

FOCUS ON EXCEPTIONAL CHILDREN

Motor Development for Special Populations: Issues, Problems, and Operations

Bryant J. Cratty

Historically, the use of movement activities for various special groups of people has paralleled the interest of individuals and societies in exceptional populations. Centuries before the birth of Christ, physicians in the Orient, Greece, and India were caring for the needs of physically handicapped people with exercises, which in modified forms are a part of contemporary therapy programs (Licht, 1965). Still later, at the end of the 1700s, sensory-motor activities began to be applied to those with sensory handicaps, and the retarded as exemplified by the work of Sequin and the legendary book, *The Wild Boy of Aveyron* (Itard, 1932). Marie Montessori used movements of both the larger and smaller muscle groups in formulating her program for the culturally deprived in the slums of Rome around the turn of this century. After World War II, the learning disabled segment was exposed to various movement tasks (Getman, 1952; Ayres, 1972).

The programs of still other exceptional groups might be enriched with movement activities designed especially for them. These populations include the gifted and the developmentally disabled young adult. And the special movement needs and capacities of the deaf and hard-of-hearing still have received only cursory attention by both researchers and practitioners (Cratty, 1980).

The historical antecedents just cited, along with firsthand observation, prompted the insertion of various types of movement imperatives in Public Law 94-142, exemplified in statements of objectives and in descriptions of program content for handicapped groups. Thus, one is now able to find a variety of delivery systems in both general and special education incorporating efforts to enhance the movement attributes of various atypical populations (Gearheart & Weishahn, 1976).

Dr. Cratty is Professor of Kinesiology and Director of the Perceptual-Motor Learning Laboratory, University of California, Los Angeles.

For the most part these attempts at enriching movement experiences are useful, and the practitioners involved are often capable, energetic, knowledgeable, and well motivated. But sometimes school districts have employed part-time help with sketchy backgrounds, merely to throw balls at special children and youth 15-20 minutes a day for one or two sessions each week. Efforts in this latter case may be meeting the letter of the law but not the intent of PL 94-142.

At times, when time and experience permit, the adapted physical education teacher, physical or occupational therapist, or another whose responsibility involves incorporating movement experiences into special programs formulates credible, achievable goals when writing the individualized education program. Other times, when both experience and time are lacking, the IEP meeting is superficial and the written goals involving motor development tasks are unachievable, less than meaningful, or developmentally unsound.

To provide meaningful services for the physical needs of youngsters and adults with special problems, certain issues must be confronted and problems solved. Such confrontation should result in reasonable and sound operations, which in turn are likely to produce real change in the movement capacities of those served.

One can easily pontificate about what should be done, but one must also realize that school districts are being confronted with the most difficult kinds of decisions. On one hand, taxpayers, by their support of PL 94-142

and other legislation at the state level, are demanding increased services. But these same taxpayers meanwhile are pleading to cut the "meat" out of the often sparse budgets required to supply these essential kinds of educational enrichment. With these conflicts in mind, I will outline what I perceive as some of the most important issues within the context of motor development services for exceptional students, and then outline certain operational procedures that may be useful to consider.

ISSUES AND PROBLEMS

1. Who should receive motor development services and in what form?

Simply mainstreaming a handicapped youngster within a regular school's academic program may not go far enough when the child is faced with the school's physical education program. Even recess may prove trying. To illustrate the kind of problem that might arise — I received a phone call recently from a mother of a young girl with spina bifida. The mother reported that her daughter was doing fine in the academic program and had a heightened feeling of self-worth upon realizing that she was equal or superior to many of her "normal" classmates. In informal play and during physical education, however, the girl was experiencing anguish. The difference between her own physical capacities and those she observed in the other children seemed "overwhelming", the distraught mother told me. While my response was perhaps more tranquilizing than truly helpful, the realization remained that the girl was being served well in one sense — in that the concept of "least restrictive environment" was being met within the classroom — but the environment in which the child had to play and function physically was proving to be more restrictive both physically and emotionally than that of the school for the handicapped that she had attended previously.

