
Analysis of Selected Bio-Motor and Hockey Skills Factors among South Zone Inter University Men Hockey Players

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Abstract: The purpose of this study was to analyze the selected Bio-motor and Hockey Skills Factors among South Zone inter University men Hockey players. The study was conducted on three matched groups each having thirty low achiever, moderate achiever and high achiever participated in the South zone inter University men Hockey tournament held at Anna University of Technology, Tirunelveli, Tamilnadu, South India during the year 2010-11. The age of the subjects were ranged from 18-21 years. First round loser the tournament was treated as low achiever, second round loser was treated as moderate achiever and third round winner was treated as high achiever. Bio-motor and Hockey skill factors namely Speed, Agility, Hockey Dribbling, Hitting and Pushing were selected as criterion variables and it was assessed by standardized test methods. Analysis of variance (ANOVA) was used to analyze the collected data. Scheffe's post-hoc test of significance to determine the level of significant difference between the paired means. The results indicated significant difference in was found among the three groups. The results also showed that high achiever group showed significant improvement in the Bio-motor and Hockey skill factors as compared to other groups.

Key Words: *Speed, Agility Hockey Dribbling, Hitting and Pushing.*

Introduction:

Motor fitness may be defined as a "Readiness or Preparedness" for performance with specific regard for big muscle activity without undue fatigue. It concerns the capacity to move the body efficiently with force over a responsible length of time. The term „motor“ refers to movement whereas the prefix „bio“ is added to illustrate the biological importance of speed, strength, and endurance abilities. A typical field Hockey player must train for many years to

refine the technique and to develop physical fitness factors especially strength, endurance and speed to reach his individual potential. There are many types of training by which an athlete can improve the above said bio-motor qualities. Field Hockey is considered to be an endurance event. Various skills in field Hockey demand display of specific strength and endurance. A definite degree of strength of arm muscle is required to do the basic skills like hitting, pushing, and scooping. Hockey requires a higher degree of running ability. The extension of the Hockey field is so large that the players are able to run in the whole field without fatigue and compete with their opponents. The quality of muscular endurance and cardio respiratory endurance is highly required for a Hockey player to improve his performance. There are trainings like circuit and weight training to develop and improve strength and interval and resistance training to improve the speed. Circuit training has proved to be a very effective method for improving strength endurance (Seaton, 1983).

The game of Hockey nowadays is being played in many types of surfaces namely grass, gravel and artificial surface. After the introduction of the artificial surface, the player, coaches and the conditioning experts now understand that the physical variables are playing vital role to reach high level performance in the artificial surface. All the major tournaments like Olympics, World cups, Asian games, champion's trophy, and commonwealth games are being played only in the artificial surface. Playing in the artificial surface requires high level of physical efficiency, especially in speed, agility, power and endurance. Among the many physical variables, the investigator felt and experienced that the physical variables namely speed, power, agility and cardio respiratory endurance are more important and selected those as Bio-motor variables for this study.

The role of physical fitness is phenomenal in modern hockey is the introduction of synthetic playing surface in hockey, the less conditioned players often experience difficulties in displaying techniques and tactics of the game owing to quick setting fatigue and exhaustion. It has been observed that the performance of sportsmen in any game is based not only on physical performance but also in addition the acquisition of requisite characteristics of morphology and body composition (Sodhi, et al, 1995). Leone et al (2002) confirmed that elite adolescent female athletes showed physical and Bio-motor differences that clearly distinguish them according to their particular sport. Women basketball players were comparatively superior to volleyball players in arm and shoulder strength (Chauhan, 1984). Athletes were found to differ significantly from non-athletes on all variables. It was indicated that basketball players had lower sprint time and greater upper and lower body

strength than volleyball player (Morrow et al, 1980). Boys and high socioeconomic status children also reported greater levels of physical activity than girls and low socioeconomic status children respectively (Duncan et al, 2004). From the national and international research studies, it has been proved the Bio motor and Hockey skill factors plays very important role in Hockey performance. Keeping this in view, the present study has been undertaken to find out Bio Motor ad Hockey skill factors of male South zone Inter University Hockey Players.

