BAREFOOT, SHOD AND SHOE SPIKE: WHICH IS MORE EFFICIENT?

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ABSTRACT

Purpose: The purpose of the study is to find out the difference among barefoot, shod and spikes running conditions of sprinters in order to provide information about the potential effects of footwear on competitive runners. Design/methodology/approach: The twenty six (n= 26) male sprinters participated at state/inter-collegiate level competitions of their age range 17 to 25 years were purposively selected as subjects from Haryana State, India. The acceleration ability by 30m run test, running performance by 100 Mts. race and stride frequency by high knee action for one minute were measured in three different bare foot, shod and with shoe spikes running conditions of sprinters. To calculate the mean difference among different running conditions one way ANOVA and to calculate multiple Comparisons among different running conditions; where difference is exists Tukey HSD test were used. Findings: A statistical significant mean difference were observed for 100m sprint and acceleration run ability in all three different running conditions, whereas there exists insignificant mean difference among different running conditions i.e., bare foot, shod and shoe spikes running conditions of sprinters. Conclusion: It is concluded that the sprinters performed better with spikes as compared to shod and barefoot running conditions in acceleration run and 100M race, hence sprinters had more stride frequencies in natural barefoot condition as compare to shod and shoe spikes running conditions. Originality/values: The study provides a succinct introduction to the use of shoe spikes, shod and barefoot running conditions during practices and competitions and makes an innovative contribution by focusing on, how spikes helps in acceleration zone and bare foot in stride frequency.

Keynotes: Shoe spikes, barefoot, shod and sprinters.
1. INTRODUCTION

In recent days different shoe manufacturing companies are introducing impressive and effective shoes/spikes for training as well as for competitions but still in some countries trainers are also emphases upon barefoot training. But in reviewing the research, from the Nike Sport Research Laboratory published an article in which he postulated that the three main needs of the athlete are performance, injury protection, and comfort (Lafortune, 2008). In the 1960 Olympic Games, an Ethiopian barefoot runner named Abebe Bikila won the Marathon gold with a time 2:15:16. This set the marathon world record, and is considered a respectable time to this day. This was probably one of the first accounts in modern times of someone winning a major competition while running completely without shoes (Christopher McDougall, 2009). Zola Budd is another barefoot runner that won recognition by setting a world record at 5000 m in 1985, finishing at 15:01:83 (Christopher McDougall, 2009). This is question that many have sought to answer. One recent trend is the interest in barefoot running. There are many voices on the Internet that believe it may be more beneficial to run barefoot than the standard practice of running in cushioned shoes (Barefoot runner, 2012). Manufacturers of bare foot sports shoes currently state that wearing their shoes will stimulate and strengthen muscles in the feet and lower legs, improving general foot health and reducing the risk of injury. Further stimulate neural function important to balance and agility. The shoes would even help you to unleash your optimal running stride. The impact force has been a major concern for shoe designers and manufacturers, as one of the primary roles for running shoes is to provide shock absorption (Cavanagh 1980; Nigg & Wakeling 2001). Additionally, for improving the athlete performance the total weight of the shoe has been reduced. Hence, racing tracks, shoes and spikes have been developed to help facilitate optimal performance (Cavanagh & Lafortune 1980; Denton 2005). William (2001) stated "Natural walking is mechanically impossible for any shoe-wearing person. Natural walking and footwear are mechanically incompatible because shoes convert the natural foot into the unnatural which doctors consider normal." In comparison to most running shoes, spikes and racing track surface have less cushioning and a flat, thinner heel to produce a lighter shoe for tournaments and practice/training sessions. While competitive footwear has its time and place, it is assumed that this type of shoe should be used with alertness and awareness of the possible increased injury risks (Denton, 2005). The body need to adapt to barefoot running anatomically if one previously has been running only in shoes and the lack of proprioception in a minimal shoe affect running form (Lieberman, 2012). This research, "Will be a Guide for Runners that in which conditions we should do training with bare, shod and shoe spikes because we may find spikes uncomfortable at first because of the lack of cushioning, and the sharp spikes located under the ball of our foot. There will be a period of adjustment until they become comfortable, and we may choose to use our regular running shoes for most of our training, and spikes for racing only. It is true a big question arise on the minds of every athletes, coaches, trainers, physical therapists and physicians is whether running barefoot, shod or with shoe spikes are better for athletes or not. In present study we try to find out answer of this question by experimental research. The results of the present study may be helpful for athletes, physical education teachers, coaches and sport trainers.