Physical activities for special children and youth range from imperatives needed by the obviously physically handicapped (Cratty & Breen, 1972) and the profoundly and severely retarded (Edgar, 1970), through helpful modifications required by the moderately and mildly retarded, sensory handicapped, emotionally disturbed, and learning disabled, to what might be termed "helpful and creatively different tasks" for the gifted. Schools should take care to provide a reasonably exact "fit" in physical development services for the handicapped. Permitting a child in a wheelchair to merely keep score or administering physical activities for typical

FOCUS ON EXCEPTIONAL CHILDREN (ISSN 0015-511X) (USPS 201-360) is published monthly except June, July, and August as a service to teachers, special educators, curriculum specialists, administrators, and those concerned with the special education of exceptional children. This journal is abstracted and indexed in *Exceptional Child Education Resources*, and is also available in microform from Xerox University Microfilms, Ann Arbor, Michigan. Subscription rates, \$13.50 per year. Copyright 1980, Love Publishing Company. All rights reserved. Reproduction in whole or part without written permission is prohibited. Printed in the United States of America. Second class postage is paid at Denver, Colorado. POSTMASTER: Send address changes to

Love Publishing Company
Executive and Editorial Office
1777 South Bellaire Street
Denver, Colorado 80222
Telephone (303) 757-2579

EDITORIAL BOARD

Edward L. Meyen
University of Kansas

Glenn A. Vergason
Georgia State University

Richard J. Whelan
University of Kansas Medical Center

Carolyn Acheson
Senior Editor

Stanley F. Love
Publisher

children without regard for a handicapped student in their midst is not serving his or her needs. Likewise, allowing an emotionally disturbed child to remain on the fringes is not being sensitive to his or her needs.

Rather, many special children and youth may be exposed to a helpful mix of both special and regular educational services throughout a school day. The prevailing policy should be one that provides for optimum integration of given attributes, including physical capacities, of special and regular services within the school program — not one that mindlessly places atypical youngsters with typical ones in all phases of the school curriculum, to sink or to swim as best they can.

Among the variety of delivery forms of enrichment in motor development are the following possibilities:

- (a) the help of a "student guide" in a regular physical education class;
- (b) special physical education classes catering to certain motorically deficient children and youth in regular school settings;
- (c) traveling physical development teachers who would work on a 2:1 or 3:1 ratio with physically impaired children in regular school settings;
- (d) special physical or occupational therapy services to which handicapped children might travel or which may be provided, by an itinerant physical therapist (PT) or occupational therapist (OT) during visits to regular schools twice a week or so.

2. How many types of services should be offered within a physical development program?

The content of a physical development program may vary greatly depending upon the available time and resources, the expertise and background of specialists assigned to the job, the philosophy of the school district, and specific needs of individual children needing services. The more expansive programs provide a broad range of movement experiences including rhythmic, sports skills, fitness activities, and the like, along with manual dexterity tasks, self-care skill development, relaxation training intended to reduce hyperactivity, practice in printing and writing, and activities designed to reduce manneristic behaviors.

More and more people are earning graduate degrees focused on the physical needs of special children and youth, and so are becoming better equipped to provide the breadth of services described. At the same time, the roles of the PT and OT are becoming defined more broadly than was true during the 1960s and early 1970s.

Thus, I think that in the decade ahead the physical development specialist will more and more provide special children, youths, and adults with a broader range of services including those listed above. These specialists may improve the physical capacities and skills of youngsters in direct ways as well as by serving as helpful consultants to classroom teachers.

3. What are reasonable goals to expect from the application of a physical development program to special populations?

Hopefully, the presence of better educated motor development specialists within school systems will:

- (a) bring about an increased ability to provide the breadth of services discussed under issue 2, above;
- (b) enable interpretation of research findings; which in turn will
- (c) subject expansive claims made for motor development activities to rational and scientific scrutiny (Freeman, 1967; Hamill, 1972; Glass, 1967; Hamill & Wiederholt, 1972.).

