



IMPACT OF FUNCTIONAL TRAINING WITH AND WITHOUT VISION TRAINING AMONG COLLEGE MEN FIELD HOCKEY PLAYERS

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ABSTRACT

The purpose of the study was to find out the impact of functional training with and without vision training on selected skill related physical fitness and performance related variables namely agility, balance and cardio respiratory endurance and dribbling among college men field hockey players. To achieve the purpose of the study, forty five male hockey players were randomly selected from three colleges namely, YMCA College of Physical Education, Chennai, Loyola College, Chennai, and D. B. Jain College, Chennai were selected. The age of the subjects selected for this study was between 18 and 25 years. The subjects had training age of at least three years in hockey and only who those represented their respective college teams were taken as subjects. A series of physical tests was carried out on each participant. Agility was assessed by Illinois agility test, balance was assessed by Dynamic Balance test and cardio respiratory endurance assessed by Beep Test. Performance variable such as dribbling was measured by Schmithal's field hockey test. By using the matching procedure on the basis of their initial hockey playing ability performance test scores, Group-I underwent functional training without vision training, Group-II underwent functional training with vision training and Group-III acted as control group. The experimental group participated in the functional training with and without vision training for 3 days a week, one session per day and for 8 weeks each session lasted 90 minutes. The control group maintained their daily routine activities and no special training was given. The subjects of the three groups were tested on selected variables prior and immediately after the training period. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significance difference, if any among the groups. In case 'F' values found to be the significant, the Scheffe's test was used as post hoc test. The 0.05 level of confidence was fixed to test the level of significance difference, if any between groups. The results of the study showed that there was significant differences exist between functional training with vision training and control group and functional training without vision training and control group.

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Introduction

Hockey is an intermittent endurance sport involving short sprinting as well as movement with and without ball (Manna et al. 2009). In current scenario the game Field Hockey requires lots of Physiological and Physical demands to compete in Olympics. Physical characteristics and body composition have been known to be fundamental to excellence in athletic performance (Mathur 1985), (Mandeep Singh 2010). Functional training is designed to specifically enhance the performance of activities of daily living, recreational pursuits, and sports performance. It targets the neuromuscular system and trains movements (muscle groups and the nervous system) (Boyle, 2004). Functional training programs have been used in a variety of rehabilitation settings with documented success. Based on that success, the concept of functional training has gained popularity in applied fitness settings to enhance sport performance (Thompson, Cobb and Blackwell, 2007). A proactive, functional training approach that decreases injury through improved performance efficiency will enhance overall wellness and productivity in many active populations (Cook, Burton, 2006). Vision is one of the several sensory organs which receive information from the external environment and for years it has been recognized that many sports place demands on vision and particular visual skills. The earliest proponent of this concept was Galen, a Roman Physician who in the second century believed that there is a relationship between ball sports, body and visual status (Hitzeman & Beckerman, 1993). In spite of this early recognition of visual importance in sports it stood neglected for many years and it was not before the middle of 20th century that new scientific opinions were developed and the thought, "sports being a multidisciplinary approach" came into picture (Jafarzadehpur & Yarigholi, 2004). Sports Vision as such includes

specific visual determinants which precisely coordinates a player's activity during the game. It has been seen that successful athletes generally have better skill, accuracy and spatio-temporal constraints on visual information acquisition. As such if two similar athletes meet in competition and one has a better trained visual system, the athlete with enhanced visual system will perform better (Loran & Griffiths, 2001).

The researcher, as a hockey player, official, coach, administrator, selector, and an observer attempted to study about the functional and vision training of the hockey players. Functional & vision training can help to improve performance in hockey players. Little research has been done on hockey players.

The purpose of the study was to find out the impact of functional training with and without vision training on selected skill related fitness and performance related variables among college men field hockey players.

