Utilizing Goals in Adapted Physical Education

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Establishing goals for adapted physical education is of paramount importance. However, establishing goals is more than writing behavioral objectives and completing an IEP. Understanding and using goals is essential for effective teaching behaviors and ultimately for learning. For this purpose three important aspects of goals are introduced: intention, purpose, and meaning. A distinction is also made between primary and concomitant goals. The primary goals are the improvement of physical and motor fitness and the development and acquisition of motor skills. Concomitant means being achieved along with, and these goals include language, social, and cognitive skills. Also, a distinction is made between abstract concepts and concrete actions or tasks. Finally, providing information about the goal of each task is a major function of the instructor. Three modes of presentation are described. Goals may be specified symbolically (verbally), iconically (by demonstrations), or actively (by having the students move in a structured environment). Adherence to and further development of these concepts is important to the improvement of the teaching/learning process in adapted physical education.

The establishment of goals and objectives in adapted physical education is of paramount importance. One impetus for this belief comes from P.L. 94–142, the Education for All Handicapped Children Act, which mandates that goals be established for each individualized educational program (IEP). This includes both long-term goals (broad outcomes) and short-term goals, the latter being referred to as objectives or specific outcomes. The IEP also requires the evaluation of student progress, and this calls for an objective measure. One way to obtain this measure is to write goals and objectives behaviorally, that is, to state the goal in terms of the performance or behavior the student will exhibit and to state it in a way that is quantifiable. Therefore, much of the recent educational literature about goals has focused on the need to write objectives behaviorally and how this might be accomplished.

Goals and behavioral objectives are important not only in the evaluation process of the IEP (e.g., Fait & Dunn, 1984) but also in the actual implementation of the lesson (Arnheim & Sinclair, 1985; Sherrill, 1986). A goal is inherent in each specific activity or task. In the motor learning literature these goals are referred to as task goals (Saltzman & Kelso, 1987). Thus, goals and objectives

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are not only important in the writing of a formal IEP but are also necessary for maximizing the actual learning of motor skills. The significance of goals in learning is not only recognized by adapted physical educators (e.g., Arneheim & Sinclair, 1985; Seaman & DePauw, 1985; Sherrill, 1986) but has long been acknowledged by researchers in motor learning (see Magill, 1980; Oxendine, 1984). Harrow's (1972) work in taxonomy for the psychomotor domain has provided the foundation for establishing long-range goals in physical education. Similarly, Mager's (1962) conceptualization of the three components of a behavioral objective (performance, conditions, and criteria) has provided the basis for quantifying short-term objectives.

Certainly these efforts have enhanced the formal process of writing an IEP. Of course the intention of the IEP is to improve the teaching/learning process for students with varying capabilities (Sherrill, 1988). However, experience in the teaching laboratory suggests that student teachers often find it difficult to make the link from the formal IEP to the implementation of the lesson. Therefore there is a need to further conceptualize goals in order to relate them more directly to the teaching/learning process. This conceptualization must include linking task goals to the behavioral objectives required in an IEP.

The concepts and ideas presented here are taken from the motor learning literature, in which the term goal is used differently than it is in the educational literature. For example, behavior is viewed as being goal directed, that is, each act has a purpose that may be referred to as a task goal. Thus, a goal may be short term or what most educators consider to be an objective. However, for purposes of this paper the term objective is not used. Goals may be either long-range goals or short-term task goals. It is important for practitioners to make the connection between the goals they write down in the record and the purpose of the tasks they are teaching.

Four concepts that help tie goals as written in an IEP to the teaching/learning process are discussed here. First, the teacher must be aware of three distinct but related aspects of any goal. Second, the classification of long-range adapted physical education goals as primary and concomitant is viewed as important in the selection and implementation of goals. Third, an explicit distinction is made between goals that are functional (concrete descriptions of behavior) and goals that are abstract (descriptions of underlying constructs). Finally, task goals can be made explicit to the students via three modes of presentation. These concepts are introduced with a brief review of the motor learning literature that clearly establishes the importance of goals in learning and performing motor skills.

