

VALIDITY AND RELIABILITY OF COMPREHENSIVE ASSESSMENT INSTRUMENTS FOR PROFESSIONAL SKILLS IN FIELD AND COURT SPORT AMONG MAJOR STUDENTS COACHING BASED ON MODEL K

NORKHALID SALIMIN, JULISMAH JANI, NUR AKMAL ISHAK, SADZALI HASSAN,
GUNATHEVAN ELUMALAI, ONG KUAN BOON & MOHD IZWAN SHAHRIL

Faculty of Sports Science and Coaching, Sultan Idris Education University, Perak, Malaysia

ABSTRACT

This study was conducted to assess the validity and reliability of comprehensive assessment instruments for professional skills in field and court sport courses on major students in Faculty of Sports Science and Coaching based on K Model. Netball, soccer, hockey, volleyball, basketball and handball were selected as professional skills in field and court sport courses to be studied. Measuring instrument has been made and it consists of cognitive (Krathwohl, 2002), psychomotor (Dave, 1970) and affective domains (Krathwohl et al., 1964). The results showed the validity of the comprehensive assessment instruments for professional skills in field and court sport courses was $r = 0.90$ ($N = 7$), while the reliability was $r = 0.81$ ($N = 180$). The inter observer agreement between examiners was 70.11% ($SD = 0.5$, $N = 6$). Based on the findings, a comprehensive assessment is suitable to be used as a standard instrument for assessing student achievement for professional skills in field and court sport courses on major students in Faculty of Sports Science and Coaching.

KEYWORDS: Validity, Reliability, Comprehensive Assessment

INTRODUCTION

Faculty of Sports Science and Coaching (FSSKJ) was established on June 1, 2010, aiming to produce graduates who are knowledgeable, skilled and competent in the field of Sports Science, Physical Education, Science Coaching, Sports Rehabilitation and Sports Psychology. The structure of the study programme at Bachelor of Education (ISMP) requires students to register for courses in University Courses, Core Courses (Professional Education and Learning Management), Minor or Elective courses totaling 130 credits.

Professional Skills in field and court sports (1 credit) are part of the compulsory courses taken by students in the core courses (major) programme structure. Students ISMP (Sports Science) AT03 and AT59 Physical Education are required to register a total of four credits for field sports and five credits for court sports, while students ISMP program (Coaching Science) AT43 register two credits for field sports and two credits for court sports. Professional Skills in Field Sports offered by FSSKJ are Basketball, Football, Softball, Hockey, Rugby, Cricket, Golf and Petanque and Professional Skills Sports Arena also is like Tennis, Volleyball, Sepaktakraw, Futsal, Badminton, Basketball, Squash, Handball and Table Tennis.

Lecturers are required to conduct an assessment to determine the achievement of learning outcomes for each course that has been taught. According Bhasah (2007), the evaluation was designed to assess the status of an object that is evaluated and compared with respected to the status of a set of standards or criteria for decision making. In this context, evaluation is a process that includes determining the objectives, gathering information, processing information and forming

conclusions. When this process is run with a systematic and scientific manner, then the decision will be more accurate and meet the purpose of evaluation results (Abu Bakar & Bhasah, 2008).

Professional Skills in Sports Field and Court have offered an enormous role in contributing to the growth and development of the whole student through the learning based experience on the cognitive, psychomotor and affective domains (Darst & Pangrazi, 2006; Abdullah Sani, 2003; Freeman, 2001: and Daeur & Pangrazi, 1995). To ensure the achievement of learning outcomes, lecturers should perform assessments using standardized instrument. This study is based on Model K (Norkhalid, 2012) which has been modified and he has recommended comprehensive assessment that covers the cognitive, psychomotor and affective domains on student achievement.

The purpose of this study is to identifying the validity and reliability of a comprehensive assessment instruments of Professional Skills Field and Court Sports. Comprehensive assessment instruments are built based on the level of Krathwohl taxonomy (2002) on the cognitive domain, Dave taxonomy (1970) for the psychomotor domain and Krathwohl et al. (1964) taxonomy for the affective domain.

