td>
</tr>
</tbody>
</table>

Table 3 shows the comparison of humerus biepicondylar diameter between jumper and thrower under 19 year age group. The mean value of jumper and thrower were found (6.4145 and 7.2650) cms, in statistically result were found extremely significant (t=10.2686) respectively. The result show that under 19 year age group thrower were possesses greater humerus biepicondylar (cm) than jumpers.
Table 4: Show the comparison of femur biepicondylar diameter (cm) between jumpers and throwers.

<table>
<thead>
<tr>
<th>Event</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jumpers</td>
<td>20</td>
<td>8.5485</td>
<td>0.2958</td>
<td></td>
</tr>
<tr>
<td>Throwers</td>
<td>20</td>
<td>9.0770</td>
<td>0.2357</td>
<td></td>
</tr>
</tbody>
</table>

\[ t_{0.05(38)} = 2.021 \]

Table and figure 4 show the comparison of biepicondylar diameter (cm) between jumper and thrower of under 19 year age group. The mean value of jumper and thrower were found to be (8.5485 and 9.0770) cms in statistically result were found extremely significant \( t = 6.2496 \) respectively. The result shows under 19 year age group throwers were possesses greater upper arm biepicondylar diameter (cm) than jumpers.

Interpretation and discussion

The present study shows the comparison of kinanthropometric characteristics between jumpers and thrower under 19 age group. The result shows thrower were taller than jumpers, thrower were heavier than jumpers, thrower were possesses greater humerus biepicondylar than jumpers, thrower were possesses greater femurs biepicondylar diameter than jumpers, thrower were possesses greater upper arm circumference (cm) than jumpers, thrower were possesses greater lower arm circumference (cm) than jumpers, this may be due to genetically and diet pattern.

Conclusions

The comparison between of kinanthropometric characteristics throwers have found taller, heavier, greater diameters and more circumferences then jumpers.

Reference