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A RETROSPECTIVE EVALUATION OF ASSESSMENT IN PHYSICAL EDUCATION

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ABSTRACT

Assessment and reporting in Health and Physical Education (HPE) continues to evoke debate and confusion amongst Physical Education (PE) professionals. There is genuine concern that without objective measurement and evaluation of student learning and achievement, PE programmes could be placed in a vulnerable position during times of programme review, budget cuts and school restructuring. This paper revisits some of the fundamental assessment issues in PE and suggests guidelines for teachers to consider. A review of past practices reveals little consensus regarding the educational outcomes that should be measured, the levels of attainment expected to achieve a particular achievement grade, what degree of improvement or skill level was reached, and how PE teachers could derive and report meaningful assessment of student outcomes. An increase in public awareness of education has further emphasised accountability in all areas, including PE and has reinforced the demand for valid student measurement, evaluation and overall assessment. The problems identified through this evaluation were a catalyst in the development of an outcomes-focused approach by the curriculum authorities in Western Australian schools.

Key words: Assessment; Reporting; Physical Education.

INTRODUCTION

The physical education (PE) profession has long experienced a dilemma in assessment and reporting of student performance. The adequacy or inadequacy of assessment procedures in PE is an issue that arises regularly, especially when linked with curriculum change. There is genuine concern that without objective measurement and evaluation of student learning and achievement, PE programmes could be placed in a vulnerable position during times of programme review, budget cuts and school restructuring (Lund, 1992; Almond & McGeorge, 1998). A retrospective look will enhance an understanding of the PE evaluation process. A review of past practices reveals little consensus regarding the educational outcomes that should be measured, the levels of attainment expected to achieve a particular achievement grade, what degree of improvement or skill level was reached, and how PE teachers could derive meaningful grades (Lashuk, 1984). The problems identified through this evaluation were a catalyst in the development of an outcomes focussed approach in some schools.

It is expected that physical educators should develop a range of assessment approaches (McConachie-Smith, 1993) which are valid, reliable and consistent with the educational philosophy of the day. Naturally, assessment should determine whether the goals of the programme have been achieved (Matanin & Tannehill, 1994) and whether grades accurately reflect the students' levels of achievement (Lund, 1992) according to some performance based

criteria. This paper revisits some of the fundamental assessment issues in PE and suggests some guidelines for teachers to consider.

THE PE LEARNING AREA

The importance and benefit of sport, physical activity and recreation has been well documented (Biddle & Chatzisantris, 1999; Siedentop & Tannehill, 2000) and more specifically, the physical and emotional benefits to adolescents engaged in these pursuits (Taggart & Sharp, 1997). Sport and fitness education have historically been seen as 'the cornerstones of PE' (Taggart, 1988). Until recently, it was considered that the main goal of PE was simply to improve physical fitness (Lashuk, 1984), rhythmic and sport skills, and knowledge of physical activity (Heitmann, 1988; Matanin & Tannehill, 1994). By comparison, contemporary PE aims to produce well rounded students who are able to perform complex skills, make decisions, assume leadership tasks and have an understanding of the facets of game play.

Assessment, according to Browne (1998) has generally provided quantitative and qualitative data through a variety of subjective skills and fitness testing procedures. Effective learning has relied on a systematic process, which begins with the identification of learning goals and culminates with judgements as to the successful attainment of these goals. Assessment is essential to the teaching-learning experience and effective education process (Ebel, 1980; Safrit, 1986; Veal, 1988; Hensley *et al.*, 1989; Hensley, 1990). Moreover, it is seen to enhance levels of awareness, interest, motivation and self-esteem of PE students (Veal, 1992; Radford *et al.*, 1995). In addition, assessment encourages a professional approach by PE staff, assists students to understand their performances, enables greater parental understanding, and facilitates analysis of teacher effectiveness (Hensley *et al.*, 1989). Students increase effort and remain on-task if held formally accountable for a grade (Matanin & Tannehill, 1994), while the evaluation and assessment generally provides evidence from which PE teachers can award grades fairly (Radford *et al.*, 1995). In turn, this enables a revision of the teaching strategies employed, students become more aware of the course requirements, and the relationship between effort and results is enhanced (Veal, 1992; Radford *et al.*, 1995). In order to effectively evaluate both student and teacher performance, desired outcomes in terms of specific objectives need clear definition (Hensley, 1990). Physical education teachers are charged with preparation of these objectives and are required to provide evidence of the extent to which they had been achieved (Wood & Safrit, 1990). However, Matanin and Tannehill (1994) considered that maximum student participation and enjoyment have been given priority over student assessment and evaluation.

