Assessment of anaerobic capacity among different male team game players

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Abstract
The purpose of the present study was to compare the anaerobic capacity of among different male team game players such as basketball, handball and volleyball. For this study researcher randomly selected 36 male players (basketball=12, handball=12 and volleyball=12) from Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) and their age ranged between 17-28 years. Anaerobic capacity was measured by applying 50 meter dash run test and measure in second. The one-way analysis of variance (ANOVA) test with significant level at 0.05 was used. All statistical analysis was carried out using SPSS 16.0 version and MS Excel. The findings of the study shows that there were significant difference exists between basketball and volleyball players; between handball and volleyball players respectively but there were insignificant difference found between basketball and handball players of Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) in compare with the anaerobic capacity. Similar studies should be carried out among different game players in India for better insight of anaerobic capacity of players.

Keywords: Anaerobic capacity, team game

Introduction
The anaerobic capacity is the capacity to perform work, which is normally short term in nature, without presence of adequate oxygen. Anaerobic means without oxygen thus in anaerobic exercise a large at the required energy is obtained from the anaerobic energy sources. Anaerobic energy is required in high intensity short term exercise involving power or speed Reid & Thomson (1984) [7].

Anaerobic capacity is the ability to mobilize energy during activities of intensive nature i.e. executing intensive work with explosive action in short duration of time, such as, bursting speed in football, basketball, kabaddi, kho-kho, hockey, take off in jumps etc. But the requirement of fitness varies from game to game Sarkar (2013) [8].

Everyone tries to become successful by outperforming the others. Therefore, every athlete must improve his technical and tactical abilities along with conditional abilities and mental abilities. Two individual having the similar technical, tactical or psychic ability can differ in performances when there is a differences in their conditional ability Bej, Hamid & Jamal (2016) [2].

Anaerobic power is energy that is stored in muscles and that can be accessed without the use of oxygen. There are two systems that utilize this type of power, the phosphogen system and the lactic acid system. Human beings use this form of energy in short bursts that cannot be sustained for longer than about two minutes Sharma & Ghosh (2016) [9].

The present study assesses the anaerobic capacity among basketball, handball and volleyball players of Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)

Statement of the problem
The statement of the problem was stated as to examine the anaerobic capacity among different male team game players.

Objective of the Study
- The main objective of the study to compare the anaerobic capacity among different male team game players.
Methodology
For this study researcher randomly selected 36 male players (basketball=12, handball=12 and volleyball=12) were selected form Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) and their age ranged between 17-28 years. The anaerobic capacity and different male team game players were selected as variables. Anaerobic capacity was measured by applying 50 meter dash run test and measure in second.

Test Administration
50 yard dash run test
The tester instructed subjects in advance. All subjects asked to take the position behind the starting line and wait for signal. The tester gives commands ready, steady, go. At the command go, the timers start their respective stopwatches. All subjects start running as fast as possible till you reach the finish line. As soon as the subject crosses the finish line, the respective timer switches stop the stopwatch and records the time accurate up to 0.01 second. Only one correct trial is permitted.

Scoring
As soon as the subject crosses the finish line, the timer switches stop the stopwatch and recorded the time up to hundredth of a second.

Statistical Procedure
The data were analyzed by applying descriptive statistics and one way analysis of variance (ANOVA) among different male team game players. The level of significance was set at 0.05. Data was analyzed using the SPSS version 16.0 and MS Excel.

Result and finding of the study
The scores were obtained by applying anaerobic test. All the individual scores were used to compare the anaerobic capacity among different team game players.