For the most part, research indicates that the folksy axiom heard in many contexts applies when attempting to formulate reasonable goals for a motor development program for special populations: "You get out of something what you put into it!" Stated in another way, one had better include in a motor development program content that corresponds rather closely with stated goals or one may be disappointed with outcomes (Cratty, 1972; Seefeldt, 1974).

The research indicates that, within limits, movement capacities may be improved if children and youth are exposed to properly sequenced, reasonable movement tasks (Cratty, Ikeda, Martin, Jennett, & Morris, 1970). This improvement is more likely if the children are younger and the movement problems are moderate rather than severe.

Many of the surveys by numerous writers over the past 15 years stating expansive claims for outcomes of movement programs are less than realistic (Myers & Hammill, 1976). One must focus rather directly upon the specific type of movement capacity one is hoping to change. Rolling on the floor or otherwise subjecting a child to a variety of activities using the larger muscle groups is not likely to help him or her print better or exhibit better self-care skills, which require use of the smaller muscle groups.

Crawling on the floor, patterning, scooter board work, and balance activities, if applied intelligently, may aid certain movement capacities. But assertions

that these and similar sensory-motor experiences will somehow influence higher thought processes; auditory and visual perceptual skills, reading, and other academic activities are not supported by the available research.

Motor development specialists of a variety of titles, somehow seduced by the "movement magicians" whose ideas have found their way into print, may initially recruit enthusiastic volunteers, easily collect monies, and gain support to institute what appear to be viable programs. Later, however, evaluation of the outcomes of such programs by more sophisticated specialists within the district may bring embarrassment to many well meaning but misguided zealots.

To provide a sound program of motor development, a rather close correspondence should exist between three components:

- (a) the list of objectives put forth;
- (b) the nature of the content of evaluation devices employed before and after the program takes place; and
- (c) the activities offered to participants on a daily basis.

4. *What skills focusing on atypical populations should motor development specialists possess?*

More and more useful legislation at the state level is specifying the critical skills needed by those who impose motor tasks upon handicapped children and youth. Now, these individuals may be required to have, in addition to regular teaching credentials, physical education, special education, and, often, advanced graduate work in their specialty. As a result, these people are more likely to bring to the job a useful balance between practical and applied skills gained via internship programs and a theoretical sophistication enabling them to determine *why* they may be exposing a given child or youth to a given task or tasks.

This enlarged background is also spawning people with finely honed assessment skills that should enable them to:

- (a) evaluate the technical integrity of a given test or test battery including assessment of its reliability and validity as well as a careful look at the population upon which it has been normed;
- (b) formulate developmentally sound, sensible, situation-specific checklists for use by various handicapped groups. Such lists may be useful, for example, in attempting to determine improvements that may be made within a given school's environment and classroom situation by children confined to wheelchairs (Cratty, 1980);

- (c) construct useful test batteries by selecting from among those available either entire testing instruments or selected parts of more than one instrument which, when applied, will yield useful information before, during, and after application of a motor development program.

Finally, motor development specialists should possess patience and warmth. These qualities may be ascertained in advance by taking a look, before making a permanent job offer, at the way in which they relate to special populations while they serve as part-time aides or volunteers.

5. *How can people from more than one discipline be aided in working together to optimize the motor development of a given child or a group of atypical children, youths, or adults?*

A lack of supervision or integration of physical services may cause less than optimum outcomes and even regression in an individual's physical capacities. For example, a physical therapist may be training a child with spastic cerebral palsy to walk by reducing the tendency for a scissor-like gait. During another part of the day, a well meaning but maladroit swimming instructor may be teaching the elementary backstroke—and thereby strengthening the muscles that *cause* scissoring. At still another point in the school day, the traveling "perceptual-motor lady" may take an apparatus from the back of her station wagon and proceed to decrease the capacity for a wide, stable gait pattern by placing the child on a narrow balance beam.

To cite yet another example, a robust physical educator, assuming that the "drainage theory" of physical activity is valid, may attempt to calm hyperactive children by exposing them to vigorous exercise. In truth, however, he or she is probably raising their activation levels too high for any kind of meaningful academic work that is to follow the physical activity.