THE PE ASSESSMENT PROCESS: A RETROSPECTIVE EVALUATION

Objective grading or evaluation has been defined as the process of assigning marks to students based on a formal assessment of changes in student behaviour (Imwold *et al.*, 1982) and information gathered by measurement techniques to judge the effectiveness of the educational experience (Wooden, 1984). According to Veal (1988) formal assessment is a pre-planned technique that produced a written record of performance, knowledge or behaviour. While Hensley *et al.* (1989) believed that grading should be guided by the extent to which students meet the learning objectives, others (Wooden, 1984; Matanin & Tannehill, 1994) claimed that an effective PE programme should encompass the three processes of formal assessment;

namely, systematic evaluation, objective grading and a measure of accountability. However, these three processes were seen to be practised infrequently in PE (Morrow, 1978; Imwold *et al*., 1982; Hensley *et al*., 1989). Generally it was agreed that most of the attributes used for grading purposes are difficult to evaluate objectively (Safrit, 1986; Hellinson, 1993).

Formal assessment is avoided in some schools. Indeed, some PE teachers have been criticised for 'getting-by' without formally evaluating students and expending minimal effort to produce the minimal grades and reports required by school administrators (Lund, 1992). Several school systems reported that it was common for PE grades to be based exclusively on attendance, uniform and subjective skills tests (Matthews, 1963; Coker, 1972; Morrow, 1973). Comportment, defined by Lashuk (1984) includes; attitude, contribution, dress, attendance, cooperation, effort, eagerness, enthusiasm, social skills, politeness, self-discipline, work habits and active participation. Lashuk (1984) reported that comportment accounted for the highest proportion (41%) of final PE grades when surveying metropolitan Canadian high schools. Wooden (1984) reported that the majority of teachers (59%) in North American high schools, based half of the PE grade on the students attendance, attitude and 'dressing out'; while the majority of schools indicated that skills and knowledge tests contributed to a third of the student grade. When examining public high school PE programmes, Hensley *et al*. (1989) found that 36% of teachers used subjective ratings to assess their students and that the primary determinant of a student's final grade was 'participation/effort.' Furthermore, the next most frequently mentioned attributes were attitude, skill, attendance and being in PE uniform (Hensley *et al*., 1989). Frazier and Holland (1991), whilst determining the factors which influenced PE high school assessment, noted that nearly all of the teachers surveyed used attendance in their grade determinations. Attendance contributed between 15% and 50% of the student's final grade. Teachers evaluated effort and sportsmanship for up to 30% of the final grade (Frazier & Holland, 1991).

Previously, teachers, students and parents relied on these subjective measures being translated into a single comment or grade as a method of reporting PE (Doyle, 1986). Matanin and Tannehill (1994) found that PE assessment in high schools (n=11) was generally subjective, and skills testing had little impact on student grades. Moreover, student grades were derived predominantly from active participation, knowledge and skill performance. Physical education teachers frequently made subjective determinations regarding student achievement; and whilst they were seen as being quite competent at using informal, observational assessment (Veal, 1992), others believed that the more objective and reliable the measure the more valid the student grade (Morrow, 1978; Hensley, *et al.*, 1989). Morrow (1973) suggested that student achievement should not be based only on attributes such as participation, conduct, attitude or uniform – when clearly PE had a broader overview. Hensley *et al.* (1989) agreed and claimed that subjective evaluation diminished the value of any systematic grading. Moreover, as objectivity was seen by some as imperative, skills and fitness tests were undertaken to provide meaningful feedback to students, parents and teachers. In contrast, some students were evaluated on behavioural or marginal factors, rather than fitness or skill achievement (Cotten & Cotten, 1985; Kovar & Ermler, 1991). Matanin and Tannehill (1994) found that high participation rates and enjoyment of activities were more important for most PE teachers than assessment of student progress. This points to the fact that, many PE teachers were not sure of what assessment was required or how it was best achieved. A list of general principles and practice attributes that should and should not determine student grades (Table 1) were found in most PE measurement texts (Morrow, 1978).