Materials and Methods

To achieve the purpose of the study, forty five male hockey players were randomly selected from three colleges namely, YMCA College of Physical Education, Chennai, Loyola College, Chennai, and D. B. Jain College, Chennai were selected. The age of the subjects selected for this study was between 18 and 25 years. The subjects had a training age of at least three years in hockey and only who those represented their respective college teams were taken as subjects. A series of physical tests was carried out on each participant. Agility was assessed by Illinois agility test, balance was assessed by Dynamic Balance test and cardio respiratory endurance assessed by Beep Test. Performance variable such as dribbling was measured by Schmithal's field hockey test. By using the matching

procedure on the basis of their initial hockey playing ability performance test scores, Group-I underwent functional training without vision training, Group-II underwent functional training with vision training and Group-III acted as control group. The experimental group participated in the functional training with and without vision training for 3 days a week, one session per day and for 8 weeks each session lasted 90 minutes. The control group maintained their daily routine activities and no special training was given. The subjects of the three groups were tested on selected variables prior and immediately after the training period. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significance difference, if any between the groups. In case 'F' values found to be the significant the Scheffe's test was used as post hoc test. The 0.05 level of confidence was fixed to test the level of significance difference, if any among groups.

TABLE-I
Criterion measures

S.No	Criterion measure	Test items	Unit of measurement
1	Agility	Illinois agility test	Seconds
2	Balance	Dynamic Balance test	Points
3	Cardiorespiratory endurance	Beep Test	ml/kg/min.
4	Dribbling	Schmithal's field hockey test	Seconds

TABLE - II

Descriptive analysis of selected physical & performance variables among control and experimental groups

S.No	Variables	Group	Pre-Test Mean	SD (±)	Post -Test Mean	SD (±)	Adjusted Mean
1	Agility	CG	16.60	0.33	16.55	0.39	16.56
		FT	16.60	0.30	15.64	0.33	15.65
		FWVT	16.62	0.36	15.63	0.26	15.63
2	Balance	CG	66.26	3.32	66.53	3.48	66.75
		FT	66.60	2.87	80.06	4.19	79.92
		FWVT	66.53	3.75	80	4.82	79.93
3	Cardiorespiratory endurance	CG	41.26	3.12	41.66	2.91	41.53
		FT	40.93	2.71	49.06	4.38	49.18
		FWVT	41.06	3.61	48.60	1.59	48.62
4	Dribbling	CG	14.94	0.27	14.95	0.24	14.94
		FT	14.89	0.42	13.84	0.41	14.31
		FWVT	14.89	0.42	13.84	0.41	13.88

FWVT= Functional with vision training group CG= Control group
FT= Functional training group

The tables-II the pre, post-test means, standard deviations and adjusted means on selected physical and performance variables of hockey players were numerically presented. The analysis of covariance on selected variables of Functional training, Functional training with vision training and control group is presented in table - III

TABLE - III
Computation of analysis of covariance on selected physical & performance variables among hockey players

S.No	variables	Test	Sum of variance	Sum of squares	df	Mean square	F ratio
1	Agility	Pre-test	B.W	0.00	2	0.002	0.01
			W.G	4.71	42	0.11	
		Post-test	B.W	8.34	2	4.17	37.37*
			W.G	4.69	42	0.11	
		Adjusted means	B.S	8.52	2	4.26	79.98*
			W.S	2.184	41	0.05	
2	Balance	Pre-test	B.W	0.93	2	0.467	0.04
			W.G	468.27	42	11.15	
		Post-test	B.W	1822.53	2	911.27	51.53*
			W.G	742.67	42	17.68	
		Adjusted means	B.S	1732.82	2	866.41	179.88*
			W.S	197.476	41	4.82	
3	Cardiorespiratory endurance	Pre-test	B.W	0.84	2	0.422	0.04
			W.G	422.80	42	10.07	
		Post-test	B.W	515.24	2	257.62	19.75*
			W.G	547.87	42	13.04	
		Adjusted means	B.S	544.19	2	272.09	36.10*
			W.S	308.99 1	41	7.54	
4	Dribbling	Pre-test	B.W	0.04	2	0.021	0.16
			W.G	5.34	42	0.13	
		Post-test	B.W	9.22	2	4.61	32.58*
			W.G	5.94	42	0.14	
		Adjusted means	B.S	8.52	2	4.26	85.08*
			W.S	2.052	41	0.05	