I once observed an army of specialists working with a number of profoundly and severely retarded individuals in a large, expensive facility. These specialists, in their own sessions, were requiring what in sum were virtually identical tasks. The speech therapists, occupational and physical therapists, physical educators, and dance specialists were, unknown to each other, eliciting the same responses despite what each "specialist" considered his or her special type of effort.

Integration of services is not difficult. It primarily requires frequent, continual communication between and among movement specialists and others concerned for the clients' welfare. The legislation requiring IEPs

is serving in some ways to reduce the types of problems mentioned above.

Many other issues could be mentioned, most of which are interrelated and are modifications of those already presented here. Four of these are briefly suggested below, and the following discussion of various operations alludes to the same and other issues.

— Formulating reasonable administrative and supervisory structures and policies to promote motor development program components is important. At present, budgetary situations tend to restrict the number of adequate supervisory personnel. And those who do function in that capacity often do not have the appropriate academic background and techniques to supervise therapists, adapted physical education teachers, and others interested in motor development. Or their supervisory duties are so fragmented that enhancing motor development occupies only a small part of their time and mission. Legislation at the state level, to provide for supervisors with graduate level degrees in motor development as overseers of adapted physical educators and others, seems advisable.

— Adequate provision for meaningful parent participation in motor development programs is usually lacking within the school system. The following section speaks to the issue of operationalizing this kind of interaction.

— Policies are needed to provide adequate guidelines for evaluation, and at times to impose restrictions upon the kinds of things motor development specialists are permitted to evaluate. At this writing, one of the larger school districts in the country, with the help of a university teacher-educator in physical education, has provided its adapted physical education teachers with an evaluative instrument containing numerous items that purportedly evaluate visual-perceptual functions. The real danger in an unqualified person using such an instrument is the perhaps spurious assumption by parents that if school personnel involved in the evaluation find no visual problem, none exists; thus, parents will be less inclined to seek further help for their children from professionals trained to detect atypical vision and ocular function.

— Policies are needed to spell out exactly how much time should be allotted for direct contact between a motor development specialist and a child each week. With mainstreaming this direct contact has often been drastically reduced because the time spent traveling from school to school is interpolated into the specialist's working day. Any real change in a child's motor competencies, however, will not take place without

a minimum of two to three contacts per week between specialist and client, with each session lasting 20-45 minutes.

OPERATIONS/PROCEDURES

The operations and procedures discussed here bear upon the quality of service rendered to pupil. The guidelines are based upon optimizing contact time between motor development specialist and child or youth, yet are reasonable in relation to the budgetary circumstances confronting most school districts.

1. *Providing for facilities and equipment.*

Maximum use of facilities and equipment may be encouraged by considering the following ideas:

- Equipment, balls, and the like need not all be "store bought." The mark-up for relatively simple equipment and apparatus is great. As an alternative, many pieces of equipment may be made by the children themselves. Often, the special ownership and feelings about equipment like beanbags are enhanced if the children themselves have made them (Corbin, 1972).

- Special children could be accorded playground and gym use, with proper supervision of specialists, at times when the other children are not using these facilities. Self-conscious children with motor problems do not usually enjoy having their more competent peers judge their progress toward achieving adequate play skills, and hyperactive children can become more focused if they are not subjected to the confusion of the usual playground situation.

- Cubicles, or carrels, may be helpful to distractible children who are involved in crafts projects.

- Studies have shown that the modifiability of play materials enhances both physical and mental participation by youngsters of all ages (Cratty & Breen, 1972). Thus, for example, giving children large sheets of thin plastic often prompts a variety of construction behaviors, and a water source further enhances the activity (a system of "lakes?"). Large IBM printout sheets similarly prove stimulating to groups of children in a play situation. I once observed a young group of atypical youngsters beginning to construct "buildings" of IBM sheets early in the day. Later, artistic paper-tearing activities evolved, and by the end of the day the paper had been reduced to "snow," which was sprinkled on the heads of all participants!