TABLE 1. **PROPOSED PLAN FOR GRADING**

COMPONENTS	WEIGHTINGS	INSTRUMENTS
Attitude (in terms of Attendance, Punctuality, Uniform and Participation)	5% to 25%	□ Attendance and other records □ Teacher observation
Skills (in terms of Form in Execution of Skill, Standard of Performance and Application in Game Situation)	20% to 35%	□ Objective tests □ Teacher observations □ Student evaluation
Physical Fitness (with emphasis on Muscular Strength and Endurance, Cardiovascular-Respiratory Endurance, Agility and Flexibility)	20% to 35%	□ Objective tests □ Teacher observation
Knowledge and Appreciation (of Skills, Strategy, Rules and History and Terms)	5% to 25%	□ Written tests □ Teacher observation
Behaviour (in terms of Social Conduct and Health and safety Practices)	5% to 25%	□ Teacher observation □ Student evaluation

Reference: Adapted from Bucher, C.A. & Koenig, C.R. (1983). *Methods and materials for Secondary School PE (6th ed.)*. St. Louis, MO: C.V. Mosby.

Although the pursuit and improvement of sport skills was an objective of school PE, standardised skills tests were infrequently used by teachers (Frazier & Holland, 1991). More than 80% of teachers used non standardised sports skills tests which they had created, to assess students' physical abilities in PE (Hensley *et al*., 1989; Veal, 1992; Veal, 1993). Whilst these tests were criticised for lacking reliability and validity (Frazier & Holland, 1991), they did allow teachers to clearly observe the skill, were directly related to the way the skill was taught, and could be administered in a relatively short amount of time (Veal, 1992). Conversely, there were problems associated with their delivery. It was acknowledged that it was difficult to assess sport skills using this method because performance usually consisted of several skills, each of which may have been fundamentally different from each other (Hensley *et al.*, 1990). Most tests combined several sport skills into a single measure and rarely used sufficient trials to ensure consistency (Hensley *et al*., 1990). In general, skills tests were not adaptable or relevant to the class needs (Veal, 1993), nor were they valid or reliable. They were difficult to prepare and administer, and often did not simulate game or competition conditions (Strand & Wilson, 1993). Due to the time needed to set up, administer and score skills tests, PE teachers often evaluated students' skills by scanning class participants (Hensley *et al*., 1989). Western Australian high school Health and Physical Education (HPE) teachers ranked the observation of student sport skills as the most important attribute that contributed to a PE grade (Doyle, 1986), but others criticised this approach, because it could hurt the feelings of some students (Veal, 1993). Veal (1993) reasoned that skills tests would be unfair on the lower skilled students, although he suggested the use of some baseline measure, followed by regular and on-going progress checks to boost self-esteem and confidence, could overcome this problem. It was also claimed that highly skilled students did

not need extra points for improvement as they were awarded the higher grades anyway (Veal, 1993). Nearly half of the teaching population regularly used knowledge examinations and a majority (57%) developed their own measurement tests for student assessment (Hensley *et al*., 1989).