Table 1: Descriptive statistics of different team game players with compare to anaerobic capacity

<table>
<thead>
<tr>
<th>Variable</th>
<th>Games</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anaerobic Capacity</td>
<td>Basketball</td>
<td>12</td>
<td>6.8408</td>
<td>0.12652</td>
<td>0.03652</td>
<td>6.61</td>
<td>7.02</td>
</tr>
<tr>
<td></td>
<td>Handball</td>
<td>12</td>
<td>6.7567</td>
<td>0.12929</td>
<td>0.03732</td>
<td>6.57</td>
<td>6.95</td>
</tr>
<tr>
<td></td>
<td>Volleyball</td>
<td>12</td>
<td>7.0658</td>
<td>0.18431</td>
<td>0.05321</td>
<td>6.83</td>
<td>7.45</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>36</td>
<td>6.8878</td>
<td>0.19616</td>
<td>0.03269</td>
<td>6.57</td>
<td>7.45</td>
</tr>
</tbody>
</table>

Table 2: Analysis of Variance (ANOVA) of the means of different team game players with compare to anaerobic capacity

<table>
<thead>
<tr>
<th>Mean Game</th>
<th>Sum of Variance</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basketball</td>
<td>6.8408</td>
<td>B</td>
<td>0.613</td>
<td>2</td>
<td>0.307</td>
<td>13.790*</td>
</tr>
<tr>
<td>Handball</td>
<td>6.7567</td>
<td>W</td>
<td>0.734</td>
<td>33</td>
<td>0.022</td>
<td></td>
</tr>
<tr>
<td>Volleyball</td>
<td>7.0658</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table – 2 shows that the analysis of variance with regard to anaerobic capacity among different male team game players (basketball, handball and Volleyball) found statistically significant (p<0.05). Since, it was observed that the obtained F-ratio 13.790 was found statistically significant than the table value 3.27. This confirms that significant difference exists among the means of male team game players in compare with anaerobic capacity. Therefore, Post-hoc test (LSD) was applied to find out the degree and direction of difference between paired means among team game.

Table 3: Post hoc comparison of the means of different team game players with compare to anaerobic capacity using LSD test

<table>
<thead>
<tr>
<th>(I) Team Game</th>
<th>(J) Team Game</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basketball</td>
<td>Handball</td>
<td>0.08417</td>
<td>0.06087</td>
<td>0.176</td>
</tr>
<tr>
<td></td>
<td>Volleyball</td>
<td>-0.22500*</td>
<td>0.06087</td>
<td>0.001</td>
</tr>
<tr>
<td>Handball</td>
<td>Basketball</td>
<td>-0.08417</td>
<td>0.06087</td>
<td>0.176</td>
</tr>
<tr>
<td></td>
<td>Volleyball</td>
<td>-0.30917*</td>
<td>0.06087</td>
<td>0.000</td>
</tr>
<tr>
<td>Volleyball</td>
<td>Basketball</td>
<td>0.22500*</td>
<td>0.06087</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Handball</td>
<td>0.30917</td>
<td>0.06087</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Discussion of the study
The finding of the present study indicates that the anaerobic capacity is significant in comparing between basketball and volleyball players; handball and volleyball players, but there is insignificant difference found between basketball and handball players. The basketball and handball players were more anaerobic capacity than volleyball due the nature of game.

The finding of study was supported by Sharma (2016) [10], he has conducted a study on speed and agility of young basketball players and his findings shows the significant difference between district and state level basketball players on the variable speed. Hence, researcher made here an attempt to examine the various games (basketball, handball and volleyball) to compare with anaerobic capacity. Khan & Rahman (2003) [6] conducted a study on Motor fitness of Bangladesh Krira Shikkha Protishtan (BKSP) basketball players – a profile study and they observed that the basketball players had a very good status in respect of speed Ghosh (2015) [4] conducted a study on selected physical fitness components of badminton & volleyball player and the results of the study shows the significant difference between
badminton and volleyball players on 50 yard dash run test. Ashwini & Virupaksha (2014) \(^1\) have conducted a study on motor fitness of basketball and volleyball female player and the finding revealed that there were significant differences found in speed between basketball and volleyball players also indicating the same result in their study.

**Conclusion of the study**

- In compare to anaerobic capacity significant difference was found between basketball and volleyball game players.
- In compare to anaerobic capacity significant difference was found between handball and volleyball game players.
- In compare to anaerobic capacity insignificant difference was found between basketball and handball game players.

**Acknowledgement**

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**Reference**