- Equipment normally purchased for the gymnasium—large, foam-filled mats, for example—may be constructed with the contribution of scraps from a foam-furniture shop, which are bundled within a large,

old volleyball net. This type of mat may be constructed in various shapes and used as a downhill or uphill surface, or as a level, soft, therapy-like mattress.

2. *Proceeding developmentally.*

No practitioner of the "motor development arts" can be too well-versed in the sequences and subsequences permeating the motor development patterns of normal children (Cratty, 1979). The adapted physical educator and others should be aware, for example, of the subsequences involved in crawling (i.e., a hand-knee support, then reaching out, then a random-pattern crawl, and finally a cross-extension crawl).

Similar knowledge of the subsequences of scribbling, to cite another example, represents a tool in what may be termed "parallel-scribble play" alongside a motorically deficient youngster (Keogh & Smith, 1967). As a result of this strategy, the youngster is encouraged indirectly, through the teacher's efforts, to be gradually stimulated by increasingly sophisticated types of scribbling — efforts that promote the control needed to form primitive geometric figures and, later, letters. An excellent text by Rhoda Kellogg (1969) provides guidelines for this type of early enrichment.

As the child attempts to print, the motor development specialist should be familiar with developmental sequences of figures that may be drawn (i.e., first a + then a O, then a square, triangles, and so on). During this stage templates may be constructed to aid the child in partially making figures and letters and then, after removing the template, completing the figures. Examples of both inside (easiest to manage) and outside templates are shown in Figure 1.

Motor development specialists should also be familiar with the order in which lines are drawn in various directions relative to the body and the order of difficulty of various block printed letters, rather than starting by asking the child to print his or her name. Right angle letters are easiest (e.g., H I T), then circular letters (C C), then combinations (B P), and then slanted lines (X V K W A) and those combining curves and slants (R). The compound curved S is the most difficult.

My text in adapted physical education (Cratty, 1980) contains numerous sequences and subsequences underlying the important act of walking. These sequences should be kept in mind, particularly when more than one motor specialist converges on a given youngster each day or week. The specialists should consult each other about meaningful substages, where the child is at the present time, and the best way in which to move the child upward and forward.

Among the other sequences and subsequences of which the motor development specialist should be aware are the following:

- Intercepting a thrown or bounced ball is not a first step for motorically handicapped children. If a child cannot manage this, balls of various shapes, sizes, and weights should simply be passed from hand to hand, and held. Also, balls should be rolled, and trapped, first in a seated position and later standing. These things should be accomplished before asking a motorically deficient child to catch a ball of any size. A first step for many handicapped children may be to merely watch a moving ball.

- The use of beanbags may not aid ball catching because the hands have to "give" as a ball is contacted and this is not necessary in catching a beanbag. Beanbags, frisbees, and other missiles, however, should be experienced by all children, including the handicapped.

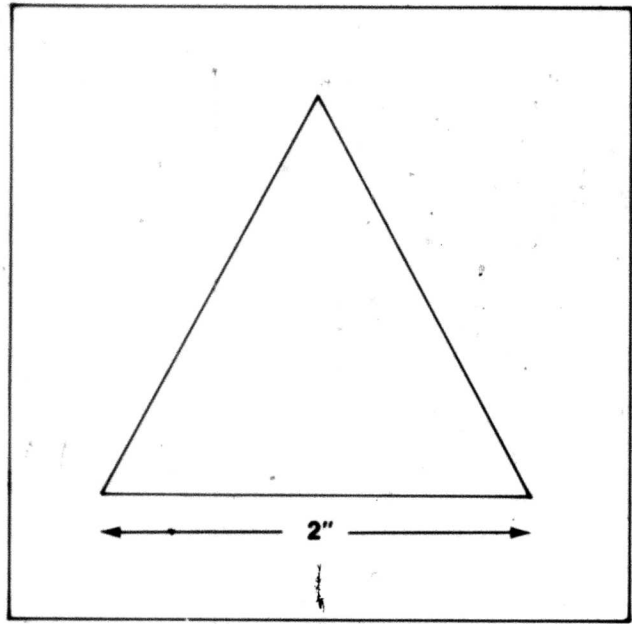
- The stages in throwing a ball are first to give it impetus with the hands or feet, then to propel it without any weight shift (usually two-handed at first), then to make a weight shift, stepping with the foot on the same side as the throwing arm. Finally, the mature throw requires a simultaneous weight shift, using the leg opposite to the throwing arm. By having the child on a small tilting platform when releasing the ball, the weight shift may be heard and exaggerated.