TABLE 2. **PROBLEMS IDENTIFIED BY PE TEACHERS, WHICH RESTRICT THE USE OF FORMAL MEASUREMENT AND EVALUATION TESTS**

Problems	Author(s)
1. Large and overcrowded class sizes	Fabricius *et al.* (1967), Solley (1967), Morrow (1978), Wooden (1984), Hensley (1990), Hensley *et al.* (1990), Veal (1988; 1992; 1993)
2. Facilities make measurement of validity difficult	Morrow (1978), Hensley (1990)
3. Lack of equipment and facilities available for testing programmes	Morrow (1978), Hensley (1990)
4. Lack of adequate class time and preparation time to set up equipment for a measurement session	Solley (1967), Wooden (1984), Veal (1988), Hensley (1990)
5. Departmental regulations concerning the measurement techniques to be used within a school	Morrow (1978)
6. Programme emphasis based on participation rather than learning and achievement	Wooden (1984)
7. Importance of coaching rather than teaching in the PE programme	Morrow (1978)
8. Psychological peer pressure amongst PE staff	Morrow (1978)
9. A narrow and negative view of assessment	Veal (1988; 1992)
10. Lack of professional preparation to implement formal assessment procedures	Wooden (1984), Veal (1988; 1992)
11. Inconsistency of student performance from day to day	Veal (1988; 1992)
12. Performance tests examine skills out of context of the game and do not predict student's playing ability	Veal (1988; 1992; 1993)
13. Frequent grading periods	Solley (1967)
14. Numerous and distinctly different objectives to be evaluated	Solley (1967)
15. Existing measurement techniques and devices are too complicated	Solley (1967)
16. Concentration of evaluation periods at the end of sport units	Solley (1967)
17. Little or no assistance	Hensley (1990)

Additional problems reported by PE teachers, which restrict the use of formal measurement and evaluation tests, can be viewed in Table 2. Interestingly, there appeared to be a gap between the measurement and evaluation techniques recommended by pedagogists and those

actually used by PE teachers. However, pedagogues failed to give attention to practical problems encountered universally at the school level (Fabricius *et al*., 1967). Furthermore, Morrow (1978) found that students on teaching practice had little opportunity to use the measurement techniques they learned in their teacher training courses. The reasons given were that nothing in PE classes was measured, the supervisory teacher rarely used measurement techniques, the school used another system, and grades were determined by participation and dress (Morrow, 1978).

Verducci (1980) and Hedlund (1988) highlighted the importance of a coordinated alliance between pedagogues and PE practitioners to revise measurement tools and techniques. Verducci (1980) recommended rating scales whereby each student is graded on several occasions and the results averaged for the final evaluation. In addition, the author recommended that these rating scales need to:

i. Determine the specific skills and attributes to be evaluated.
ii. Identify characteristics that represent success for the performance being evaluated.
iii. Determine the levels of success or ability for each skill.
iv. Define each category or ability level in terms of observable behaviour.
v. Devise a form or system that allows the immediate recording of the rating of the observed behaviour (Verducci, 1980).

Verducci (1980) warned that the PE teacher must recognise the potential influence of physical appearance, personality and previous ratings of the student. Adequate time to observe each student and the use of more than one person to rate the student was also recommended. Pre-service teacher education and teacher professional development was considered important to show how grading and evaluation methods could be modified to achieve validity and reliability, and provide students with worthwhile feedback. But, as Morrow (1978) says, this must be linked to existing formats for effective integration.

While the goals and objectives of PE programmes should be reflected in the grading methods used (Seefeldt & Vogel, 1990), PE teachers claimed this often was not the case. Indeed, the texualised goals of physical fitness, skill, personal and social development did not underpin the assessment criteria. Doyle (1986) made a point of changing from a one line PE report, to one incorporating student normative data regarding fitness and skill levels. Accordingly, the more detailed report greatly minimised parental questions and raised interest at parent teacher nights (Doyle 1986). Such inconsistencies between goals and grading practices were reported to undermine the attempts made by physical educators to justify PE as a legitimate area of content in the K-12 curriculum (Seefeldt & Vogel, 1990).

Physical fitness was regarded by most PE staff as the second most important objective of a PE programme (Hedlund, 1988), but secondary school physical educators ranked high achievement in physical fitness as the lowest in priority (Hedlund, 1988). It should be noted that, although physical fitness was not considered an important objective in the schools, it was the most common category measured and tested by PE staff. Physical fitness testing has been the most frequently used formal measurement test in PE (Hensley, 1990). Fitness testing was seen to serve other purposes. These include motivation for the students to improve on their results, to monitor school nutritional and health trends, and to identify possible students who need assistance with their general fitness and diet. However, it was questioned that these

benefits were often not realised, as the results were usually not reported to the students or parents (Doyle, 1986).