2. METHODOLOGY

2.1 Sample:

For the purpose of the present study, Twenty-six (N=26), Male athletes participated at Inter-Collegiate and State level competitions of their age group of 17-25 years from Haryana were selected as subject in this study. The subjects were purposively selected and tested three times for selected kinematics and kinetic variables in different conditions of running i.e., barefoot, shod and running with spikes.
2.2 Selection of Variables
The variables were selected according to the running activities i.e., 100m sprint test to observe bare foot, shod and with spikes running condition effects on athletes, acceleration ability (30 m sprint), stride frequency (by high knee action for one minutes. The 400m grassy surface standard track was used for 100m sprint tests. The subjects were used their own routine training shoes and (5 or 7 nails) spikes. The subjects were belongs to semi rural area and they were used to do running in bare foot, shod and with shoe spikes.

2.3 Statistical Analysis
The data were analyzed by using ANOVA to observe significant mean difference among bare foot, shod and with spikes running condition of sprinters and to calculate multiple Comparisons, where difference exist Tukey HSD test was used with the help of SPSS (version 11.5) computer software.

3. RESULTS & DISCUSSION

<table>
<thead>
<tr>
<th>Group of acceleration run ability Conditions</th>
<th>Mean (Sec.)</th>
<th>S.D.</th>
<th>Std. Error</th>
<th>Source of variance</th>
<th>Sum of Square</th>
<th>DF</th>
<th>Mean Square</th>
<th>F-ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceleration run ability with Bare Foot</td>
<td>4.4227</td>
<td>18224</td>
<td>.03574</td>
<td>Between Group</td>
<td>427</td>
<td>2</td>
<td>.213</td>
<td>4.317</td>
</tr>
<tr>
<td>Acceleration run ability with Shod</td>
<td>4.4323</td>
<td>22605</td>
<td>.04433</td>
<td>Within Group</td>
<td>3.709</td>
<td>7</td>
<td>.049</td>
<td></td>
</tr>
<tr>
<td>Acceleration run ability with Spikes</td>
<td>4.2708</td>
<td>25308</td>
<td>.04963</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4.3753</td>
<td>23176</td>
<td>.02624</td>
<td>Total</td>
<td>4.136</td>
<td>7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1 shows Mean, standard deviation, std. error and ‘F’ value of sprinters acceleration run ability with bare foot, shod and shoe spikes. The calculated ‘F’ value of acceleration run ability is 4.317, which is greater than the required table value at 0.05 level of confidence. Results shows that the ‘p’ value .017 is less than 0.05 indicates that there exist significant mean difference at least between two groups. Further the mean values of acceleration run ability of sprinters with shoe spikes (4.271) conditions were found less as compared to sprinters run with barefoot (4.423) and shod (4.432) on the other hand mean value of sprinters acc. ability with barefoot (4.423) is less than that of shod running (4.432) condition. The (30mts. run) acceleration run ability is inversely related to performance of the sprinters, if performance increases the time will decrease, hence it clearly indicates that the sprinters acceleration run ability with shoe spikes followed by barefoot are better than that of shod running conditions.

It is because runners running with flat/minimalist footwear and bare foot have a shorter stride length (Less flight phase); but higher stride frequency (faster turnover) which is main necessity of acceleration run ability; spikes also enables the athletes to add traction to run as fast as possible by generating ground reaction force. In case of running with shoe it add sole height of shoe by virtue of this athletes have a wide stride length (longer flight phase); and lower strides
frequency (slower turnover) which is opposite to the basic need of acceleration zone. To find out where the differences exist among different running conditions, we use the Tukey posthoc multiple compression test.

