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A comparative study of depth perception between male and female inter-university level softball players

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Abstract
This ex-post facto study was conducted on a non-random sample of 18 male and 18 female Inter-University Level Softball Players of Punjabi University, Patiala ranging 18 to 25 years of age. Me-Digraph depth perception tester was the best suited instrument for the study and employed individually at one go and collected data from them. The t-test was employed, the level of significance was set at 0.05. Comparative statistics were used to analyse the results, which conclusively showed insignificant gender-based differences on Depth Perception.

Keywords: Depth percepion, softball players, male and female

Introduction

Depth perception arises from an assortment of depth signals. Binocular prompt - vision in which the two eyes are utilized together. Monocular signal - vision in which each eye is utilized independently. By utilizing the eyes along these lines, as contradicted by binocular vision, the field of view is expanded, while depth perception is restricted. The consequence of debilitation that might be physical, mental, formative, or some blend of these. An inability might be available from birth, or happen amid a man's (Singh, 2017) [6].

In many of the depth perception studies, most commonly subjects are asked to view a target in a test scene and then to adjust a target in a reference scene to match the perceived distance of the test target (Beise, 1937) [1]. Depth cues are consistently varied, through which the researcher can access and quantify the effect of manipulation of depth cue by differentiating between the perceived distances of test and reference target. Lighting is the dynamic character of environment which causes poses challenges in terms of repeatability and manipulation of parameters in a controlled manner. Flexibility can be provided with adequate modelling visualization, display technologies, and computer-generated images to simulate various lighting conditions through manipulation of input parameters including the spatial composition, materiality, lighting and the occupant's viewpoint. Therefore, computational approaches provide a unique opportunity to systematically study the impact of lighting as a pictorial cue (Sillero, *et al*. 2007) [5]. In this study, physically based rendering and perceptually based tone mapping techniques are utilized to generate pictorial spaces that can provide surrogate models for physical environments to study depth perception. The objective of this study is to demonstrate the relationship between the architectural configuration, luminance distribution patterns, time, and perceived spatial depth (Tai & Inanici, 2009) [7].

Research studies on athlete's Depth Perception are abundant. According to Erickson (2007) [3] study, Depth Perception is one of the most importance visual skills for athletes; especially those sports require accurate spatial localization. It is generally believed that uncorrected refractive errors would adversely affect depth perception.

Depth Perception is necessary for accurate shot placement, evaluating the defensive positions of the opponent and judgment of whether a ball hit to you will land in or out of bounds. It also assists in judgment of the speed of the opponent's shot. Some of the most important vision skills for softball players are eye tracking, peripheral awareness, depth perception, dynamic visual acuity and hand-eye coordination. Players can help narrow down which vision skill might be lacking for them by asking experienced players or coaches what area of the game they need the most improvement in. Each vision skill is tied to a particular activity or activities within the game (Deshaies & Pargman, 1977) [2].

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Using Me-Digraph Depth Perception Scale, Shahid and Deol (2015) [4] assessed Depth Perception in 20 male and 20 female higher Secondary School level Students from Senior Secondary Model School Punjabi University Patiala. The age of subjects ranged between 15 to 20 years. The study showed Depth Perception to be a highly related psychological Variable with insignificant differences between male and female athletes.

Materials and Method
This is a post-facto (non-experimental) study, conducted on a non-random sample of 18 male and 18 female Inter-University level Softball Players of Punjabi University, Patiala. The age ranging from 18 to 25.
The requisite data on Depth Perception was collected by individually administering to the subjects Me-Digraph Depth Perception Tester, which was the best suited tool for the study and was used to measure the Depth Perception of the samples. The subject is asked to sit on the chair at front of the instrument. The tester set the pointer of the Me

digraph D.P. Tester at the starting point. The subject can see the pointer with the help of the glass, place at her/his side. Subject is asked to hold the regulator and drag the pointer with the help of two buttons placed on the regulator. Subject will try to stop the pointer at zero. Three trials were given. Scores are shown at the opposite side on the meter. It may be negative or positive. If below zero then it will be negative form and above the zero it will be positive. The lowest score is counted as final score in centimetres. Appropriate comparative statistics were employed to treat the data in line with the objectives of the study and conclusions drawn accordingly.

Statistical Analysis
After the collection of relevant data, it was processed and analyzed with descriptive statistics. To compare the Depth Perception of subjects' Mean, Standard Deviation and t- test was employed with the help of statistical package of SPSS.
Results of the study are summed up in table I & Figure I discussed as required.

Table 1: Gender-based comparative statistics on depth perception variable of inter-university level softball players

Group	N	Mean	Standard Deviation	Standard Error of Mean	t-value
Male	18	10.78	31.21	7.36	1.8314
Female	18	-8.94	33.37	7.87	

Table I & Figure I statistically show that the mean and standard deviation with regard to Male softball players is 10.78 and 31.21 where as in case of Female Softball players is -8.94 and 33.37 respectively. The calculated t-value (1.8314) which is less than the tabulated t-value (2.021) at 0.05 levels. So, it indicates that there insignificant difference among Male and Female Softball Inter-University level players for their Depth perception variable.
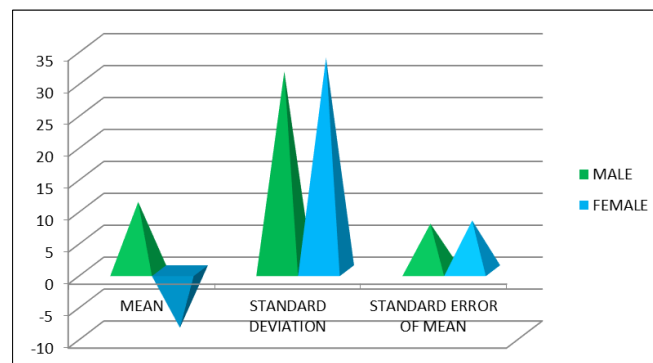

Fig 1: Mean and standard deviation of selected depth perception variable of male and female softball inter university level players

Discussion and Findings
The result of the study established that there was insignificant difference in depth perception between Male and Female Inter-University level Softball players. Depth perception can be affected by some factors such as:- visual distance, visual ability. The reason behind the insignificance differences is that, at the time of data collection the subjects were performing inconsistently. On the basis of analysis of the data, investigator found that the earlier study of Shahid and Deol (2015) [4] supported the present study.

Conclusions
Within the limits and limitations of the study, it is concluded that male and female Inter- University level Softball Players don't differ on Depth Perception variable.

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