ISSN: 2349 - 4891

International
Journal of Recent Research and Applied Studies
(Multidisciplinary Open Access Refereed e-Journal)

Design and Development of Playing Ability in Hockey

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Received 1st June 2016, Accepted 12th July 2016

Abstract

The purpose of this study was to construct the skill test battery and to predict the playing ability in Hockey. To achieve this purpose initially twelve tests were designed by the investigators, after analysing the various factors. As an initial step, a pilot study was conducted to thirty subjects for finalizing the final test battery. After the pilot study seven skill test items were finalised by keen observation and consultation with the experts. The seven skill test items were administered to ninety six college level Hockey players from affiliated colleges of Alagappa University, Karaikudi, Tamil Nadu, whose age ranged from 18 to 25 years. To find out the objectivity, reliability and validity correlation co-efficient was used. Further stepwise multiple regression was used to predict the playing ability of Hockey players. The results reveal that the validity of the skill test items was ensured up to the 7-item module, namely Indian dribble, Speed dribble, Spin dribble, Long pass, Short pass,Aerial pass and dynamic pass the addition of other tests does not enhance the validity of the test battery. The fitted multiple regression equation for prediction of the Hockey playing ability will be: BBPA: $6.84+1.43x_1-0.14x_2+0.62x_3-0.73x_4+0.34x_5 0.64x_6+0.36x_7$ From that it can be said that the final skill test items as a 7-item package correlate significantly with the playing ability of the subjects.

Keywords: Hockey, Playing ability, Prediction and Skill test.

Introduction

Although fitness is very important for many sports, it is skill that really defines how good someone is at their sport. Usually skill elements are removed from fitness test so that the pure fitness component is tested. Although in some sport specific tests you have combined skill, technique and fitness involved to make it more relevant to the sport. Sports skill test are designed to measure the basic skills used in the playing of a specific sport. Because of the wide range of skills in most sports, a selection of the most important skill is invariably necessary. The selection is usually based keeping in mind the literature available, opinion of experts as well as by applying appropriate statistical techniques. The skill items collectively are called test battery. The skill test helps the students to evaluate their performance in the fundamental skills the game and to provide an incentive for improvement. The test also serves the purpose of helping the teachers/coach to measure student's/player's performance and to evaluate their own teaching/coaching procedure and programme.

Skill tests were developed to measure the basic skills used in a specific sport (AAHPERD, 1969). The skill test items are collectively called a test battery. Meanwhile the nature of the battery of tests in measuring the fundamental skills should be a field based one rather than the lab based. Since the field based test items highlight the real game situations, assessing the player in the real game situation is encouraged. An important influence on the development of Field Hockey has been the replacement of the natural playing surface with the synthetic one. Although the player's forward leaning position is common in Field Hockey, the extent of the forward lean is far greater on the artificial turf. This change was related, in part, to the running technique, stick length and changes in tactics. On an artificial surface, the characteristic position of a player features a greater lean forward during most of time of the game. Field Hockey has also become faster and more dynamic, resulting in new tactics and changes in selection, development and preparation of players.

Field Hockey is a national sport of India. The high skill level of Indian Filed Hockey players is recognised world-wide. A number of studies have focused on performance-related characteristics of elite Field Hockey players (Reilly and Seaton, 1990). When players of different competition levels are compared on the basis of their skills and performance, the characteristics to be expected among the higher level players outscore the lower level players. However, this does not necessarily apply when players involve within the same competition level; i.e., within a talent-group. This is possible by comparing elite youth players with sub-elite youth players. Both elite and sub-elite players are part of a talent development programme of a Field Hockey club of national prestige, and are playing at the highest level for their age category. The purpose of the

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study was to influence of selected skill test and over all playing ability of Hockey players.

Methodology

To achieve the purpose initially twelve tests were designed by the investigators, after analysing the various factors. As an initial step, a pilot study was conducted to thirty subjects before the actual test administration for the purpose of observation and revision. The instructions and a demonstration of the test items were given properly to avoid any vagueness of the test. After the pilot study seven items were finalised by keen observation and consultation with the experts. The seven skill test items were administered to ninety six college level Hockey players from from affiliated colleges of Alagappa University, Karaikudi, Tamil Nadu, whose age ranged from 18 to 25 years. A good skill test possesses a high objectivity, reliability and validity. To find out the objectivity, reliability and validity correlation co-efficient was used. Further stepwise multiple regression was used to predict the playing ability of Hockey players.

Objectivity Reliability and Validity of the Skill Test Items

According to Barrow & McGee (1979) objectivity is a measure of the worth of the scores and is inherent in the test. Objectivity is enhanced by clear test directions, precise scoring methods, and adherence to them. These precautions were taken in the construction and administration of this test. Reliability of the tests was established by test–retest process from ten subjects whereby consistency of results was obtained by Intra-class correlation. Baumgartner et al. (2003) opined that it is possible to be reliable and objective, but not valid. However, a test cannot be valid even it has either objectivity or reliability. The criterion for establishing test validity was a subjective ranking of the subjects according to playing ability. Ranking of players according to their playing ability was the criterion used for establishing the validity of the test items. Subjective ratings were done (from one to ten, point scale with ten being the highest) by a jury of experts (Rankings were based on skill test performance and subjective observation). Guidelines were given by the investigators regarding the system of grading. Test scores were correlated with the criterion score of rank. The objectivity, reliability and validity coefficients of the test items were presented in Table-I. All the specified skill tests were administered on Hockey court at the competition site and no motivational techniques were employed.