Materials and Methods:

The study was conducted on ninety(N=90) male Hockey players who were participated South Zone inter University men Hockey tournament held at Anna University of Technology, Tamilnadu, South India during the year 2011-12. Subjects were randomly divided equally into three groups of thirty each(n=30), First round looser the tournament was treated as low achiever(Group-I), Second round looser the tournament was treated as low achiever(Group-II), and Third round winner was treated as high achiever(Group-III).Bio-motor and Hockey skill factors namely Speed, Agility, Dribbling, Hitting and Pushing were selected as criterion variables. The data on Speed was collected by 50 meters run test, Agility was assessed by Shuttle Run, Hockey Dribbling, Hitting and Pushing were assessed by Hockey Field test prescribed by Sodhi, et.al (1985).

To analysis selected Bio-motor and Hockey skill factors among the players of low, moderate and high achiever, one way analysis of variance (ANOVA) was computed. The level of confidence was fixed at .05 levels for all the cases. If F-ratio was found significance Scheffe's post hoc test was applied to test the significant difference between paired means of the groups.

Results and Discussion:

The analysis of variance on of Speed, Agility, Dribbling, Hitting and Pushing of low, moderate and high achiever groups have been analyzed and presented in Table – I.

Table – I
Analysis of Variance on selected variables between Low, Moderate and High achiever Groups

Means				Source of Variance	Sum of Squares	df	Mean Squares	„F“ Ratio
Criterion Variable	Low Achiever	Moderate Achiever	High Achiever					
Speed	7.73	7.31	6.82	SSB	18.03	2	6.23	
				SSW	30.48	87	0.21	30.04*
				SST	12.45	89		
Agility	11.74	11.27	10.10	SSB	42.52	2	21.26	
				SSW	35.61	87	0.41	51.95*
				SST	78.13	89		
Dribbling	4.23	5.57	6.93	SSB	109.36	2	54.68	
				SSW	88.60	87	1.02	53.69*
				SST	197.96	89		
Hitting	7.6	8.97	9.8	SSB	74.02	2	37.01	
				SSW	128.97	87	1.48	24.97*
				SST	202.99	89		
Pushing	7.73	9.07	9.87	SSB	69.69	2	34.84	
				SSW	109.2	87	1.26	27.76*
				SST	178.89	89		

* Significant at .05 level of confidence

(The table value required for Significance at .05 level with df 2 and 87 is 3.07)

Table I shows that the mean value of Speed, Agility, Dribbling, Hitting and Pushing. The F-value needed for significance for df (2, 87) at $\alpha < 0.05$ level was 3.07. The F-value obtained from testing the means between the Low achiever, Moderate achiever and High achiever groups on Speed, Agility, Dribbling, Hitting and Pushing were 51.94, 53.69, 24.97 and 27.76

which were statistically significant.

To determine the paired means significant difference, Scheffe's test was applied as post hoc test and the results are presented in Table II.

Table – II
The Scheffe's Post-hoc Test for Mean Differences between Groups of Speed, Agility, Dribbling, Hitting and Pushing

Low Achiever	Moderate Achiever	High Achiever	Mean Difference	Confidence Interval
Speed				
7.73	7.31		0.42*	0.30
7.73		6.82	0.91*	0.30
	7.31	6.82	0.49*	0.30
Agility				
11.74	11.27		0.47*	0.42
11.74		10.10	1.64*	0.42
	11.27	10.10	1.17*	0.42
Dribbling				
4.23	5.57		1.34*	0.66
4.23		6.93	2.70*	0.66
	5.57	6.93	1.36*	0.66
Hitting				
7.60	8.97		1.37*	0.80
7.60		9.80	2.20*	0.80
	8.97	9.80	0.83*	0.80
Pushing				
7.73	9.07		1.34*	0.74
7.73		9.87	2.14*	0.74
	9.07	9.87	0.80*	0.74