*Significant at 0.05level of confidences

(Table value for df 2 and 42 was 3.22, Table value for df 2 and 41 was 3.23)

In the table II, the results of analysis of covariance on agility, balance, cardiorespiratory endurance and dribbling is presented. The obtained 'F' ratio of 0.01, 0.04, 0.04 and 0.16 for Pre-test means were less than the table value of 3.22 for df 2 and 42 required for significance at 0.05 level of confidence on agility, balance, cardiorespiratory endurance and dribbling. The obtained 'F' ratio of 37.37, 51.53, 19.75 and 32.58 for post-test means was greater than the table value of 3.22 for df 2 and 42 required for

significance at 0.05 level of confidence on agility, balance, cardiorespiratory endurance and dribbling. The obtained 'F' ratio of 79.98, 179.88, 36.10 and 85.08 for adjusted post-test means were greater than the table value of 3.22 for df 2 and 42 required for significance at 0.05 level of confidence for agility, balance, cardiorespiratory endurance and dribbling. The result of the study indicated that there was a significant difference among the adjusted post test means of functional training group and functional with vision training group and control group on agility, balance, cardiorespiratory endurance and dribbling.

Since the obtained 'F' ratio value was significant further to find out the pair mean difference, the scheffe's test was employed and presented in table-IV

TABLE – IV

The Scheffe's test for the differences between the adjusted Post tests paired means on agility, balance, cardiorespiratory endurance and dribbling.

Functional with vision training	Functional training	Control group	Mean difference	Confidence Interval
Agility				
15.63	15.65	.....	0.02	0.21
15.63	.....	16.56	0.93*	0.21
.....	15.65	16.56	0.91*	0.21
Balance				
79.93	79.92	.....	0.01	2.00
79.93	.....	66.75	13.18*	2.00
.....	79.92	66.75	13.17*	2.00
Cardiorespiratory Endurance				
48.62	49.18	.....	0.57	2.50
48.62	.....	41.53	7.08*	2.50
.....	49.18	41.53	7.65*	2.50
Dribbling				
13.88	14.31	.....	0.43*	0.20
13.88	.....	14.94	1.06*	0.20
.....	14.31	14.94	0.63*	0.20

*Significant at 0.05 level of confidence

From the table-IV, clear that the adjusted post test means of agility are 15.63, 15.65 and 16.56 respectively. The mean differences values between functional training with vision training group and control group & functional training without vision training group and control group are 0.93 and 0.91 respectively which were greater than confidence interval value 0.21. The results of the study showed that there were a significant difference between functional training with vision training group and control group & functional without vision training group and control group. There was no significant difference on agility between experimental group I and II since the mean difference 0.02 was lesser than the confidence interval value 0.21 at 0.05 level of confidence.

From the table-IV, it is clear that the adjusted post test means of balance are 79.93, 79.92 and 66.75 respectively. The mean differences values between functional training with vision training group and control group & functional training without vision training group and control group are 13.18 and 13.17 respectively. The results of the study showed that there were a significant difference between functional training with vision training group and control group & functional without vision training group and control group. There was no significant difference on balance between experimental group I and II since the mean difference 0.01 was lesser than the confidence interval value 2.0 at 0.05 level of confidence.

From the table-IV, it is clear that the adjusted post test means of cardiorespiratory endurance are 48.62, 49.18 and 41.53 respectively. The

mean differences values are between functional training with vision training group and control group & functional training without vision training group and control group are 7.08 and 7.65 respectively. The results of the study showed that there were a significant difference between functional training with vision training group and control group & functional without vision training group and control group. There was no significant difference on cardiorespiratory endurance between experimental group I and II since the mean difference 0.57 was lesser than the confidence interval value 2.50 at 0.05 level of confidence.