The Importance of Goals in Motor Learning

A goal may be defined as the purpose toward which an endeavor is directed. All skilled actions are goal-directed. According to Saltzman and Kelso (1987, p. 207), "Such goals are defined in terms of environmental outcomes that are relevant to the actor's desires and current behavioral repertoire." Gentile (1972), in her paper on teaching motor skills, emphasized the importance of making the goal of the task explicit to the learner, particularly for the initial stage of learning. However, knowing precisely the task goal may be equally important to highly skilled performers. Phillips (1986) noted that beginning typists and musicians focus on their fingers, but after hard practice the fingers are displaced to the "fringe
of the consciousness field, leaving the overriding goals of performance—musical or linguistic—in possession of the centre'' (p. 7). In action theory (Reed, 1982; Turvey, 1977) it is stated that the goal or intentionality of a task is important because it "determines the relevant information," that is, it determines the perceptual information required in planning and controlling the movement. From this theoretical perspective it would appear that the goal of the task is important at any level of performance.

Studies provide support for the view that it is important to use goals in physical education. Nelson (1978) found that the groups of college men given norms and goals performed better on endurance testing than did the group without such guidelines. Goal setting also helped students in beginning archery to achieve higher performance levels compared to having no performance goals (Barnett & Stanicek, 1979). Perhaps the most often cited study in goal setting in a motor skill learning situation was the one by Locke and Bryan (1966), in which a group of subjects was instructed to simply do their best in a matching task while a second group was given a specific goal to strive for. Results showed a faster rate of improvement as well as a better overall performance for the specific-goal group.

Empirical evidence demonstrating the importance of task goals also comes from motor control research in which unanticipated perturbations have been used to disrupt speech gestures (Abbs & Gracco, 1982; Kelso, Tuller, & Fowler, 1982), hand/wrist actions (Taub, Rothwell, & Marsden, 1980), and postural adjustments (Cordo & Nashner, 1982; Marsden, Merton, & Morton, 1981). These studies all demonstrated that the responses to perturbation depend upon the goal and context of the specific movement as well as the characteristics of the perturbation.

Goals, then, affect motor learning in several ways. For example, specific, difficult goals lead to better performance by affecting effort, persistence, and direction of attention, and by motivating strategy development (Locke & Latham, 1985). Specific goal setting helps learners focus their work and realistically evaluate their progress (Rink, 1985). Locke and Latham (1985) also suggested that feedback regarding progress is necessary for goal setting to work and that goals must be accepted by the learner if they are to affect performance. Thus, for the teacher engaged in the teaching/learning process, establishing goals is more than just writing behavioral objectives. Teachers must not only know what they want the student to learn but they must also relate that goal to the interests of the student. It is this latter responsibility in particular that sets the framework for the conceptualization of three aspects of a performance goal in adapted physical education.

Three Aspects of a Goal

In order to facilitate learning, goals must be carefully considered. The teacher must be cognizant of at least three aspects of a goal. Any goal in adapted physical education has what may be referred to as intention, purpose, and meaning. Goal was defined earlier as the purpose toward which an endeavor is directed. Intention is defined as "a plan of action; an aim that guides action" (Morris, 1975). The term is used here to mean the task the student actually does. It is akin to performance, in behavioral objective terminology (Mager, 1962). For example, the intention of a goal may be to climb to the top of a ladder. A second example of an intention may be to throw and catch a medicine ball.

Purpose is defined as "a result or effect that is intended or desired" (Morris,
The term is used here to mean that which the instructor perceives as important or what he or she wants to accomplish. Using the first example, the purpose of ladder climbing may be to improve climbing skills and/or to increase leg strength. In the example of throwing and catching a medicine ball, the purpose may be to improve throwing and catching skills and/or to increase upper body strength. The purpose then may or may not be the same as the intention. Achieving the task itself may be the purpose, or there may be some underlying construct such as strength improvement, or both may be the purpose. The behavioral objective in the IEP is written on the basis of the purpose.