Although many teacher education programmes included units in evaluation and measurement techniques, and general skill and fitness tests, PE teachers were criticised for not using valid and reliable systematic assessment instruments (Lund, 1992). Lund (1992) attributed this to the material being too theoretical and teachers experiencing difficulty when translating "T" scores and correlations to relevant and practical information needed for 30+ students in 50 minutes. Teachers have found these methods and tests too restrictive, irrelevant and time consuming, but pedagogues at this time had not provided alternatives. Hensley (1990) identified the need for theorists and PE practitioners to work together and devise techniques that are simple and can be used with large numbers, while maintaining adequate standards for reliability, validity and objectivity. Wood and Safrit (1990) agreed, confirming the need for researchers to be involved at the 'coalface' to more fully grasp the needs and demands of PE teachers.

A PERCEIVED NEED FOR CHANGE

A raised public awareness of education has placed increasing emphasis on accountability in all areas, including PE (Hensley *et al*., 1989; Hensley, 1990; Frazier & Holland, 1991; Veal, 1992). Hence, there has been a rekindled demand for valid student measurement, evaluation and overall assessment (Hensley *et al*., 1989; Hensley, 1990; Wood & Safrit, 1990). This is especially so in the affective domain which often has used a hybrid of descriptive behaviours such as attitude and participation to form a grade. Matanin and Tannehill (1994) reported that PE teachers placed more value on programmes that are enjoyable, relaxed, recreation-oriented and subjectively evaluated. This type of PE programme does not provide any indication of what students have actually learned, nor does it generate feedback to teachers concerning their own performances and the effectiveness of their programmes (Matanin & Tannehill, 1994).

Browne (1998) summarised the PE assessment findings:

i. Students are generally not held accountable for learning in PE.
ii. Teachers are not held accountable for assessment in PE.
iii. PE assessment is rarely 'game-authenticated' through games.

Gibbons and Bressan (1991) suggested that learning outcomes, as defined in performance terms, could be the lenses through which instructional objectives were viewed. Using the unique features of the school and local community, they suggested that teachers should develop their own list of outcomes. However, in doing so, they should consider the areas of application of thinking skills, attitudes and interests, appreciation and adjustment to the environment, as well the traditional cognitive and psychomotor outcomes. Furthermore, Melograno (1994) suggested that whilst assisting schools to define curriculum intent with greater clarity, student outcomes would allow the communication of student progress and provide a focus for teacher assessment of student performance. Demonstrating student achievement through a PE programme based on outcomes is also integral to the justification and evaluation of any educational programme (Matanin & Tannehill, 1994).

The assessment problems stated in this overview, were among the primary reasons why there is a global tendency towards an outcomes based approach to teaching and assessment. The

Western Australian Curriculum Framework is one such example. It is a holistic and integrated package, which emphasises the knowing, evaluating, participation in and determination of one's sense and level of well being. The rationale demands the coordination and cross-curricular interaction of individual teachers, departments and the school policy/curricular administrators. It is defined by five major outcomes; Knowledge and Understanding, Attitudes and Values, Skills for Physical Activity, Self-Management Skills and Interpersonal Skills (Curriculum Council, 1998). The diversity of the framework by nature suggests a complexity of assessment and evaluation procedures.

Physical activity has always been, and must remain, an integral part of the curriculum in every school system. However, physical educators must adapt to changing values and needs of society. The high technology/sedentary society into which we are being thrust, demands that students have appropriately sequential, generic PE knowledge and skills to provide the cornerstone of an active, vibrant and healthy lifestyle. Appropriate evaluation and monitoring of progress in PE is as important as it is with the commonly regarded generic skills of literacy, numeracy and communication.

Anecdotal reaction to the framework is not all positive; indeed, to determine the relative acquisition of all of the knowledge, skills, attitudes and values as defined by the outcomes appears demanding, if not impractical. The next phase is to measure the same parameters under an outcomes approach and compare the results with the findings of this review. Then it will be possible to evaluate whether an outcomes approach resolves any of the above mentioned fundamental problems expressed by PE teachers. The consistent use of valid, reliable assessment and grading techniques is important, as it helps describe and enhance student achievement in PE (Matanin & Tannehill, 1994). It will also strengthen the philosophical basis and delivery of PE, particularly in times of budget cuts and school restructuring. Currently, schools are under ever-increasing demand for curriculum time and, at a time of high public awareness of the values of physical activity, fitness and healthy lifestyles, school PE programmes must equip students with these values and skills, and be able to demonstrate successful achievement objectively.

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