- Developmentally sound ways to proceed with various rhythmic movements are based, for example, on the fact that vertical and horizontal movements are easier than lateral and spiral movements. Failure of a child to participate successfully in the best intended rhythmic program may result if a teacher ignores these sequences.

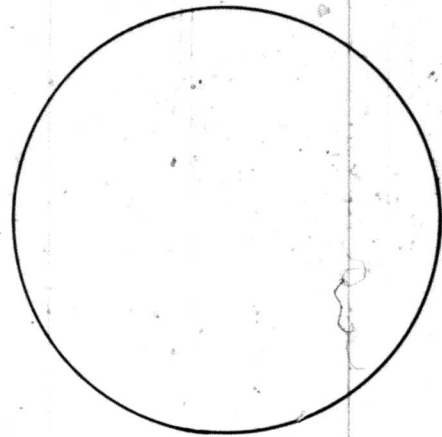
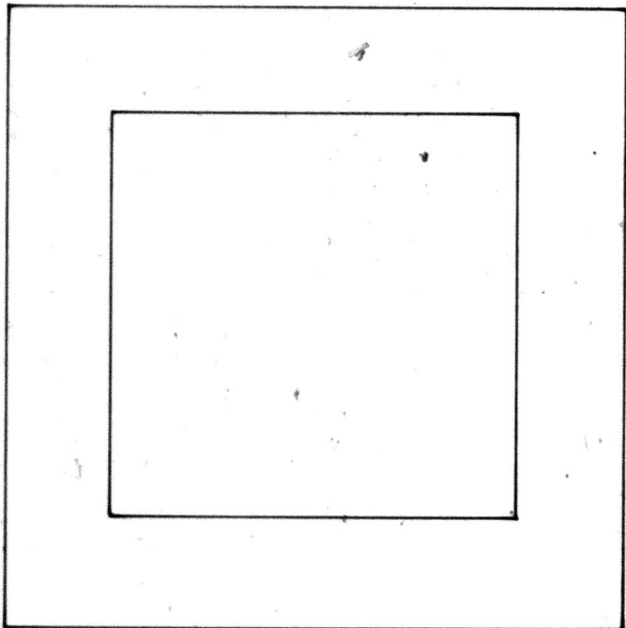
This main purpose of possessing a detailed knowledge of developmentally sound sequences relates to the formulation of valid, useful program content. Many subpopulations of atypical children and youth, including the retarded, emotionally disturbed, and motorically deficient, evidence marked insecurities when confronted with physical tasks. Their background of failure has led to a disinclination to exert effort in motor skills, and this in turn leads to a further reduction of capacities.

To reverse this failure syndrome, the sensitive instructor should first introduce tasks that are slightly below the students' skill levels—tasks that permit a build-up of success. As success is realized, more difficult tasks slightly ahead of the individual's level of function should be introduced gradually in order to promote positive change and elicit progress.

In determining what tasks are likely to produce success and those that are likely to be slightly difficult, one must be aware of the performance level of



