



Construction of Skill Test Battery in Women Hockey Players

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Abstract

Among different games and sports, field Hockey is one of the fast outdoor game. It is an accepted fact that Hockey is one of the most popular participation sports around the world. Day by day the nature of the game changes its structure. The purpose of this study was to construct a skill test battery in Hockey. To achieve this purpose initially thirteen skill tests were designed by the investigators. A pilot study was conducted with thirty subjects, after analyzing the various factors, seven 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 Tirunelveli region and their age ranged from 14 to 16 years. To find out the validity simple correlation was employed. Further stepwise multiple regressions were used for validating the test battery and to arrive the final test battery. The selected seven skill test items have shown sufficient reliability, objectivity and validity but only the following three test items namely Straight Drive Hit, Scoop for distance and Speed right dodge were part of the final test battery.

Keywords: Construction, Objectivity, Reliability, Validity and Hockey.

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Introduction

Many sports skills tests are described in the professional literature. Some of these tests are valid and reliable others are not. No attempt is made in this project to describe all good sports skill tests, but a very adequate sampling is provided. Unless indicated otherwise, the described tests may be administered to male and females. Collins and Hodges (1978), describe 103 tests for twenty- six sports. Their comprehensive guide is an excellent source for skills tests. In addition to selecting a good test, one should recognize that some tests measure only one aspect of a sport. When such a tests is administered, no generalization should be made about an individual's overall skill in a particular sport. Names are available for many sports skill tests, but unless one want to make national comparisons, it may be more appropriate to develop local norms. Often local norms are more meaningful, owing to differences in movement experiences, the socioeconomic environment of the group being tested, and the group used to develop the test norms. A skill is an ability, usually learned and acquired through training, to perform actions which achieve a desired outcome. During 1930, skill testing in the fundamental skills in different games and sports were devised. Brace presented one of the earliest skill tests on basketball. All those tests were followed the general

procedure was to determine statistically a few simple test items to measure the total activity of that sports and games. Skill tests were developed to measure the basic skills used in a specific sport (AAHPERD, 1968). 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. 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 test items are collectively called as skill 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.

Among different games and sports, field Hockey is a fast outdoor game. It is an accepted fact that Hockey is one of the most popular participation sport around the world. The success of the Indian team was due to positional play, combination of forwards with halves, likewise of halves with backs, the tackle back, quick movement and first time passes, deft stick work both in attack and defence, frequent use of hand to feint to baffle the defence (Majumdar, 2008). From this

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description it is evident that the Indians were sound in the basics and adept at tactics and strategy. After the introduction of artificial grass it has become extraneously speedy game. Recent developments in field Hockey, such as the playing surface, new stick material, and interchange of rule, have increased the number of technical demands made on field Hockey players at all levels. Day by day the nature of the game changes its structure (Lemmink, 2004). Dureha & Mehrotra (2003) found that very limited number of experiments have been made in testing individual skills. Keeping this objective in mind the investigator attempted to construct the skill test battery in field Hockey.

Materials and Methods

The purpose of this study was to construct a skill test battery in women hockey players. To achieve this purpose initially thirteen skill tests were designed by the investigators. A pilot study was conducted with thirty subjects, after analyzing the various factors, seven 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 Tirunelveli region and their age ranged from 14 to 16 years. The instructions and a demonstration of the test items were given properly to avoid any vagueness of the test. A good skill test possesses a high validity, objectivity and reliability. To find out the objectivity, reliability and validity simple correlation was employed. Further stepwise multiple regressions was used for validating the test battery and to arrive the final test battery.

Objectivity of the 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.

Table I. Correlation coefficients for all the test items

S. No.	Test items	Co-efficient of Correlation 'R'
1	Straight Drive Hit	0.89*
2	Slap Hit	0.83*
3	Scoop for Distance	0.88*
4	Speed Right Dodge	0.90*
5	Speed Left Dodge	0.85*
6	Straight shooting	0.86*
7	Speed Shooting	0.81*

* Significant at the 0.01 level.