From the table-IV, it is clear that the adjusted post test means of dribbling are 13.88, 14.31 and 14.94 respectively. The mean differences values between functional training with vision training group and functional training without vision training group and control group & functional training without vision training group and control group are 0.43, 1.06 and 0.63 respectively on dribbling are greater than the confidence interval value 0.20 at 0.05 level of confidence. The results of the study showed that there were a significant difference between functional training with vision training group and functional training without vision training group functional training with vision training group and control group & functional without vision training group and control group. When experimental groups were compared functional training with vision training group showed significant improvement in dribbling.

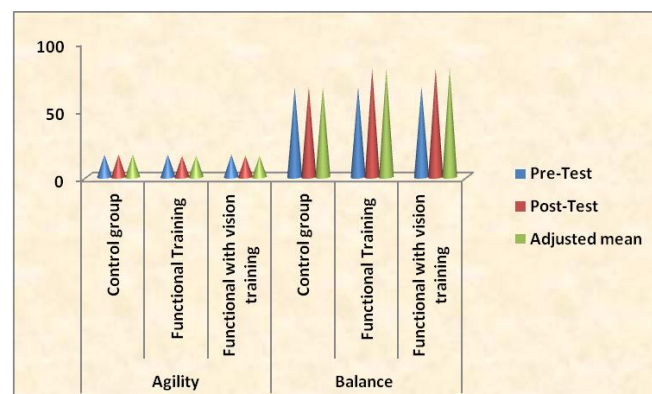


Figure-I The pre, post and adjusted mean values of agility and balance of control group, functional training and functional training with vision training group are graphically represented in the figure-I

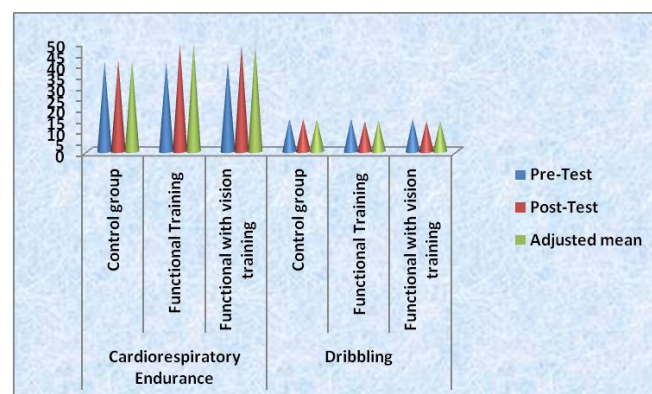


Figure-II The pre, post and adjusted mean values of cardiorespiratory endurance and dribbling of control group, functional training and functional training with vision training group are graphically represented in the figure-II

Discussion of findings

The results of the study indicate that the experimental group which underwent functional training with vision training showed significant improvement in the selected variables namely agility, balance, cardiorespiratory endurance and dribbling, when compared to the control group. Functional training without vision training had showed significant improvement in the selected variables namely agility, balance, cardiorespiratory endurance and dribbling, when compared to the control group. The functional training with vision training had a better improvement on dribbling than functional training without vision training. The functional training without vision training had a better improvement on dribbling than the control group. The past studies on selected physical variables also reveals similar result Gambetta and Gray (2002), Quevedo et al. (1999) & Revien & Gabor (1981) found that functional training with vision training group showed significant improvement on agility, balance, and cardiorespiratory endurance compared to control group.

Conclusions

From the analysis of data, the following conclusions were drawn.

1. The functional training with vision training had significant improvement on the selected skill related physical fitness variables namely agility, balance, cardiorespiratory endurance and dribbling than the control group among college men field hockey players.
2. The functional training without vision training had significant improvement on the selected skill related physical fitness variables namely agility, balance, cardiorespiratory endurance and dribbling than the control group among college men field hockey players.
3. There was no significant difference between functional training with vision training and functional training without vision training on the selected physical fitness variables namely, agility, balance, cardiorespiratory endurance.
4. The functional training with vision training had a better improvement on dribbling than functional training without vision training among college men field hockey players.

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