**TABLE 2**

**TUKEY POSTHOC MULTIPLE COMPRESSION TEST OF ACCELERATION RUN ABILITY.**

(DEPENDENT VARIABLE: MT30)

<table>
<thead>
<tr>
<th>(I) GROUP30</th>
<th>(J) GROUP30</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceleration Ability (by 30 Mts. run test)</td>
<td>Acceleration run Ability with shod running</td>
<td>-0.096</td>
<td>0.0617</td>
<td>.987</td>
<td>-1.1571 - 0.1379</td>
</tr>
<tr>
<td>Acceleration run Ability with bare foot</td>
<td>Acceleration run Ability with spikes</td>
<td>0.1519*</td>
<td>0.0617</td>
<td>.042</td>
<td>0.0044 - 0.2994</td>
</tr>
<tr>
<td>Acceleration run Ability with shod running</td>
<td>Acceleration run Ability with bare foot</td>
<td>0.096</td>
<td>0.0617</td>
<td>.987</td>
<td>-1.1379 - 0.1571</td>
</tr>
<tr>
<td>Acceleration run Ability with spikes</td>
<td>Acceleration run Ability with spikes</td>
<td>0.1615*</td>
<td>0.0617</td>
<td>.028</td>
<td>0.0141 - 0.3090</td>
</tr>
</tbody>
</table>

*The mean difference is significant at the .05 level.*

Table 2 clearly indicates that there exist significant difference (0.1519) at .05 level of significance of 30 mts. acceleration run ability between barefoot and with spikes running conditions but there exist no significance difference (-0.0096) between acceleration run ability between barefoot and shod running conditions. It shows that there exists significant difference (0.1615) at .05 level of significance in acceleration run ability between running with shod and with spikes running conditions. It suggests that in case of acceleration run ability spikes and bare foot running conditions are better than that of shod running, hence shoe increase extra mass and height between foot and running surface so it increases stride length (More flight phase) but decreases stride frequency which is basic need of acceleration run ability. In case of spikes and bare foot, spikes add traction to move forward without slipping or jerking foot backwardly and negative heel spikes helps athletes mid to forefoot landing to encourage athlete demand. Runners with spikes get lightest foot covering for safety which provides psychological gain to athletes for avoiding any surface related injury.
Table 3
MEAN, STANDARD DEVIATION, STD. ERROR AND ONE-WAY ANOVA OF ATHLETES 100 MTS.
SPRINTING ABILITY AMONG BARE FOOT, SHOD AND SPIKES
RUNNING CONDITIONS. (N=26)

<table>
<thead>
<tr>
<th>Group of 100M sprint Conditions</th>
<th>Mean Sec.</th>
<th>S.D.</th>
<th>Std. Error</th>
<th>Source of varianc e</th>
<th>Sum of Square</th>
<th>DF</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig. P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>100M sprint with Bare Foot (Sec.)</td>
<td>13.054</td>
<td>.74794</td>
<td>14668</td>
<td>Between Group</td>
<td>4.417</td>
<td>2</td>
<td>2.209</td>
<td>4.312</td>
<td>.017</td>
</tr>
<tr>
<td>100M sprint with Shod (Sec.)</td>
<td>13.037</td>
<td>.64969</td>
<td>12742</td>
<td>Within Group</td>
<td>38.417</td>
<td>75</td>
<td>.512</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100M sprint with shoe Spikes (Sec.)</td>
<td>12.541</td>
<td>.74510</td>
<td>14613</td>
<td></td>
<td>42.835</td>
<td>77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>12.877</td>
<td>.74585</td>
<td>08445</td>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3 shows Mean, standard deviation, std. error and 'F' value of 100 Mts. sprinting ability with bare foot, shod and shoe spikes. The calculated 'F' value of 100 Mts. sprint is 4.312, which is greater than the required table value at 0.05 level of confidence. Result shows that the 'p' value .017 is less than 0.05 indicates that there exists significant mean difference at least between two groups. Further the mean values of 100Mts sprint with shoe spikes (12.540) conditions were found less as compared to sprinters run with barefoot (13.054) and shod (13.037) on the other hand mean value of 100 Mts. sprint with shod (13.037) is less than that of barefoot running (13.054) condition. The 100mts. sprint time is inversely related to performance of the sprinters, if performance increases the time will decrease, hence it clearly indicates that the 100 Mts. sprint with shoe spikes followed by shod are better than that of barefoot running conditions.