Finally, the dictionary (Morris, 1975) defines meaning as "that which is interpreted to be the goal; intent or end." Meaning is also defined as "inner significance." It is appropriate, then, that meaning here be seen as the aspect of the task the student perceives as important, or what the student believes he or she is to do. Meaning is the reason the student does the task, that is, from his or her perspective. In the example of climbing the ladder, the teacher might say to the student, "See the race car [or whatever the favorite toy might be] on top of that ladder? Climb the ladder and get the car, and you may play with it the remainder of the class period." Getting the toy, then, is the meaning of the goal.

Any goal, to be successful, must have meaning to the student. In the medicine ball example, the meaning could be to "pretend you are Superman and stop the cannon ball," or it could be simply to improve catching skills and increase upper body strength. Thus, meaning can be different from or exactly the same as the intent and/or purpose. Meaning will depend on the individual student and requires empathetic consideration on the part of the teacher. For severely and multiply handicapped individuals, meaning may relate more to basic needs than to any higher order objective. For example, if the students are lying supine and plastic hoops are piled on top of them, it will require considerable effort on the part of the students to free themselves. The intent is pushing the hoops off, the purpose may be to increase the muscular endurance of the upper body, and the meaning is to free oneself from the obstacles.

Providing meaning to the task is to provide motivation for doing the task, and thus it is one of the teacher’s primary functions. There are numerous ways of providing meaning to each performance goal. A few examples will be given here. Children, particularly very young ones, respect teachers, and by request alone the teacher makes the task meaningful. For older children the influence of peers is often greater than that of teachers or parents. Therefore the instructor might show that the task is important to the student’s peers in order to provide meaning. Tasks that are challenging, novel, or in other ways interesting are also more meaningful. Whether the task is challenging or novel will depend upon the students. Meaning can also be enhanced with the use of external rewards or social praise.

Of course the first step is to understand that meaning is an essential aspect of any goal. The goals themselves come from those long established in the psychomotor domain. Generally speaking, broad, long-range goals do not differ among individuals, regardless of disability. Besides motor skills, cognitive and affective goals are important to all students and are perhaps given more emphasis when students are faced with multiple disabilities. For example, many students with motor disabilities also have language problems. Therefore the instructor may need
to consciously stress the use of language by these students while they learn motor skills, whereas language is often taken for granted in regular physical education classes. Likewise, students with behavioral problems require greater emphasis on the development of social skills that other students already possess. Sherrill (1988) noted that nondisabled children develop a healthy body image without special help, but not so for children with disabilities. Therefore the instructor must give special attention to the development of a positive self-concept for these children. However, it is important that a clear distinction be made between psycho-motor goals and goals in the cognitive and affective domains.

Primary and Concomitant Goals

All texts in adapted physical education place in one list goals from the psychomotor, cognitive, and affective domains without making any attempt to differentiate between them with respect to instruction. Few researchers or educators would argue with the fact that in any task there are aspects of movement, cognition, and affective behavior. It is also the case that some tasks, such as solving math problems, have as their primary goal the learning of a cognitive skill. Likewise, in the motor domain, motor skills and physical fitness are the primary goals of the tasks employed. Sherrill (1986, 1988) suggests that goals be prioritized in adapted physical education and notes that teachers place self-concept at the top of the list in most cases. The approach advocated here is to define long-range and performance goals as being either primary or concomitant. Those goals that are in the psychomotor domain are primary, and those in the other domains are concomitant. Thus there are two primary goals: the acquisition and improvement of motor skills, and the maintenance or improvement of physical fitness. There are several concomitant goals, including language development, self-concept, knowledges, and appreciations.

Primary is used here to indicate that the two goals listed above are the focus of adapted physical education. All activities used in adapted physical education must be aimed at achievements related to either or both of these goals. To say that something is concomitant is to say that it comes along with and not that it is of lesser importance. Thus, concomitant goals are to be achieved simultaneously with achieving a primary goal. The notion of primary and concomitant goals is not incompatible with Sherrill’s approach of prioritizing goals irrespective of domain. Self-concept could be the most important goal for the student in adapted physical education, and yet would be classified as concomitant. It would be achieved along with a primary goal. This classification is also not contrary to Corbin’s (1977) call for “higher order” goals in physical education. Learning to appreciate and understand movement is just as important as learning to perform the motor skill itself. However, such appreciation can be gained most easily while learning to perform the motor skill.