Cognitive domain refers to the thinking and the intellect in which the cognitive evaluation was to measure the level of knowledge and intelligence of the students (Kamarudin & Siti Hajar, 2004) happens all the time and everywhere (Abu Bakar & Bashah, 2008). There are six levels of cognitive classification based on Bloom's taxonomy (1956), namely (i) knowledge, (ii) understanding, (iii) application, (iv) analysis, (v) synthesis and (vi) evaluation. Krathwohl (2002) in the revised Bloom's taxonomy has introduced a new taxonomy level where the word 'knowledge' was changed to 'remember', 'understanding' was changed to 'understand', 'synthesis' was changed to 'create'. In this case, the old version put the 'synthesis' under 'evaluation' in the taxonomy hierarchy. While the revised version, 'create' is the pinnacle of the hierarchy. Low Order Thinking Skills (LOTS) was introduced and covered 'remember' and 'understand' levels and the Higher Order Thinking Skills (HOTS) covered 'apply', 'analyze', 'evaluate' and 'create' levels.

Psychomotor domain is a skill that related to physical movement of a person. Professional Skills in Field and Court Sports have always focused on controlling limb movements during training and games. Thus, it is used to measure the ability and efficiency of physical, motor, fitness and games (Jansma & French, 1994). In the teaching and learning process, psychomotor domain is very significant. There are five levels of hierarchy based on Dave taxonomy (1970), namely (i) imitation, (ii) manipulation, (iii) develop precision, (iv) articulation and (v) naturalization.

Affective domain involves spiritual aspects and it emphasized on growth and development of attitudes, feelings, emotions and values that exist. Feelings, attitudes and values are things to learn and grow from time to time. If the environment is healthy, then the feelings, attitudes and values will be positive (Abu Bakar, 1985). Krathwohl et al. (1964) classified the affective domain into five taxonomic levels which are (i) receive, (ii) respond, (iii) value (iv) organise personal value system and (v) internalize value system.

Based on Figure 1, the theoretical framework of this study is based on Krathwohl taxonomy (2002) for cognitive domain, Dave taxonomy (1970) for psychomotor domain and Krathwohl et al. (1964) taxonomy for the affective domain. Comprehensive assessment in this study was built on the basic theory and includes three types of assessment which involves the assessment of cognitive, psychomotor and affective for assessing student achievement in the field (netball, soccer and hockey) and court (volleyball courts are, basketball and handball) professional skills.

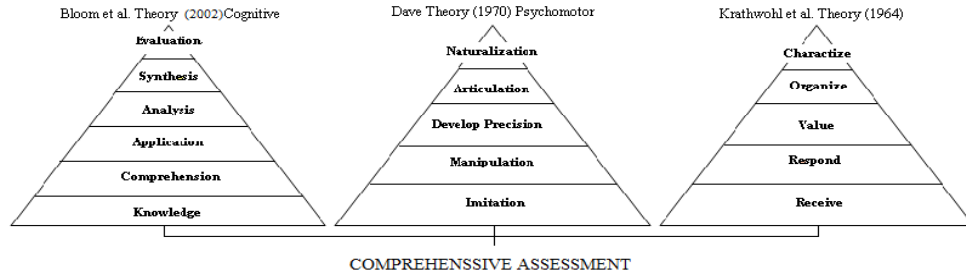


Figure 1: Research Theoretical Framework

METHODOLOGY

This studied was conducted using one-shot case study. Subjects consisted of 180 students who attended the Basketball, Football, Hockey, Volleyball, Basketball and Handball Professional Skills Course and 7 expert panels involved in the study. Lecturers and expert panels were selected using purposive sampling while the students were selected by intact where all students under selected lecturer were used as subjects in this study. This study used three types of assessment instruments which are cognitive, psychomotor and affective for netball, soccer, hockey, volleyball, basketball and handball. Comprehensive assessment in this study is an instrument designed by the researcher based on Morrow et al. (2005). Figure 2 shows a flow chart of the construction of a comprehensive assessment instruments for professional skills for fields and courts sports.