TABLE 4
TUKEY POSTHOC MULTIPLE COMPRESSION TEST OF 100 MTS. RUNNING ABILITY.(DEPENDENT VARIABLE: MT30)

<table>
<thead>
<tr>
<th>(I) GROUP</th>
<th>(J) GROUP</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 Mts. sprinting conditions</td>
<td>100 Mts. with shod running</td>
<td>100Mts with spikes</td>
<td>.0169</td>
<td>.5131*</td>
<td>.1985</td>
</tr>
<tr>
<td>100Mts sprints with bare foot</td>
<td>100 Mts. with shod running</td>
<td>100Mts with spikes</td>
<td>-.0169</td>
<td>.4962*</td>
<td>.1985</td>
</tr>
<tr>
<td>100 Mts sprints with shod running</td>
<td>100Mts with bare foot</td>
<td>100Mts with spikes</td>
<td>-.5131*</td>
<td>.4962*</td>
<td>.1985</td>
</tr>
<tr>
<td>100Mts sprints with spikes</td>
<td>100Mts with bare foot</td>
<td>100 Mts with shod running</td>
<td>-.5131*</td>
<td>.4962*</td>
<td>.1985</td>
</tr>
</tbody>
</table>

* The mean difference is significant at the .05 level.

It is obvious from table- 2.2 that there exist significant difference (.5131) at .05 level of significance of 100 mts. runing ability between barefoot and shoe spikes running conditions but there exist no significance difference (.0169) between barefoot and shod running conditions. It also shows that there exists significant difference (.4962) at .05 level of significance in 100mts. mts.
running ability between shod and with spikes running conditions. Hence it reveals that in case of 100m sprint ability athletes performed better in shoe spikes running condition as compare to bare foot and shod running conditions it is because runners running with minimalist sole spikes have a narrow stride length (shorter flight phase); and higher strides frequency (faster turnover). In condition of running with spikes complete body leads by upper body; spikes enables the body's to absorb the shocks and forces, protects the foot from trauma and injuries and generates ground reaction force without jerk.

**TABLE 5**

<table>
<thead>
<tr>
<th>Group Stride Frequency</th>
<th>Mean Sec.</th>
<th>S.D.</th>
<th>Std. Error</th>
<th>Source of variance</th>
<th>Sum of Square</th>
<th>DF</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig. P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Knee Action with Bare Foot</td>
<td>25.923</td>
<td>3.084</td>
<td>.60491</td>
<td>Between Group</td>
<td>35.179</td>
<td>2</td>
<td>17.590</td>
<td>1.538</td>
<td>.221</td>
</tr>
<tr>
<td>High Knee Action with Shod</td>
<td>25.385</td>
<td>3.287</td>
<td>.64469</td>
<td>Within Group</td>
<td>857.538</td>
<td>75</td>
<td>11.434</td>
<td>11.434</td>
<td>.221</td>
</tr>
<tr>
<td>High Knee Action with Spikes</td>
<td>24.308</td>
<td>3.739</td>
<td>.73332</td>
<td></td>
<td>Total</td>
<td>892.718</td>
<td>77</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4 shows Mean, standard deviation, std. error and 'F' value of stride frequency (High knee action) with bare foot, shod and shoe spikes conditions. The calculated 'F' value of stride frequency is 1.538, which is greater than the required table value at 0.05 level of confidence. Result shows that the 'p' value .221 is greater than 0.05 indicates that there exists insignificant mean difference among any groups. Further the mean values of stride frequency with barefoot (25.923) conditions is found more as compared to stride frequency with shod (25.385) and shoe spikes (24.308) on the other hand mean value of stride frequency with shod (25.385) is more than that of shoe spikes (24.308) condition. Hence, it clearly indicates that the stride frequency with bare foot followed by shod are better than that of shoe spikes running conditions. It suggests that, the bare foot runners performed better in stride frequency test as compared to running with spikes condition it is due to in case of bare feet; runners leads on the outside middle of the foot and the initial force peak occurs very rapidly, while in spikes, there is negative drop from forefoot to heel in the quest to provide greater performance assistance to run fast; runners foot strike first then heel with ground and it increases the time taken for the initial force peak. Spikes also add mass to the foot, which slowing down the runners. Athletes running with bare foot also have a shorter stride length (Less flight phase); but higher stride frequency (faster turnover).