Results

Table I. Correlation coefficients for all the skill test items

S. No.	Test items	Objectivity	Reliability	Validity
1	Indian Dribble	0.83*	0.83*	0.73*
2	Speed Dribble	0.85*	0.90*	0.80*
3	Spin Dribble	0.91*	0.86*	0.81*
4	Long Pass	0.90*	0.85*	0.88*
5	Short Pass	0.81*	0.89*	0.83*
6	Aerial Pass	0.82*	0.85*	0.82*
7	Dynamic Pass	0.81*	0.86*	0.83*

* Significant at the 0.01 level.

According to Barrow & McGee (1979) arbitrary standard for acceptable objectivity & reliability was 0.80 and acceptable validity was 0.70. Hence, only the above said seven test items were acceptable according to arbitrary standards for the evaluation of physical performance tests.

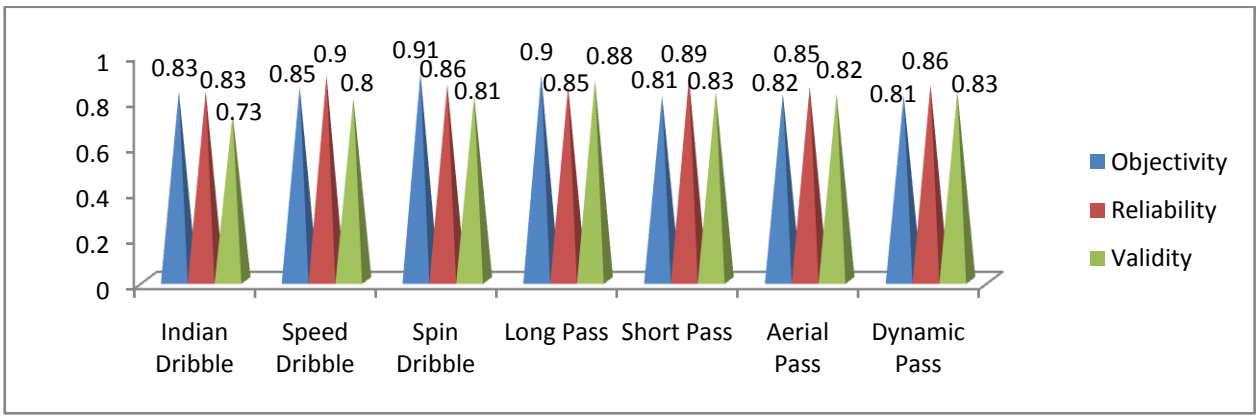

Figure I. showing the objectivity, reliability and validity of skill test items.

Table II. Test module arrived on step wise regression for prediction

Variables	b	SE b	B	R Value	't' Value
Constant	6.84	0.93			
Indian Dribble	1.43	0.13	1.92	0.73	8.02*
Speed Dribble	0.14	0.02	0.53	0.83	6.53*
Spin Dribble	0.62	0.15	0.36	0.88	4.50*
Long Pass	0.73	0.14	0.46	0.90	5.53*
Short Pass	0.34	0.15	0.45	0.91	4.05*
Aerial Pass	0.64	0.13	0.43	0.81	4.53*
Dynamic Pass	0.36	0.12	0.37	0.86	5.02*

* Significant at 0.05 level

The test items entered in the following order: Indian dribble, Speed dribble, Spin dribble, Long pass, Short pass, Aerial pass and dynamic pass. It is apparent that the "R" value changes incrementally. The validity of skill test battery was ensured up to the 7-item module. The addition of other tests does not enhance the validity of the test battery.

Results

For this analysis the criterion (playing ability of ninety six subjects) was taken as dependent variable and the skill tests scores are the independent variables. According to the results shown, out of two independent variables the following six variables namely Indian dribble, Speed dribble, Spin dribble, Long pass, Short pass, Aerial pass and dynamic pass. Have shown significant influence on the playing ability: The obtained't' value of the skill test items are much higher than the required table value 4.00. Although ordinarily one would not confidently conclude that skills other than seven items really do not matter in the final playing ability, it is of statistical interest to say that they do not possess significant influence in the current context. Hence, the fitted multiple regression equation for prediction of the Hockey playing ability will be

FHPA: $6.84+1.43x_1-0.14x_2+0.62x_3-0.73x_4+0.34x_5 0.64x_6+0.36x_7$

From that it can said that the final skill test items as a 7-item package correlate significantly with the playing ability of the subjects.

Conclusion

The prime intention of the researchers was to construct a comprehensive module with limited number of test items and greater level of dependability. Hence stepwise multiple regression technique was employed. While analyzing results it was revealed that the following seven test items namely Indian dribble, Speed dribble, Spin dribble, Long pass, Short pass, Aerial pass and dynamic pass were included in the final test battery. The above said tests were found to be highly reliable and fully valid final test battery.

Final test battery is believed, will be a significant contribution for the promotion of the game. The battery, when employed by the coaches, is expected to help them to come up with useful and reliable data that may be processed for monitoring and improving the playing ability and for talent identification of the subjects. The high validity and reliability scores for the seven tests in the final test battery module also affirm the fact that the administration of these seven tests have been good, thereby assuring the administrative feasibility of the tests.

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