Volume : 2 | Issue : 9 | Sept 2013 • ISSN No 2277 - 8160

Research Paper | Physical Education

Relationship Between Playing Ability of Handball Players and Motor Fitness Components

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ABSTRACT

Successful performance in handball requires the ability to generate explosive strength combined with other motor parameters and precise skills. To achieve desired objective researchers showed that playing ability and fitness components are inter-related. The purpose of this study was to determine the relationship of motor fitness components with playing ability of handballers. The present study was conducted on 98 Inter-University level male handball players of age range 18-25 years, selected randomly as subject. Seven motor fitness components and three handball game skill tests of I.L.Zinn Team Handball Skills Battery (1981) were evaluated of each subject. Pearson's Product Movements Method for correlation was applied for correlation by the help of SPSS (11.5) computer software. Analysis of the data has revealed that the 9 Meter Front Throw Skill and Dominant Hand Speed Pass Skill had significant correlations with speed, arm strength, agility and leg strength. Whereas, Over Head Pass skill had significant correlations with speed, arm strength, agility, leg strength and static balance. Further, flexibility had negative relationship with all these three skills of Handball game.

KEYWORDS: Playing ability, Motor fitness and Handball players

INTRODUCTION:

Handball, the second most popular team sport in Europe after football. It is an exciting, fast paced, high scoring game. As an Olympic sport, Handball is set to draw huge crowds this summer in London. It is a sport which is rapidly gaining more and more popularity and this is inevitable. Peoples are accustomed to watching such sports as football, basketball, soccer and baseball. Team handball, combining aspects of basketball, soccer, rugby and water polo. It is one of the most popular sport in the world. The game is unique, with a rapid and physical yet simultaneously skillful and strategic style of play.

In his classic book, AEROBICS **Dr. Kenneth Cooper** states: "The best conditioning exercises are running, swimming, cycling, walking, HANDBALL, basketball and squash, and in just about that order." Note that the tope GAME mentioned is HANDBALL! In a survey by the President's Council on Physical Fitness and Sports, fourteen popular sports and exercises were rated by seven fitness experts. Using the criteria of cardio-respiratory endurance, muscular endurance, muscular strength, flexibility and balance, HANDBALL WAS RANKED NUMBER ONE!

It is a very strenuous body-contact Olympic sport (Gorostiaga, et al., 2006) that is also played professionally in Europe (Cardoso & González-Badillo, 2006). This sport requires a high level of physical condition in the relevant actions of the game like jumping, diving, blocking, running, sprint, and throwing (Wallace & Cardinale, 1997).

Rowland (1970) stated that "Handball requires that the performer is able to run, jump, throw and catch all natural and specific skills."

This sport requires a high level of physical condition in the relevant actions of the game like jumping, diving, blocking, running, sprint, and throwing (Wallace & Cardinale, 1997). Of all, goal shot is considered as key to success (Wit & Eliasz, 1998). Throwing accuracy and ball velocity are considered to play an important role in goal success (Fleck et al., 1992; Van den T. 2003).

From the literary review it is evident that there is a clear demand of research in this specific area of game. In Indian context this study helps the coaches to identify and selection of talented handball players. It is the reason for which the authors show's a big interest in the selection of this problem.

MATERIALS AND METHODS:

The aims of this study were assessed the relationship between playing ability (three handball game skills) with seven motor fitness components separately. For this purpose, 98 Inter-University level male Handball players from North-East India were evaluated. To establish the reliability of the data test and re-test method were used on 15 subjects and found significant correlation at .01 level of confidence.

The motor fitness components of the subjects were collected by using the 6Lbs Medicine ball Put, 50 yards Dash Run, 600Yards run and walk, Bent and Reach, Shuttle Run, Standing broad jump and Stork Stand test to measure Arm Strength, Speed, Endurance, Flexibility, Agility, Leg Strength and Balance respectively. The playing ability was measured by **I.L.Zinn Team Handball Skills Battery (1981)** i. e., 9 Meter Front Throw, Dominant Hand Speed Pass and Over Head Pass. SPSS (11.5) computer software was used for statistical analysis.

RESULTS:

Table-1: Mean, Standard Deviation and Correlation value between motor fitness components and Nine Meter Front Throw Skill. (N=98)

Sr.No.	Variables correlated with Nine Meter Front Throw Skill efficiency	Mean	Std. Deviation	Co-efficient of Correlation 'r'
1	**Nine Meter Front Throw Skill**	23.86	6.02	
	Speed	6.96	0.49	-.392**
2	Arm Strength	871.28	30.26	.690**
3	Endurance	221.20	20.46	.164
4	Flexibility	15.59	3.83	-.254*
5	Agility	10.59	0.71	-.319**
6	Leg Strength	205.31	24.42	.659**
7	Static Balance	25.70	7.86	-.109

**Correlation is significant at the 0.01 level (2-tailed) = .257
N = 98

*Correlation is significant at the 0.05 level (2-tailed) = .198
df = 96

It is observed from the table- 1 that arm strength and leg strength had significant and positive correlations at .01 level of confidence whereas speed, agility and flexibility had inverse and significant correlations at .01 level of confidence with nine meter front throw skill. Since time is inversely related to performance hence decrease in time indicates higher performance. Due to this, the correlations of speed and agility had inverse correlations with shooting skill efficiency. However, flexibility had negative and significant correlation at .05 level of confidence. On the other hand endurance and static balance were found to be insignificant correlations with the same skill. It suggests that these variables of motor fitness directly contribute to improve the Handball players shooting skill.