4. CONCLUSION

From the results of the present study concluded that in acceleration and 100mts running ability the sprinters with shoe spike condition perform better as compared to shod and bare foot running conditions and there exist significant mean difference at .05 level of significance, while mean values shows that runners with shod performed better as compared to bare foot condition but there exist insignificant difference. Whereas in case of stride frequency the mean value shows that bare foot runners was better than that of shod and shoe spike runner and shod runner performed better as compared to shoe spikes runners but there exist insignificant mean difference among them.
REFERENCES


ANALYSIS OF SELECTED PSYCHOLOGICAL VARIABLES AMONG HIGHER SECONDARY LEVEL KHO-KHO, KABADDI AND VOLLEYBALL PLAYERS

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ABSTRACT

The present study is a comparative analysis of selected psychological variables of Higher Secondary level the Kho Kho, Kabaddi and Volleyball players. The purpose of the study was to make a comparative analysis of cognitive anxiety, somatic anxiety and self-confidence among, higher secondary level Kho Kho, Kabaddi, and Volleyball players. To facilitate the study forty five subjects each in Kho Kho, Kabaddi, and Volleyball players from the affiliated Higher Secondary of Kashmir were selected as subjects at randomly. One-way analysis of variance was used to find out the difference between psychological variables. In case of significance of mean difference was observed on the criterion measure, to find out which pair of group is higher among the others, as a post- hoc, the Schaffer’s test was applied test at 0.05 level of significant was adopted by SPSS 17 version.

Keywords: Self-Confidence, Somatic Anxiety, Cognitive Anxiety.
1. INTRODUCTION

As we know that competition is a social process that takes place when prizes are given to people on the basis the comparison of their performance with the performance of others participating in the same event (Coakley, 1994).

In sport, pre-competitive anxiety refers to an unpleasant emotion which is characterized by imprecise but persistent feeling of uneasiness and fear before competition. Anxiety is a reaction to impending danger: real or imaginary. It contains of two subcomponents, namely cognitive (mental) and somatic (physiological), which influence the performance before and during competition. Cognitive is the mental component, characterized by negative expectation about success or self-evaluation, negative self-talk, inability to cope, worry about performance, fear of failure, inability to concentrate and attention narrowing (Jervis, 2002). That is, players who are prone to experiencing anxiety have a tendency to worry because they have an attention disposition to observe situational threats (e.g., Mathews, 1990).

Worry is also a component of “cognitive interference,” which refers to a class of cognitions that are intrusive, unwanted, undesirable and at times disturbing to the individual (Sarason, Pierce, & Sarason, 1996).

2. METHODOLOGY

2.1 Selection of Subjects

The prospective cross study was carried out and forty five subjects in each Kho-Kho, Kabbadi and Volleyball players from the affiliated Higher Secondary of Kashmir were selected as subjects of age group 16-18 years were taken randomly.

2.2 Selection of Instrument

Illusion of Self-Evolution Questionnaire was used to measure Cognitive Anxiety, Somatic Anxiety, and Self-Confidence developed by (Martens Burton Veale Bumped Smith 1983). This questionnaire consists of 27 questions of 3 components, namely cognitive anxiety, somatic anxiety and self-confidence. Each component consists of 9 questions and the success of scores range from 9-36.

2.3 Statistical Analysis

One-Way analysis of variance was used to find out the difference between three psychological variables among affiliated Higher Secondary Level men Kho-Kho, Kabaddi and volleyball players.

3. RESULTS

To find out the difference between three psychological variables among affiliated Higher Secondary Level men Kho-Kho, Kabaddi and volleyball players., F-ratio was calculated and data pertaining to this has been presented in Table 1 to 3 and depicted figure 1 to 3.

<table>
<thead>
<tr>
<th>Mean Value</th>
<th>Source of Variance</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kho kho</td>
<td>kabaddi</td>
<td>Volleyball</td>
<td>Between Groups</td>
<td>0.103704</td>
<td>2</td>
</tr>
<tr>
<td>22.22</td>
<td>22.27</td>
<td>22.29</td>
<td>Within Groups</td>
<td>2431.822</td>
<td>134</td>
</tr>
</tbody>
</table>

Insignificant at .5 level, F .05 (2, 134) = 3.00
Table 1. Shows that the obtained mean values on cognitive anxiety of Kho Kho, Kabaddi and volleyball players are 22.22, 22.27, and 22.29 respectively. The analysis of variance (ANOVA) of the mean proved that there was a significant difference in cognitive anxiety between the players as the obtained F value 0.02 was lesser than the required table value of 3.00 to be significant at 0.05 level of confidence with 1,134 degree of freedom.