The issue is that too often, in teaching students with disabilities, the importance of motor skill acquisition is overlooked. Instead, emphasis is placed upon social skills such as attending to instructions and staying in line. These are important skills but should not be taught at the expense of achieving primary goals. It is sometimes thought that class control must precede the teaching/learning of motor skills. Teaching a child self-control, and thus having class control, is con-
comitant with teaching motor skills and in fact may be achieved more easily when
the student is fully engaged in an activity. Most of the time it is much easier to
attract the students’ attention with a movement activity than it is to get them to sit
quietly. It may be advantageous, in teaching, to begin with an easier task and
then move to the more difficult task. This idea is consistent with the notion of
skill progression and task analysis (e.g., Morris, 1980).

Physical education lessons should be built around primary goals. Several
years ago Billing and Dunn (1974) cautioned about the bandwagon effect that
perceptual motor programs were having on physical education. Perceptual motor
programs were being established on the notion that movement is the basis of all
learning. This concept was taken by some to imply that movement was important
for reading-readiness skills rather than being an end in itself. Perceptual motor
programs were replacing traditional education programs. Billing and Dunn duly
pointed out the problem with that notion. If learning movement skills was impor-
tant not in itself but only as a means to academic achievement, what would happen
to physical education when a more effective means was discovered? To further
underscore the point, consider the teaching situation wherein language is a primary
goal for the student instead of a concomitant goal. It would be much more appro-
priate in most cases to achieve this goal by using activities other than motor tasks,
even watching television. The point to be made is that each activity in physical
education must include at least one primary goal; if it does not, then it is not
physical education.

**Theoretical Constructs Versus Functionality in Goal Setting**

It is important for physical educators to recognize the difference between goals
that refer to theoretical constructs (as in the case of fitness) and those that refer
to actions that are functional (as in the case of motor skills). Motor skills are
actions in the sense that they are things one does. They are functional and purpose-
ful. On the other hand, physical fitness components are abstract concepts, not
actions. One catches a ball but does not “do” body composition or even strength.
However, one can perform actions that improve body composition and increase
strength.

This distinction between functional activity and concepts is of both theoretical
and practical importance. It is important from the larger perspective of classifi-
cation (cf. Davis & Rizzo, in press; Ghiselin, 1981), but it is also important in
the planning of goals and activities in adapted physical education. Educators must
understand whether the activity is to achieve a functional goal or is aimed at
improving some hypothesized underlying construct, an abstract goal. Often tasks
can be aimed at both. This has an advantage, since it is yet to be established whether
many specific motor skills should be taught or whether a few underlying abilities
or fundamental skills are to be taught. The former is referred to as a top-down
approach and the latter as a bottom-up approach (Auxter & Pyfer, 1985). Although
there has not been, as yet, any adapted physical education literature of the top-
down versus bottom-up issue, there appears to be controversy as to which one
is the most effective.

By taking a functional approach to teaching activities aimed at a hypothesized
underlying ability, one can address both approaches. A primary example is the
belief that balance is an ability that underlies the learning and performance of most skills and that can be taught as a general ability. Although this position is not yet supported by empirical data (Newell, 1977), one can include activities (actions) that require the maintenance of balance. However, instead of just trying to increase the number of steps or the amount of time on a balance beam, as is often done, one should make the task more meaningful. This is illustrated in the following example (see also Burton, 1987). Balancing would be made meaningful to many students by having them imagine the beam as a bridge across a river full of alligators. Most students would recognize the importance of not stepping off. Even more meaningful would be the activity of actually crossing a small stream on rocks or on a log. In this case it would not be necessary to have real alligators. Pretending they were there, or even just the thought of getting wet, would make keeping one’s balance meaningful.