Table-2: Mean, Standard Deviation and Correlation value between motor fitness components and Dominant Hand Speed Pass skill. (N=98)

Sr.No.	Variables correlated with Dominant Hand Speed Pass skill efficiency	Mean	Std. Deviation	Co-efficient of Correlation 'r'
1	**Dominant Hand Speed Pass skill**	11.49	2.20	
	Speed	6.96	0.49	.671**
2	Arm Strength	871.28	30.26	-.768**
3	Endurance	221.20	20.46	-.064
4	Flexibility	15.59	3.83	.183
5	Agility	10.59	0.71	.560**
6	Leg Strength	205.31	24.42	-.531**
7	Static Balance	25.70	7.86	.107

It is evident from results shown in Table- 2 that speed, agility, arm strength and leg strength had significant correlations at .01 level of confidence with dominant hand speed pass skill. Since time is inversely related to performance hence decrease in time indicates higher the performance and vice versa. Due to this, dominant hand speed pass skill correlation had inverse correlations with arm and leg strength.

Table-3: Mean, Standard Deviation and Correlation value between motor fitness components and Over Head Pass Skill. (N=98)

Sr.No.	Variables correlated with Over Head Pass Skill efficiency	Mean	Std. Deviation	Co-efficient of Correlation 'r'
1	**Over Head Pass Skill**	21.22	4.35	
	Speed	6.96	0.49	-.456**
2	Arm Strength	871.28	30.26	.742**
3	Endurance	221.20	20.46	.196
4	Flexibility	15.59	3.83	-.222*
5	Agility	10.59	0.71	-.379**
6	Leg Strength	205.31	24.42	.647**
7	Static Balance	25.69	7.86	-.221*

It is observed from the table- 3 that arm strength and leg strength had significant and positive correlations at .01 level of confidence whereas, speed, agility and static balance had inverse and significant correlation at .01, .01 and .05 level of confidence respectively with over head pass skill of Handball game. Since time is inversely related to performance hence decrease in time indicates higher performance. Only flexibility had negative and significant correlation at .05 level of confidence with over head pass skill.

DISCUSSION:

The motor fitness components i.e., speed, agility, arm strength and leg strength have significant correlations at .01 level of confidence. The flexibility has negative and significant correlation at .05 level of confidence with 9 meter front throw skill of Handball game. These results suggest that power to throw the ball helps to elevate the players to perform a successful throw on goal on specific target in standing as well as in jumping positions. Most of the throws on goal are performed either jump shot long or jump shot high which requires more leg and arm strength with speed and agility. The results also reveal that for successful performance, agility and speed facilitate rapid changes in direction and jump, whereas explosive arms and legs strength help the players to perform a successful throw on goal and throw the ball from longer distance with high speed before reacting the goalkeeper at the time of shooting. It indicates that these variables directly contribute to improve the Handball players performance skill of shooting.

Further, it is obvious from the results that speed, arm strength, agility and leg strength have significant correlations at .01 level of confidence with dominant hand speed pass skill of Handball game. The results implies that to perform this skill, agility and speed facilitate rapid changes in direction, sudden stops, bends, twist, throw, falls and dives, whereas explosive arms and legs strength help the players to perform a successful throw on goal and throw the ball from longer distance with high speed at the time of initiating the fast break, passing and the execution of different move during the playing process. Most of the throw on goal are also performed by the dominant hand speed pass which also requires speed, agility and explosive strength. It indicates that these variables of motor fitness i.e. explosive arm and leg strength, speed and agility are directly contribute to improve the Handball player's skill.

Speed, arm strength, agility, leg strength and static balance have significant correlations with ball over head pass skill which indicates that power to throw the ball helps to elevate the players to perform over head pass skill successfully and purposefully on the specific target as fast as possible, which requires explosive strength, speed, agility and balance. These components also help the players to play the match with various types of movements according to the situation of the ball, as well as movements of opponent players. It shows that these variables directly contribute to improve the Handball player's over head pass skill.

Several studies in handball also observed a significant positive correlation between throwing efficiency and general fitness abilities such as strength or muscle power (Fleck et al., 1992; Granados et al., 2007; Marques et al., 2007). Similar and higher correlation values were found in other sports like baseball (Kane, 2003), cricket (Pyne et al. 2006) and soccer (Anthrakidis et al. 2008). However, some studies found no significant correlations between throwing velocity and muscular strength (Bayios et al. 2001). Few studies have examined the correlation between handball throwing ability and medicine ball throwing, although there is evidence that light medicine ball training significantly improves the handball throwing ability (Barata, 1992). Curiously, this improvement was lower in female students (Brylinsky et al., 1992).

Previous results have noted the relationship of the motor fitness components with playing ability of handball game as a criterion of success that can encourage the access to handball practice. In fact, these characteristics are very relevant for handball players because the game entails physical contact in which specific playing ability with a high level of speed, strength and power may provide an advantage.

CONCLUSION:

9 Meter Front Throw Skill and Dominant Hand Speed Pass Skill had positive and significant correlations at .01 level of confidence with speed, arm strength, agility and leg strength.

Over Head Pass skill had positive and significant correlations with speed, arm strength, agility, leg strength and static balance.

Out of all motor fitness components only flexibility had negative relationship with all these three skills of Handball game.

Handball is a strenuous contact Olympic team sport that places emphasis on running, jumping, sprinting, arm throwing, hitting, blocking, and pushing. For these reasons, it is believed that game skills and motor fitness qualities are the most important factors to improve handball performance. Consequently, the importance of the motor fitness parameters and playing ability were the origin of orientation toward the choice of more and more big players, and it is the reason for which the majority of the trainers show a big interest in the motor fitness ability and skills potential of the players during the period of detection and orientation.

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