inside templates



outside templates

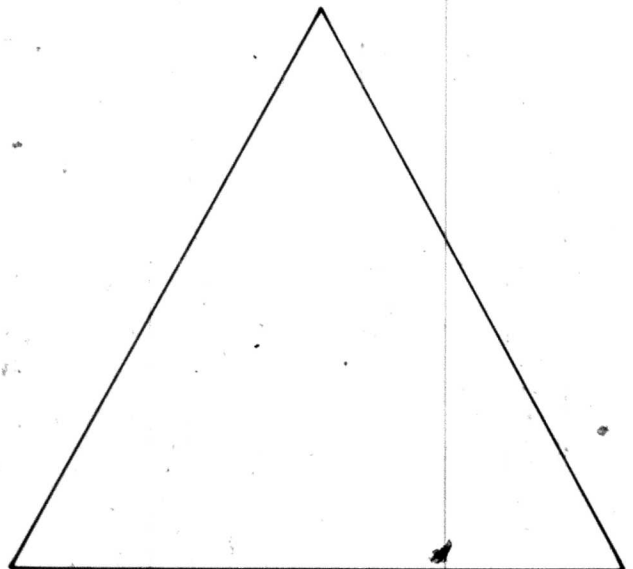


Figure 1
EXAMPLES OF INSIDE AND OUTSIDE TEMPLATES

a given individual and group and, thus, which tasks are likely to be achieved, and which tasks are likely to elicit change through the promotion of slight stress. To make these important judgments, one must be aware of the nature of several motor task sequences normally seen in the maturing child and youth:

3. *Helping in therapy.*

One of the most frequently seen mistakes when observing uninitiated or inexperienced people work with atypical children in motor activities involves overenthusiastic help. A therapist may literally carry the child through some tasks (e.g., walking a balance beam). On the other hand, the experienced therapist affords a child minimal help in motor tasks. The exercise should be done by the child, not the therapist! Thus, the good therapist molds the child's actions with minimum help at critical times. If a child seems to seek or require too much help, the experienced therapist reduces the difficulty of the task (e.g., by taking the child off a balance beam and instead having the child work on walking lines painted on the ground) or perhaps gives the youngster some relaxation activity so he or she will be able to approach the task less fearfully.

Overassistance not only may fail to produce any real change in the motor capacities of the client but, if the assistance is too vigorous, may actually prove counterproductive. A child's struggling movements imposed on the nervous system can produce patterns that are antagonistic to those required in various tasks.

4. *Using physical activities to enhance intellectual growth.*

Several publications over the past decade have suggested helpful ways to aid learning through movement activities. Such learning games, using action, can promote the acquisition of important academic, intellectual, and social-psychological abilities (Cratty, 1975, 1981; Mosston, 1972; Gilbert, 1977). If applied well, they prove motivating to those exposed to them and at the same time provide obvious evidence to the observing teacher of the nature and rate of learning taking place.

In essence, these games are based on the premise that movement can improve intellectual and academic abilities to the extent to which these abilities are combined with movement tasks in *direct* and *obvious* ways. The question that motor development specialists should ask, however, is whether both motor development and academic progress are possible, given the time constraints and other areas of learning required. At times, promoting both is possible. At other times, academic/

movement games are best left to the classroom teacher of younger or developmentally handicapped individuals. In our studies we have found that moderate physical improvement was elicited at the same time children were using movement activities to expand their prereading, reading, and spelling skills. We also found that the most improvement in *physical* skills accrues from programs designed to enhance physical rather than mental attributes (Cratty et al., 1970).

5. *Involving the parents.*

School district personnel, particularly those involved in improving movement capacities of children, often pay lip service to parent involvement. These same individuals, however, often confidentially relate their difficulties in achieving the cooperation of parents in devising physical development programs for atypical youngsters.

Parents of nonhandicapped children often have a hard time gaining the cooperation of their children in the development of new skills. The frequency with which parents reward and punish their offspring tends to blunt their efforts at motivating their progeny to attempt and improve in new skills. Not surprisingly, then, parents of atypical youngsters, where relationships with their children may be more strained, similarly have difficulty initiating home practice sessions that would aid and enhance their child's motor development.

At the same time, little technical support is offered to parents in this regard. Workshops in which "experts" pontificate are sometimes sponsored by school districts for participation by teacher-professionals and parents alike. But parents' vital questions may remain unanswered because of the reluctance of many parents to speak out in front of professionals whom they may perceive as more knowledgeable than are they.

The following operations may be helpful toward gaining parent participation in motor development programs for atypical children, youths and young adults.

