RELIABILITY AND VALIDITY OF A FIELD HOCKEY SKILL TEST

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To undertake research into field hockey in a controlled setting, it is necessary to employ a skill test that can be completed in a laboratory. The development of tests for field hockey is limited and Reilly and Borrie (1992) emphasised that this was surprising as field hockey has been part of the Physical Education curriculum in Europe and North America since the beginning of the 20th Century.
High test-retest reliability is essential in tests used for scientific research and to monitor athletic performance. Test validity is essential to allow performance to be compared between players. Thus, the purpose of this study was to design a field hockey skill test that was both reliable and valid for the modern game of hockey and determine the acceptable levels that would make it a suitable tool to use for research in a laboratory.
The skill test was undertaken indoors on a section of sportsturf of a similar type used by the players in training and match-play. After 2 practise sessions that comprised 6 shooting attempts each (or twice through the test), on a separate day, each player was required to dribble the ball around a series of cones in a specific pattern. As the player passed the last cone an infra-red beam triggered a light on either side of the goal that started a computer timing system (BBC microcomputer). After a pass against the rebound board the player shot at the opposite target to the light (Fig 1). The time taken between crossing the infra-red beam and the ball hitting the backboard was termed the 'decision time' as it incorporates decision making elements. This pattern was repeated continuously 5 times, (6 times in total). If the player missed the target area or touched a cone a 2 s time penalty was added to produce an overall time for the test. Thus the test incorporates a dribbling, passing, shooting and decision making element.
Thirty-nine well-trained university field hockey players volunteered to participate in the study. Twenty males and 19 females completed the validity study and 14 males and 17 females completed the reliability of the skill test. The reliability of the test was determined by repeating the test (trial 2) at least 3 days after trial 1. The validity of the test was undertaken by comparing the performance on the skill test with the rank given to the player by one International standard coach and one National League coach who regularly coached the players. The study had Loughborough University Ethical Committee approval. The overall skill test performance during trials 1 and 2 averaged 90.85 ± 1.65 and 90.89 ± 1.65 s (mean ± SE) and 'decision time' was 4.17 ± 0.09 and 4.17 ± 0.10 s. The coefficient of variation for the overall skill test performance was 2.1% and the mean difference ± 95% limits of agreement were 0.03 ± 5.11 s. The intraclass correlation for overall performance was $r = 0.96$ ($P<0.0001$). The coefficient of variation for the 'decision time' was 4.5% and the mean difference ± 95% limits of agreement were 0.01 ± 0.52 s. The intraclass correlation for decision time was $r = 0.88$ ($P<0.0001$). The validity correlation (Spearman Rank) was $R = 0.85$ ($P<0.00001$) and $R = 0.74$ ($P<0.001$) for female players and $R = 0.63$ ($P<0.01$) and $R = 0.70$ ($P<0.01$) for male players for overall time and 'decision time,' respectively.
The results show that the field hockey skill test provides a reliable, objective and valid tool for testing the skills of good to elite field hockey players. The high reliability and validity suggest it can be used for scientific research as well as to determine how the skills of individual players are developing.

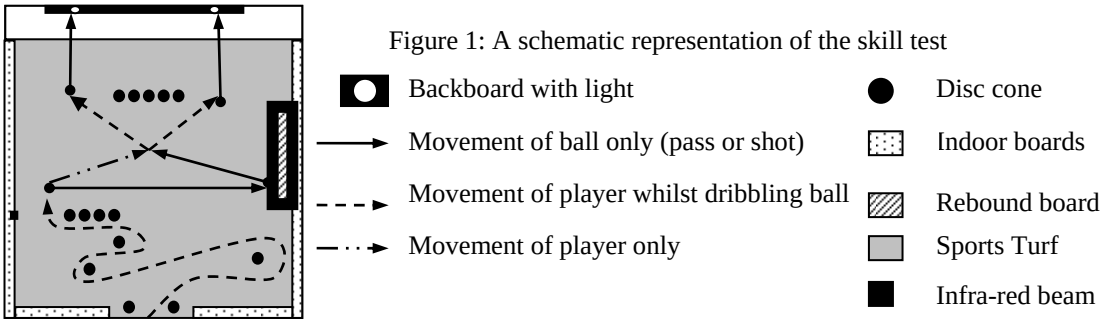

Figure 1: A schematic representation of the skill test

Reilly, T. and Borrie, A. (1992) Physiology applied to field hockey. Sports Medicine, 14, 10-26.