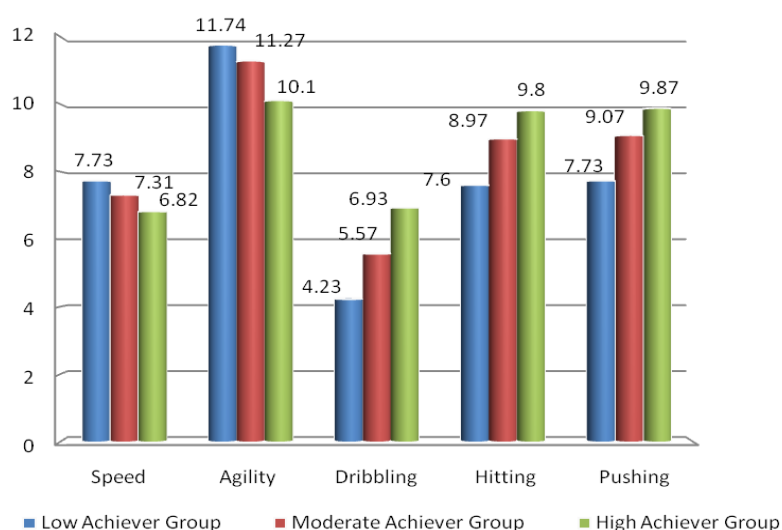
* Significant at .05 level of confidence

Table II shows that the mean difference values of Low achiever and Moderate Achiever, Low achiever and High Achiever, Moderate achiever and High achiever groups on Speed were 0.42, 0.91 and 0.49 respectively which were greater than the confidence interval value of 0.30 at $\alpha < 0.05$ level of confidence. The mean difference values of Low achiever and Moderate Achiever, Low achiever and High Achiever, Moderate achiever and High achiever groups on Agility were 0.47, 1.64 and 1.17 respectively. The comparison of Low, Moderate and High Achiever groups were greater than the confidence interval value of 0.42 at $\alpha < 0.05$ level of confidence. The mean difference values of Low achiever and Moderate Achiever, Low achiever and High Achiever, Moderate achiever and High achiever groups on Dribbling were 1.34, 2.70 and 1.36 respectively which were greater than the confidence interval value of 0.66 at $\alpha < 0.05$ level of confidence. The mean difference values of Low achiever and Moderate Achiever, Low achiever and High Achiever, Moderate achiever and High achiever groups on Hitting were 1.37, 2.20 and 0.83 respectively which were greater than the confidence interval value of 0.80 at $\alpha < 0.05$ level of confidence. The mean difference values of Low achiever and Moderate Achiever, Low achiever and High Achiever, Moderate achiever and High achiever groups on Pushing were 1.34, 2.14 and 0.80 respectively which were greater than the confidence interval value of 0.74 at $\alpha < 0.05$ level of confidence.

The mean values of Speed, Agility, Dribbling, Hitting and Pushing of low, moderate and high achiever groups were graphically represented in the Figure-1.

Figure-1

The mean values of Low Achiever, Moderate Achiever and High Achiever on Selected Criterion variables



Discussion on Findings:

This study was performed to determine whether there are any significant differences among South Zone Inter University male Hockey's players in Level of achievement and Bio-motor and Hockey skill factors such as Speed, Agility, Dribbling, Hitting and Pushing. The study reveals level of achievements and Bio-motor and Hockey skill factors qualities were significant differences among groups. Previous studies that showed significant increases among the level of achievement and Biomotor and Hockey skill factors (Joseph, 1991, Bale, 1991, Grant,2001). It is inferred from the above literature and from the results of the present study that showed that there was a significant difference among the three groups (Low, Moderate and High achiever).

Conclusions:

From the analysis of the data, the following conclusions were drawn. It was concluded that there was a significant difference among the Low, Moderate and High achiever in selected Bio-Motor and Hockey skill factors such as Speed, Agility, Dribbling, Hitting and Pushing. Further it was concluded that among the selected group's high achiever group shows the best performance in Speed, Agility, Dribbling, Hitting and Pushing than Low and Moderate achiever groups.

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