

Assessment of physical variables of drag flick performance in field hockey

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■ ABSTRACT

The purpose of the study was to assess the relationship of physical variables of drag flick performance in field hockey. And the secondary purpose was to find out the combine contribution of selected physical variables to drag flick performance. Thirty (30) male drag flickers were selected as subjects for the purpose of this study. Purposive sample was employed for reaching valid conclusion of the study. The arm and shoulder strength, back strength, leg strength, grip strength and back flexibility were the selected physical variables. Speed of the hockey ball during drag flick skill was measured by a Bushnell Speed Radar Gun. It was recorded in kilometers per hour. To find out the relationship of physical variables to drag flick skill, zero order correlations were computed using Pearson's Product Moment Correlation. Also to find out the combined contribution of the physical and variables to the drag flick performance, multiple correlation was computed. It is concluded that the following physical variables *i.e.* arm and shoulder strength and grip strength were significantly related to drag flick performance in field hockey.

■ Key Words : Drag flick, Strength, Back flexibility

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Hockey, the national game of India, is one of the world's oldest known sports. Unmatched excellence and incomparable virtuosity of the Indian hockey players brought India a string of Olympic gold medals. The golden era of the hockey in India witnessed great hockey players coming from different states who brilliantly displayed a touch of black magic in their play. In the course of time, the country also produced some remarkable hockey players, who've relentlessly contributed in furthering the country's great legacy in the game.

Drag flicking is a scoring technique in the sport of field hockey. It was first seen in the early 90's in the Netherlands. It is used as an attacking technique, mainly within the penalty corner involving two main components known as the scoop and flick. However, as umpires become more and more strict within field hockey, as new discoveries of techniques and

training are subsequently making the sport more dangerous while, also increasing the pace of the game. Therefore, it is evident that the drag flick is becoming a more and more popular means of scoring even outside the penalty corner advantage. Although it is a somewhat dangerous piece of play for the opposition, it is within the rules and a effective technique for scoring. The drag flick involves a running up, and then forceful 'slinging' technique of the ball around your body, towards the goals. As drag flicking is not hitting the ball, the flicker is allowed to raise the ball at goals, hence making it a much more deadly alternative to hitting from the penalty corner as direct hitting shots on goal are not allowed to be above knee height. The action involves a player crouching low down next to the ball and picking it up on the shaft of the hockey stick. The ball is then pushed along the ground whilst the stick is moving with a 'slinging' action.

This serves to accelerate the ball, which is eventually released in a goal wards direction, often raised. Drag flicks are especially common during penalty corners, and are used as a variant to the 'straight shot' or hit. The main difference between the drag flick and the hit is that the drag flick is classified in the rules of field hockey, as a push, which are allowed to be raised higher from a penalty corner first shot. This has created a controversy, as drag flicks, although being allowed to be lifted at goals (and consequently the defenders within the goal), are often nearly as powerful as a hit. This leads to danger and a high risk of injuries. In field hockey, the drag flick is a specialist scoring shot usually played as a set piece during penalty corner, which appeared in the 1990's. Drag flicks are especially common during penalty corners, and are used as a variant to the 'straight shot' or hit. The main difference between the drag flick and the hit is that the drag flick is classified in the rules of field hockey, as a push, which are allowed to be raised higher from a penalty corner first shot. This has created a controversy, as drag flicks, although being allowed to be lifted at goals (and consequently the defenders within the goal), are often nearly as powerful as a hit. Physical characteristics and body composition have been known to be fundamental to excellence in athletic performance. Specific athletic events require different body types and weights for maximal performance. Today it has been widely accepted by the experts that top performance in sports is achieved if an athlete possesses the basic anthropometric characteristics suitable for the event. Therefore, the athletes in a particular sport must possess such typical characteristics which are of advantage to their performance. Body composition also makes an important contribution to an individual's level of physical fitness for performance, particularly in such sports that require one to carry one's body weight over a distance, which is facilitated by a large proportion of active tissue (muscle) in relation to a small proportion of fat tissue. Physical variables namely, arm strength, shoulder strength, grip strength, speed agility, balance etc play a very vital role in most of games and sports. A good drag flicker requires a specific amount of strength, flexibility and balance.

■ METHODOLOGY

Thirty (30) male drag flickers were selected as subjects for the purpose of this study. Purposive sample was employed for reaching valid conclusion of the study. The selection of subjects was based on their participation in national level tournaments. The subjects belonged to various states and union territories. The scores for selected physical and physiological variables were obtained by using the standard tests namely, medicine ball put for arm and shoulder strength, dynamometer for back strength and leg strength, grip strength measured by grip dynamometer and back flexibility was measured by sit

and reach test. To assess the relationship of physical variables to drag flick performance, zero order correlations were computed using Pearson's Product Moment Correlation. Also to assess the combined contribution of the physical and variables to the drag flick performance, multiple correlation was computed. The level of significance was set at 0.05 level.