The first step in building a comprehensive assessment process is to evaluate the best review of criteria. This study is based on the learning outcomes of the course Instructional Plan related to the domain of cognitive, psychomotor and affective for netball, soccer, hockey, volleyball, basketball and handball. The second step was instrument analysis. Based on Instructional Plan analysis, netball consists of passing, receive, dodge, blocking, goal shooting and footwork skills. Football game consists of kicking, stopping, tackling, dribbling, passing and heading while the hockey game on the other hand are pushing, stopping, hitting, scooping dan dribbling. Volleyball game consists of support, digging, serving, setting, spiking and blocking. However, basketball game consists of passing, catching, bounce, dodge, blocking and goal shooting skills while in handball passing, catching, dodge, scoring and goal defense skills. Values found in this course are as sportsmanship, fair play, tolerance, teamwork, discipline, competitiveness, leadership and participation

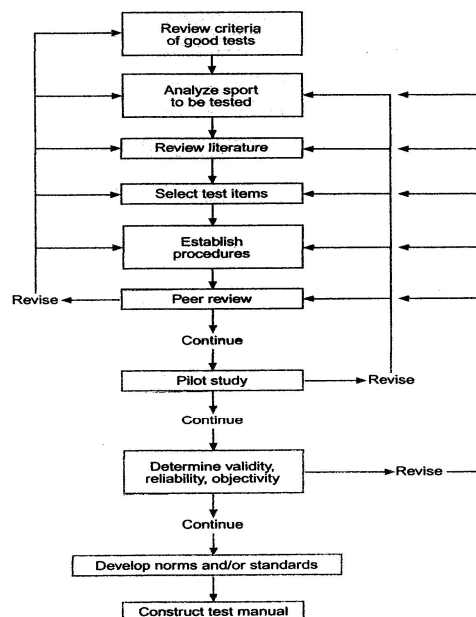


Figure 2: Flow Chart of the Construction of a Comprehensive Assessment Instruments

The third step in this study was to construct the instrument. Comprehensive assessment of this study is based on the taxonomy; cognitive, psychomotor and affective domains. Cognitive domain is based on Krathwohl (2002) taxonomy, psychomotor domain based on Dave (1970) taxonomy and affective domain based on Krathwohl et al. (1964) taxonomy. The next step was to do a selection of items on the instrument. Cognitive assessment consists of 40 questions and was divided into four sets of cognitive tests on four teaching sessions involving two hours for each meeting with each set containing 10 question tests on the learning topic. This assessment is based on the Krathwohl (2002) taxonomy, Table of Specifications Test was used and weighted proposed by Hastad and Lacy (2002).

Psychomotor assessment for netball, soccer, hockey, volleyball, basketball and handball were following the number of skills based on learning outcomes. Assessment conducted during training and playing sessions during the process of teaching and learning take place. Affective assessment for netball, soccer, hockey, volleyball, basketball and handball are consists of two sub-value; following the rules and obey the law. Therefore, comprehensive assessment was developed in order to publish the implementing procedures. This process is the first step in the preparation of a comprehensive assessment for netball, soccer, hockey, volleyball, basketball and handball games.

The final step was to form a complete comprehensive assessment instruments to be used and then a comprehensive assessment of the actual study of students enrolled in netball, soccer, hockey, volleyball, basket ball and handball courses. At this stage, expert panels were provided completed comprehensive evaluation to be reviewed and refined. Some modifications were made according to panel comments and recommendations.

This modified comprehensive assessments were then been presented to the lectures who teach netball, soccer, hockey, volleyball, basketball and handball games during one day workshop. In this workshop, lectures will understand the comprehensive assessment procedures. In addition, evaluation test (psychomotor assessment test in handball game) was conducted on to lecturers in order to get the test inter-ratter reliability. The final step in comprehensive assessment instrument developments is implementation. The implementation process will be done on next semester (second semester 2013/2014 session).

FINDINGS AND DISCUSSIONS

The Validity of Comprehensive Assessment Instrument

To find out the validity of the content on the pilot study, researchers have met the experts to review the instrument contents. Determinants Form Items have been used for this purpose. Some items have been checked and corrected based on feedback and expert advice referred.