**TABLE 2**

ANALYSIS VARIANCE OF SOMATIC ANXIETY AMONG HIGHER SECONDARY LEVEL KHO KHO, KABADDI AND VOLLEYBALL PLAYERS

<table>
<thead>
<tr>
<th>Source of Variance</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>660.04</td>
<td>2</td>
<td>330.02</td>
<td>19.38</td>
</tr>
<tr>
<td>Within Groups</td>
<td>2247.69</td>
<td>134</td>
<td>17.03</td>
<td></td>
</tr>
</tbody>
</table>

Significant at .5 level, F .05 (2, 134) = 3.00

Table 2 Shows that the obtained mean values on somatic anxiety of kho-kho, kabaddi and volleyball players are 25.64, 27.62, and 22.27 respectively. The analysis of variance (ANOVA) of the mean proved that there was a significant difference in somatic anxiety between the players as the obtained F value 19.38 was greater than the required table value of 3.00 to be significant at 0.05 level of confidence with 1,134 degree of freedom.

**TABLE 3**

ANALYSIS VARIANCE OF SELF CONFIDENCE AMONG HIGHER SECONDARY LEVEL KHO KHO, KABADDI AND VOLLEYBALL PLAYERS

<table>
<thead>
<tr>
<th>Source of Variance</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1575.511</td>
<td>2</td>
<td>787.76</td>
<td>48.01</td>
</tr>
<tr>
<td>Within Groups</td>
<td>2165.822</td>
<td>134</td>
<td>16.41</td>
<td></td>
</tr>
</tbody>
</table>

Significant at .5 level, F .05 (2, 134) = 3.00

Table 3 Shows that the obtained mean values on self confidence of kho kho, kabaddi and volleyball players are 29.27, 29.78, and 22.29 respectively. The analysis of variance (ANOVA) of the mean proved that there was a significant difference in self-confidence between the players as the obtained F-value 48.01 was greater than the required table value of 3.00 to be significant at 0.05 level of confidence with 1,134 degree of freedom.
4. DISCUSSION

The result shows that there was significant difference exists among higher secondary level kho kho, kabaddi and volleyball players. The volleyball players possess more cognitive anxiety than kabaddi and kho kho players. The post hoc analysis proved that the difference between kho kho and kabaddi players were significant. It was also proved that there was a significant difference between kho kho players and kabaddi players and kabaddi and volleyball players in cognitive anxiety. Table II Shows that there was exists significant mean difference exists kho-kho, Kabaddi and volleyball players. The kabaddi players possess more somatic anxiety than kho-kho and volleyball players. The post hoc analysis proved that the difference between kho kho players and volleyball players were significant. The kabaddi players possess more self-confidence than kho kho and volleyball players. The post hoc analysis proved that the difference between kho kho players and volleyball players were significant.

It was also proved that there was a significant difference between kabaddi and volleyball players and kho-kho and volleyball players in self-confidence. The subjects selected for this study were higher secondary level players and the results proved that the psychological preparation for these games differ from one another.
5. CONCLUSION

1. In the present study we concluded that there was significant difference in cognitive anxiety among Higher Secondary level kho kho, kabaddi and Volleyball players. It was concluded that volleyball players possess more cognitive anxiety than kabaddi and kho kho players.

2. In the present study we concluded that there was significant difference in somatic anxiety among Higher Secondary level kho kho, kabaddi and Volleyball players. It was concluded that kabaddi players possess more somatic anxiety than kho kho and volleyball players.

3. In the present study we concluded that there was significant difference in Self-Confidence among Higher Secondary level kho kho, kabaddi and Volleyball players. It was concluded that kabaddi players possess more self-confidence than kho kho and volleyball players.

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REFERENCES

Amritpreet Singh, et al: A Study of Pre-Competitive and Post-Competitive Anxiety Level of Inter- collegiate Volleyball Players


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