■ OBSERVATIONS AND DISCUSSION

The scores of each of the physical variables and drag flick performance were correlated using Pearson's Product Moment Correlation for finding out the relationship between them. The coefficient of correlation (zero order) has been presented in Table 1 (Blackwell and Knudson, 2002; Cronin and Hansen, 2005 and Ellenbecker, 2006).

Table 1 : Relationship of physical variables to drag flick

Sr. No.	Variables correlated	Co-efficient of correlation 'r'
1.	Arm and shoulder strength	0.603*
2.	Back strength	0.253
3.	Leg strength	0.181
4.	Grip strength	0.445*
5.	Back flexibility	-0.05

* indicates of significance of values at $P=0.1$, $r_{0.05(28)} = 0.361$

Table 1 indicates that drag flick was significantly related to arm and shoulder strength ($r = 0.603$) and grip strength (0.445) as obtained value of correlation was greater than value of correlation 0.361 required for correlation significant at 0.05 level of significant (Brooks, 1978 and Burr *et al.*, 2008).

Table 1 indicated that there was no significant relationship between drag flick to back strength ($r = 0.253$), leg strength ($r = 0.181$) and back flexibility ($r = -0.05$) as their correlation value was less than the required value of 0.361 required for the correlation at 0.05 level of significance. Graphical representation of Table 1 has been presented in Fig. 1 (Pugh *et al.*, 2003 and Visnapuu, 2007).

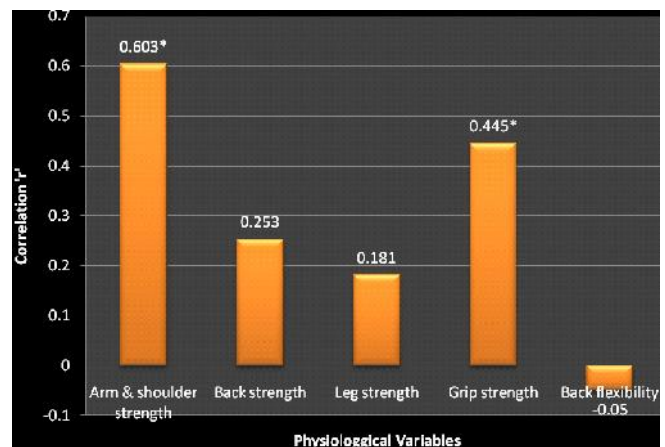


Fig. 1 : Relationship of physical variables to drag flick performance



Table 2 : Multiple correlation of physical variables to drag flick performance in field hockey

Dependent variable	Physical variables	Multiple correlation 'R'	R ²
Drag flick	Arm and shoulder strength (11) Back strength (12) Leg strength (13) Grip strength (14) Back flexibility (15)	RC.11, 14 = 0.664	0.415

* indicates of significance of values at P=0.1, respectively

Multiple correlation of physical variable to drag flick in field hockey :

The scores of each of the physical variables and drag flick performance were correlated using multiple correlation method for finding out the relationship between them. The co-efficient of multiple correlation have been presented in Table 2.

Table 2 reveals that the combined contribution of physical variables to drag flick performance is 0.664 that explained 41.5 per cent variability (R square= 0.415) in the drag flick. These findings are supported by Anbarasu and Stephen (2014), Manna *et al.* (2012), Reilly and Borrie (1992).

Conclusion :

Arm and shoulder strength contributes significantly towards drag flick performance as revealed through the findings of the study. Drag flick involves a double action of both the arms in the final stage of execution of the skill which means left hand pulls the handle of the stick towards the body where as the right hand pushes the stick towards the target. This sudden pulling and pushing action of both the hands help in generating more power. In drag flick, power is mainly produced from arm and shoulder and greater power of arm and shoulder naturally generates greater force in drag flick.

Grip strength of both the hands taken together resulted in significant relationship with performance of drag flick. Grip strength may help a player to maintain an appropriate angle through which the force applied by arm and shoulder propels the ball towards the target.

Arm and shoulder strength and grip strength are contributing variables in drag flick performance in field hockey. It is a known fact that grip strength combined with arm and shoulder girdle strength are likely to produce greater force in the execution of drag flick. The basic reason may be greater strength of involved muscles produces greater force.

It is concluded that the following physical variables *i.e.* arm and shoulder strength and grip strength were significantly related to drag flick performance in field hockey. Back strength, leg strength and back flexibility were insignificant

related to drag flick skill in field hockey.

It is concluded that combined contribution of physical variables *i.e.* arm and shoulder strength and grip strength were significantly related to predicting drag flick performance.

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