Original Research Article

EFFECT OF EYE-HAND COORDINATION ON SHOOTING SKILLS OF TRIBAL AND NON TRIBAL MALE ARCHERS

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Abstract

The present study was conducted to see the effect of eye-hand coordination on shooting skill of tribal-non tribal male archers from 10 yards distance. 100 tribal male archers (Av. age 23.46 years) and 100 non-tribal male archers (Av. age 24.44 years) were selected as sample for the present study. The criterion for selection was participation in state level archery competitions. To measure shooting ability from 10 yard distance of selected archers, AAHPER Archery Test (1967) was used. Mirror Drawing Test was used as a tool to measure hand-eye coordination of the selected subjects. After collecting the data, it was analysed to see the effect of hand-eye coordination and tribal-non tribal belongingness on archery shooting skills of male archers. Q1 and Q3 cutting points were adopted to bifurcate cases into High and Low hand-eye coordination. To verify hypothesis 2x2 ANOVA techniques was applied. Results indicated that shooting accuracy was significantly higher in a group of archers who exhibited high level of hand eye coordination as compared to group of archers who exhibited low hand eye coordinative ability (F=50.11, p<.01). Tribal male archers displayed superior shooting skills from 10 yards distance as compared to non tribal archers. (F=6.48, p<.01) The F of 0.188, an indicator of hand eye coordination x tribal non-tribal belongingness (AxB) interaction upon shooting skill, turned out to be statistically insignificant. It was concluded that perceptual motor is a pre-requisite for superior shooting skills in archery. It was also concluded that shooting skills of tribal archers is significantly better than non tribal archers but eye-hand coordination and tribal non-tribal belongingness together, unable to influence shooting skills of male archers.

INTRODUCTION

Eye-hand coordination is defined as a

perceptual-motor skill involving the integration and processing in the central nervous system of visual and tactile input so that a purposeful motor movement can be made. Eye-hand coordination is divided into 2 components. Proaction (closed motor skill) and Reaction (open motor skill). Proaction refers to action, which is initiated or controlled by the athlete.

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Reaction refers to movement that occurs in response to another action.

Tribals are well accustomed to archery as they it is their age old tradition but they use heavy arrowhead for hunting whereas in urban area archery does not come naturally but it is taken as sport by the youth.

Hence, in order to find out the difference in shooting from 10 yard distance on the basis of these two major variables i.e. hand-eye coordination and tribal-non tribal belongingness, the present study was undertaken.

While scanning the related research literature, the researcher found that several investigators namely, Anand (1976), Peter Van Handel (1982), Kooii B.W. (1991), Dey (1997), Erton (2004), Koji, T. et al. (2006), Ertana, A. (2008) etc. had conducted studies on archery but the areas explored were concerned with body type, level of participation, body fat, physical fitness and historical development but no such study was conducted in which shooting skill of archers was assessed in the light of tribal- non tribal belongingness and hand eye coordination.

Hypothesis

It was hypothesized that hand eye coordination along with tribal non-tribal belongingness will show their joint action effect on shooting skills of male archers.

Methodology :-

To verify above-mentioned objectives investigator make systematic planning to investigate the effect of eye-hand co-ordination and reasoning ability of male archers on their shooting accuracy from 10 yard distance. Therefore following methodological steps were taken.

Sample :

100 tribal male archers (Av. age 23.46 years) and 100 non-tribal male archers (Av. age 24.44 years) were selected as sample for the present study. The criterion for selection was participation in state level archery competitions.

Tools:

Following tools were used to fulfil the objectives of the study -
- Mirror Drawing Test was used as a tool to measure hand-eye coordination of the selected subjects.
- To measure shooting ability from 10 yard distance of selected archers, AAHPER Archery Test (1967) was used. In this test 9 points were given if the subject hits the gold area, 07 points for red area, 05 points for blue area, 03 points for black area and 01 point was given when the archer hits the white target area. In all 6 attempts are given to each subject.

Procedure:

- Mirror drawing test was administered to selected subjects as per their availability and suitability in a laboratory like condition.
- To gather score on shooting skills, scores on target zone for each subject was computed by adding the number of arrows in the specified coloured target zone. This is done in accordance with the instructions given in the AAHPER Archery Test Manual.
- Q_1 and Q_3 cutting points were adopted to bifurcate cases into High and Low hand-eye coordination.

To find out the effect of hand eye coordination (High-Low) and tribal - non tribal belongingness on archery shooting skills of male archers, 2x2 ANOVA technique was adopted. Results shown in Table I.

Results and Conclusion:

After ANOVA treatment, results were summarised in Table No. 1.

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Table No. 1
Hand Eye Coordination x Reasoning Ability on Shooting Accuracy (N=70)

		Gender		Marginal Mean
		B_1 Tribal Player	B_2 Non Tribal Player	
Hand Eye Coordination	A_1 **High Hand Eye Coordination**	M=45.81 N=16	M=41.56 N=16	43.68
	A_2 **Low Hand Eye Coordination**	M=32.44 N=18	M=26.45 N=20	29.44
Marginal Mean		39.12	34.00	

ANOVA SUMMARY

Source of Variation	SS	df	MS	F
A	3518.206	1	3518.206	50.11**
B	**455.199**	**1**	**455.199**	**6.48***
A x B	13.199	1	13.199	0.188 (NS)
Error	4633.769	66	70.209	

*   -   Significant at .05 level
**   -   Significant at .01 level
NS   -   Not Significant

Table 1 and ANOVA summary clearly indicate that male archers with superior hand eye coordination had better shooting skills from 10 yards distance as compared to archers with inferior hand eye coordination. The F-ratio of 50.11, which is statistically significant at .01 level, confirms the above finding.

The main effect of tribal and non tribal belongingness on archery shooting skills from 10 yards distance comes out to be statistically significant. (F=6.48, p<.01) This finding gives statistical weightage to the fact that tribal archers having significantly superior shooting skills from 10 yard distance zone (M=39.12) as compared to non tribal archers (M=34.00).

The two factor interaction effect i.e. hand eye coordination (A) and tribal- non tribal belongingness (B) on shooting skills of male

archers turned out to be statistically insignificant. (F=0.188, p>.05).

Conclusion

The results establish a fact that both the variables i.e. hand eye coordination and tribal non-tribal belongingness have strong influence on shooting skills of male archers but hand eye coordination along with tribal and non-tribal belongingness, together was not established in the context of shooting skills of male archers.

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