AUDITORY REACTION TIME IN BASKETBALL PLAYERS AND HEALTHY CONTROLS

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ABSTRACT

Reaction is purposeful voluntary response to different stimuli as visual or auditory stimuli. Auditory reaction time is time required to respond to auditory stimuli. Quickness of response is very important in games like basketball. This study was conducted to compare auditory reaction time of basketball players and healthy controls. The auditory reaction time was measured by the reaction time instrument in healthy controls and basketball players. Simple reaction time and choice reaction time measured. During the reaction time testing, auditory stimuli were given for three times and minimum reaction time was taken as the final reaction time for that sensory modality of that subject. The results were statistically analyzed and were recorded as mean ± standard deviation and student’s unpaired t-test was applied to check the level of significance. The study shows that basketball players have shorter reaction time than healthy controls. As reaction time gives the information how fast a person gives a response to sensory stimuli, it is a good indicator of performance in reactive sports like basketball. Sportsman should be trained to improve their reaction time to improve their performance.

Keywords: Auditory Reaction Time, Basketball, Alertness, Response.

INTRODUCTION

Reaction is a purposeful voluntary response to stimulus. There is a certain time period between application of stimulus and appropriate motor response. Auditory reaction time is time required to respond to auditory stimuli. Reaction time is having mainly 2 components: (1) Mental processing time: which is time required for responder to perceive stimulus, identifying and analyzing of stimulus and decide the proper motor response. (2) Movement time: it is time required to perform movement after selection of response. Luce and Welford described three types of reaction time; (2) Simple reaction time: here there is one stimulus and one response, (2) Recognition reaction time: here there are some stimulus that should be responded to and other that should not get response. (3) Choice reaction time: here there are multiple stimulus and multiple responses. Skills like rebounding, shot, block, ball handling, dribbling, shooting and passing are of utmost importance for a player at any level of play. Basketball player has to give proper and quick response during the game. They have to throw ball in proper direction. The study has been undertaken to see the effect of sports training, which involves selecting response, decision making and motor response during game, on speed of mental processes (reaction time) and to compare with control group which is not involved in regular sports activity.

MATERIAL AND METHODS

After obtaining Approval from institutional review board; present study was conducted in 50 controls and 50 basketball players of Bhavnagar district. Personal history and medical history of both groups was collected in pre-designed Performa. Medical history was taken to rule out any medical or surgical disease which would affect reaction time of individual. After taking consent, Reaction time was measured with multiple choice apparatus 653 MP (reaction time apparatus) with accuracy of ± 0.001 seconds. Auditory reaction time was measured under two categories. (1) Simple reaction time, where subject has to respond to auditory stimuli by pressing key and (2) choice reaction time; where subject has to respond to different auditory stimulus by pressing respective key. For auditory stimuli low and high frequency pure sounds were given. Subjects were given practice session in which the subject responded to auditory stimuli till near about constant values of reaction time come and then auditory stimuli were given for 3 times and minimum reaction time was taken as a final reaction time for that sensory modality of that subject.

Statistical Analysis

Data was collected and was statistically analyzed. Reaction time were taken as mean ± SD. The level of significance between basketball players and controls was tested by students Unpaired T test. The observation was taken as a significant of P value < 0.05.

<table>
<thead>
<tr>
<th>Table 1: Difference in Simple Auditory Reaction Time in 50 Healthy Controls and in 50 Basketball Players</th>
</tr>
</thead>
<tbody>
<tr>
<td><em><em>Simple ART</em> (Healthy Controls)</em>*</td>
</tr>
<tr>
<td>0.16136 ± 0.02274</td>
</tr>
</tbody>
</table>

*ART = Auditory Reaction Time

Auditory reaction time found to be significantly (P value < 0.05) less in basketball players as compared to controls in choice reaction time task.

<table>
<thead>
<tr>
<th>Table 2: Difference in Choice Auditory Reaction Time in 50 Healthy Controls and in 50 Basketball Players</th>
</tr>
</thead>
<tbody>
<tr>
<td><em><em>Choice ART</em> (Healthy Controls)</em>*</td>
</tr>
<tr>
<td>0.30724 ± 0.06850</td>
</tr>
</tbody>
</table>

*ART = Auditory Reaction Time
Our study conducted in small group size. For more information study should be conducted on larger size of sample.

CONCLUSION
Our study concluded that persons involved in sports are having good reaction time as compared to controls. Nowadays children’s are more involved in videogames like indoor games, while involvement in outdoor games would make them physically healthy as well also improve their alertness, concentration and ultimately reaction time, which would also be helpful them in day to day life as while driving it is more important to take certain decisions as quickly as possible.

REFERENCES

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