According to Barrow & McGee (1979) arbitrary standard for acceptable objectivity was 0.80. Hence it was acceptable according to arbitrary standards for the evaluation of physical performance tests. Since objectivity coefficients are normally high for scores which are precise and numerical, such as those which are timed by two timers, it is therefore assumed that this test has acceptable objectivity.

Reliability of the Test Items

Reliability of the tests was established by test-retest process from ten subjects whereby consistency of results was obtained by Intra-class correlation. The score of trial 1 was correlated with the score of trial 2. The reliability coefficients of the test items were presented in Table-II.

Table II. Reliability coefficient for test-retest scores

S. No.	Test items	Co-efficient of Correlation 'R'
1	Straight Drive Hit	0.90*
2	Slap Hit	0.85*
3	Scoop for Distance	0.89*
4	Speed Right Dodge	0.91*
5	Speed Left Dodge	0.86*
6	Straight shooting	0.83*
7	Speed Shooting	0.84*

* Significant at the 0.01 level.

According to Barrow & McGee (1979) arbitrary standard for acceptable reliability was 0.80. Hence it was

acceptable according to arbitrary standards for the evaluation of physical performance tests.

Validity of the Test Items

Baumgartner et al. (2003) opined that it is possible to be reliable and objective, but not valid. However a test cannot be valid if it is 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. After obtaining the subjective rankings, inter judge correlations indicated an acceptable agreement ($r = 0.72$) between two judges. The sum of the ratings of these judges was used in the overall ranking. The two judges whose ratings correlated highly were taken for analysis.

Table III. Correlation matrix for the criterion measure and test items

	PA	ST1	ST2	ST3	ST4	ST5	ST6
ST1	0.76*	-	-	-	-	-	-
ST2	0.74*	0.72*	-	-	-	-	-
ST3	0.73*	0.61*	0.46*	-	-	-	-
ST4	0.63*	0.23	0.42*	0.93*	-	-	-
ST5	0.47*	0.69*	0.43*	0.03	0.28	-	-
ST6	0.64*	0.83*	0.46*	0.07	0.16	0.89*	-
ST7	0.43*	0.79*	0.46*	0.26	0.13	0.72*	0.65*

* Significant at 0.05 level

PA = Playing ability

ST1 = Straight Drive Hit

ST2 = Slap Hit

ST3 = Scoop for Distance

ST7 = Speed shooting

ST4 = Speed Right Dodge

ST5 = Speed Left Dodge

ST6 = Straight shooting

The above table clearly explains the validity of test items with criterion score and validity among other test items. Further stepwise multiple regression was used

for validating the test battery and to arrive the final test battery.

Table IV. Stepwise regression analysis of skill tests items in hockey

Steps	Variables	B	SE b	β
Step I	Constant	4.07	0.33	
	Straight drive hit	1.40	0.12	0.82
Step II	Constant	-1.09	0.83	
	Straight drive hit	0.91	0.12	0.54
	Scoop for distance	0.13	0.02	0.46
Step III	Constant	4.02	0.65	
	Straight drive hit	0.81	0.05	1.09
	Scoop for distance	-0.47	0.07	-0.55
	Speed Right Dodge	0.13	0.02	0.31

Results

The test items entered in the following order: Straight drive hit, Scoop for distance and Speed Right Dodge. It is apparent that the “R” value changes incrementally. The addition of other tests does not enhance the validity of the final test battery. According to the results out of seven independent variables, the following three test items alone have significant influence on the playing ability. Although ordinarily one would not confidently conclude that skills other than three 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. The

high validity and reliability scores for the three tests in the final test battery module also affirm the fact that the administration of these three tests have been good, thereby assuring the administrative feasibility of the tests.

Conclusions

The prime intention of the researcher 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 three test items namely Straight drive hit,

Scoop for distance and Speed right dodge were part 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 of the subjects.

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