In this example the intent is to walk the bridge, the purpose could be to improve balance, and the meaning is to stay out of the water. The task of course becomes more functional for the students and in this way more meaningful. Thus, one way of making tasks meaningful is to make them functional or purposive (see Burton, 1987, for more examples). This approach to learning motor skills is consistent with Gibson’s (1977) theory of affordances. An affordance is the functional utility of an object for a person with certain action capabilities. It is the perception of what the environment affords that guides actions (Gibson, 1977, 1979). It may be useful to approach the teaching of motor skills in terms of their functional utility for the students who are to learn them.

**Modes of Presenting the Goal**

Deriving activities that are meaningful is a major function of the teacher. Equally important is to communicate to the student the purpose of the task as well as its meaning. It was noted earlier that knowing the goal is essential to the learning of motor skills at any stage. Presenting goals is not as straightforward as might be assumed (see Newell, Morris, & Scully, 1985). First, in nearly all cases physical educators and other instructors of motor skills assume that the students know what the goal is or that they will understand from a simple explanation. It may be presumptuous to assume that persons with severe disabilities easily understand the meaning and purpose of the task the instructor wants them to learn. In other words, the meaning and purpose may need to be uniquely provided, and suggestions for doing this are described below.

Second, given that the goal is known, the information provided has more to do with coordinating the action, that is, the movement kinematics, than with the goal. Of course in some cases, as in many gymnastics routines, the movement pattern is the goal. However, the movement pattern is also emphasized in teaching other skills, such as throwing and jumping, from a developmental perspective (Roberton & Halverson, 1984). Although the movement pattern itself is often emphasized, it is important not to forget the goal, especially the meaning of the goal. Students, particularly at the initial stages of learning, may be better served by focusing attention upon the task goal rather than the kinematics of the movement. The goal of the movement defines the task, not the movements themselves. For example, raising a clenched fist may have several meanings ranging from knowing the answer to a question to signifying black power.
Task goals do vary from task to task. For some, the importance lies with the outcome and not the movement kinematics per se. For example, shooting the basketball into the hoop is the concern, not the style of shot used. On the other hand, gymnastic routines require precise movement patterns, that is, a specific set of topological kinematic characteristics (van Emmerik & Newell, 1987) as required by the rules, whereas forging another's signature requires attention to both topological and metrical characteristics (Newell & Carlton, 1987a).

The foregoing discussion should not be construed to mean that the importance of the movement kinematics is to be overlooked. The kinematics, as an expression of the kinetics, do determine the outcome. The difference between the approach advocated here and a strict developmental one is the focus of the student's attention. There are ways of changing a child's movement pattern while he or she concentrates on throwing a ball as far as possible (to reach a distant target). For example, have the child face the target with the contralateral side and bring the arm back by actually moving him or her into position each time if necessary. This will help the child get greater body rotation and still allow him or her to focus on the target.

Further, when emphasis is placed on the movement pattern rather than the outcome, it is assumed that the optimal pattern, as seen qualitatively in the movement, is known for each skill and applies to everyone. There is little empirical evidence to support this assumption, even for students without disabilities. Thus it is presumptuous to believe that the movement patterns as described in the literature for a given motor skill (e.g., Wickstrom, 1983) are appropriate for students with disabilities. Neither should it be assumed that they are not. In these cases the instructor must help the students discover the movements best suited to them, keeping in mind that the task goal is the outcome. As stated earlier, it is the goal of the task that provides the information for the movement pattern.

A third source of confusion is the nature of the information being provided. In providing information about the goal, or providing knowledge of results, as is more often the case, instructors and researchers alike often associate the information with the mode of presentation or with the perceptual systems rather than with the type of information given (Newell et al., 1985). What the information specifies is the most important aspect, not which perceptual systems are used to detect the information (Davis, 1983; Davis & Rizzo, in press).

Following Gibson (1966, 1979), Lee (1978) has suggested that three types of information are needed for planning and controlling movement. He classified information about movements of the body parts relative to the body as proprioceptive, information about the layout of the environment, objects, and events as exteroceptive, and information about movements of the whole body and body parts relative to the environment as exproprioceptive. These terms classify information as it relates to the functional activity of a perceiver. Exteroceptive information is used in planning movements, proprioceptive is used in controlling movement, and exproprioceptive is used in both (Lee, 1978). Notably, each type of information is obtainable by more than one sensory system.