Table 1: Content Validity on Pilot Studies

Item	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Expert 7	Min
Cognitive Test 1	9.0	9.0	8.8	9.0	8.8	10.0	9	
Cognitive Test 2	9.2	9.0	8.8	9.0	8.8	10.0	9.4	
Cognitive Test 3	10.0	9.0	8.8	9.0	8.8	9.8	9.4	
Cognitive Test 4	10.0	9.0	8.8	9.0	8.6	8.8	9	
Psychomotor Test	9.0	9.4	9.0	9.4	8.4	8.4	9.4	
Affective Test	9.0	9.0	8.6	9.0	8.8	8.6	9.8	
Overall	8.6	8.8	9.0	8.6	8.6	8.2	9.8	
Overall Score	64.8	63.2	61.8	63	60.8	63.8	65.8	
Σ	0.93	0.90	0.88	0.90	0.87	0.91	0.94	0.90

Based on Table 1, validity of a comprehensive assessment of the pilot study is $r = .90$ ($n = 7$). According to Abu Bakar (1985), Sidek and Jamaludin (2005) and Tuckman and Waheed (1981) validity value 0.70 and above is considered to have control or achieve the higher level. However, with regard to all aspects of reviews and comments given from a panel of experts, the researchers have done some minor modifications to improve game comprehensive assessment instruments that have been built.

The Comprehensive Assessment Instrument Reliability

According to Ahmad (2004), Baumgartner and Jackson (1999) and Miller (2006), the reliability of a test is due to consistent results when it has been tested repeatedly. Test reliability will produce stable and accurate data. According Bhasah (2007), there are two procedures commonly used in estimating reliability test scores; the two test administration and the administration of the test. Cognitive assessment was developed using 20 Kuder Richardson formula and the scoring was made based on dichotomous (true-false), while the psychomotor and affective assessments were using Cronbach Alpha. The study was conducted on 180 male students, 90 female students ($n = 90$) and six lecturers involved. Table 2 shows the coefficient of assessment instruments reliability for netball, soccer, hockey, volleyball, basketball and handball.

Table 2: Reliability of the Comprehensive Assessment (N = 180)

Instrument	Analysis	r	p
Net Ball (n=30)	KR ₂₀	.94	.74
Football (n=30)	KR ₂₀	.89	.79
Field Hockey (n=30)	KR ₂₀	.94	.73
Volleyball (n=30)	KR ₂₀	.89	.91
Basketball (n=30)	KR ₂₀	.88	.87
Handball (n=30)	KR ₂₀	.93	.82
	M	.91	.81

Based on Table 2, the netball cognitive tests reliability ($r = 0.94$, $p = 0.74$), football ($r = 0.89$, $p = 0.79$), hockey ($r = 0.94$, $p = 0.73$), volleyball ($r = 0.89$, $p = 0.91$), basketball ($r = 0.88$, $p = 0.87$) and handball ($r = 0.93$, $p = 0.82$). Valette (1977) suggests the minimum reliability coefficient of instruments that may be applicable is 0.50 while Mohd. Majid (2000) states the reliability coefficient should be at least 0.60 and Fraenkel and Wallen (1996) state at least 0.70. This finding shows that cognitive assessment reliability results is between $r = 0.88$ to $r = 0.94$ ($M = .91$). Therefore, it indicates that the value is high and acceptable.

Reliability among Comprehensive Assessment Instruments Examiners (Inter Observer Reliability)

To get the reliability of testing, evaluation tests were conducted on the lecturers ($N = 6$) which is psychomotor assessment. The purpose of this test was to obtain the agreement of the tester or 'interobserver reliability. In psychomotor assessment, a subject teacher is required to give a score based on the rubric assessment forms provided based on 28 video recording. According to Bryington et al. (2002), there are two methods for obtaining the agreement between examiners (inter observer agreement) which are the percentage of agreement and Kappa method. If the data obtained using the nominal scale, Kappa method is preferred but if there is more than one tester for an item then the method of acceptance tests can be used (Rink, 2002). Therefore, in this study, the percentage of agreement between examiners (inter observer agreement) was obtained and the results show the percentage of agreement between examiners (inter observer agreement) for the assessment based on the evaluation of 28 handball video footage is between 37.50% -93.80% $M = 70.11\%$ ($SD = 0.57$). According to Rink (2002), reliability value is at least 70% (0.70) agreement between testers.

CONCLUSIONS

Based on the findings, a comprehensive assessment is suitable to be used by lecturers as a standard instrument for assessing student achievement. This comprehensive assessment is more realistic, holistic and able to assess students' comprehensive, balanced and consistence to learning outcomes for the Professional Skills for Field and Court courses in the core program's (majors) structure of Faculty of Sports Science and Coaching, Sultan Idris Education University.

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