Information about the goal of the task is information for planning the movement, or exteroceptive and exproprioceptive information. This may be considered as information obtained prior to the movement. As previously implied, most researchers discuss information only in terms of feedback, or information after
the task. Notable exceptions are Lee (1978) and Newell (Newell, 1981; Newell et al., 1985; Scully & Newell, 1985). However, it should be pointed out that information is continuous rather than discrete according to Gibson (1966, 1979). Thus, information about the outcome of a previous performance is potential information for use prior to the next practice trial. In this sense feedback and feedforward are indistinguishable. This view contrasts with the popular information processing view of perception and action.

With the above discussion as a backdrop, methods of presenting goals can be classified according to Bruner’s (1965) three modes of representation. Information can be presented by the teacher in symbolic, iconic, or active form (enactive is Bruner’s term). The primary means of symbolic presentation is verbal explanation. This is the most common method used in physical education, and it is often accompanied by a demonstration of the skill or task to be done. Demonstration is equated here with Bruner’s iconic mode, which means using a representation or picture. A demonstration provides a picture of the kinematics of the movement to be done. Demonstration, or modeling, is an important part of social learning theory (Bandura, 1974). However, the effectiveness of demonstration in motor skill learning is less clear (Gould & Roberts, 1982; Newell et al., 1985; Scully & Newell, 1985).

By actually doing the movement, students obtain information about the movements through the perceptual systems. This is the active mode, and the information is thought of as being concrete rather than abstract. The performer also requires information about the outcome of the movement. Concrete information about the goal of the task can also be obtained from the structure of the environment. For example, targets with clear, precise information about their center provide information that specifies accuracy as the goal (Davis, 1984, 1986). Increasing the distance from the target to the throwers specifies that greater force is the goal. If the goal is to get persons with severe and multiple disabilities to move in any fashion, then placing plastic hoops on top of them conveys the message. These examples illustrate the point that structuring the environment so that it invites or even forces students to move is a way of presenting the goals of various motor tasks. For instance, layout of surfaces, lines on the floor, and placement of objects can be used to show what kind of running movement is wanted or how far the student is to jump.

The active mode appears to be the most salient for learning and performing movement skills. Some empirical evidence supports this notion, at least for simple movements (Kelso, 1977). However, it is the symbolic and iconic modes that are most often used by teachers. That is, teachers most often explain while they demonstrate the way the task is to be performed. Research suggests that the kind of information provided depends on the interaction of task constraints and performer characteristics (Newell & Carlton, 1987b).

Demonstrations may be the least effective means of providing feedback to students not experienced with the skill (see Scully & Newell, 1985, for a review of the demonstration and observational learning literature). It is important to give careful consideration to the structuring of the environment in order to provide information about the goal of the task, and then to help students attend to this information. For example, teachers often tell students, “Keep your eyes on the ball,” but they are not as quick to point out the visual information needed in
guiding locomotion. In adapted physical education it is also necessary to be aware of any disabilities related to the perceptual systems used in obtaining information, such as visual impairments.

Summary

Establishing goals in adapted physical education is more than writing behavioral objectives and completing an IEP. Understanding goals is essential for effective teaching behaviors and ultimately for learning. For this purpose, three important aspects of goals were introduced: intention, purpose, and meaning. A distinction was also made between primary and concomitant long-term goals. Third, the importance of recognizing different categories of goals as they relate to the abstract nature and functionality of tasks was discussed. Finally, providing information about the goal of each task is a major function of the instructor and one that is not understood as well as it might appear. Three modes of information presentation were described. Goals may be specified symbolically (verbally), iconically (by demonstrations), or actively (by having the students move in a structured environment). Although all three modes are important, the latter is believed to be the most effective and the one least employed by instructors. Adherence to and further development of these concepts is important to the improvement of the teaching/learning process in adapted physical education.

References


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1Although the principles discussed here are presented in an adapted physical education context, they would apply to physical education in general.

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