- Workshops could be designed specifically for parents, with the basic purpose of meeting their needs for information. These workshops should be as practical as possible, and conducted either by "experts" or by knowledgeable members of the school district staff. Parents should be encouraged to listen, to ask questions, and to participate in the movement activities themselves, so they will be able to better understand the potential benefits. A parent who is unenthusiastic and who places little value on physical activity is unlikely to "sell" its advantages to either normal or atypical youngsters.

- The use of balance activities, as well as locomotor activities, should be explained to parents at information sessions.

- Parents should be invited to be real partners in motor therapy of their children. For example, a detailed schedule might be drawn up denoting times for the parent to engage in fine-motor activities with the child on Tuesday, Thursday, and Saturday, while the school is scheduled to provide sessions in large muscle activity on Monday, Wednesday, and Friday.

- Fathers should be involved in a larger sense than the usual tendency to play catch with the child in the backyard.

- The advantages of relatively brief but regular practice sessions should be explained to parents. Parents often either ignore a home program or compensate in the other direction, believing that the more one does of something the better. In the latter instance they may schedule long, physically oppressive programs containing arduous content which, when applied, is likely to have a negative rather than a positive effect upon their child's progress.

- Parents may be trained as classroom aides. During this training, they should be exposed to motor training facilities, equipment, and techniques. As a result of exposure, they not only will "pick up" technical skills but should perceive that other children have problems similar to their child's and that remediation may indeed take place if reasonable motor tasks are patiently applied. Parents are advised, however, to not work in a school context with their own children.

6. Rewarding and motivating.

Lack of motivation is a frequent problem encountered in working with atypical youngsters through physical activities. Their background of failure may be extensive and, therefore, accepting new and often difficult tasks may provoke various kinds of withdrawal reactions. Sometimes the withdrawal is obvious; the child may simply run away. At other times the negativism is more subtle; the child may seem to "space out," evidence distractibility, or otherwise detach himself or herself from the immediate surroundings.

Progress can be elicited by offering tangible rewards. Behavioral modification does work. Indeed, in all life situations obvious extrinsic or more subtle intrinsic social rewards are present and make performance either negatively or positively. To bestow rewards effectively, however, several points must be kept in mind:

- No reward should be extended unless a real change is perceived by *both* the child and the helper. Constantly rewarding the same behavior will cease to produce the desired changes and progress.

- The kind of reward being extended by parent or teacher may not be perceived by the youth as rewarding. Thus, before setting up a reward system, one must gain firm knowledge of what is truly rewarding, and also keep in mind that the nature of the reward may have to be changed from day to day or even from moment to moment because of the child's shifting feelings.

A graduate student recently completed a case study in which coding games (see Cratty, forthcoming) were applied in an attempt to teach a retarded 9-year-old boy to read action verbs. At first extrinsic rewards seemed to work as he became able to jump when shown the letter *J*, and then to hop when shown an *H*. Later, as the letters were "stretched" into complete words, however, learning seemed to become more difficult. The highly perceptive boy had come to realize that his learning was important to the graduate student and that when he made an error, he could incite sometimes obvious but usually subtle signs of tension and negativism in her. Thus, *her* reactions to his failures became more powerful rewards than the pretzels she had been extending. The rewards extended — her tensions — began to mold his behavior in a direction opposite to that desired.

- Both the pupil and the teacher or parent extending the rewards must know when some change in behavior has taken place. One of the reasons why behavioral modification techniques do not always work with the severely retarded, for example, is because they cannot connect their behavior to the reward extended or they are not cognizant of any real changes that may be taking place.

Atypical individuals often have a narrow range of acceptance regarding the difficulty of tasks presented to them. When normal children are presented with difficult tasks, they tend to try harder, insofar as they have had a background suggesting that "trying hard pays off." These same normal youngsters may passively participate in easy, even boring tasks, having also learned that conformity pays off. The atypical youngster, on the other hand, is often threatened by difficult tasks and is easily insulted by tasks that are too easy. Thus, motivating these children through the intrinsic nature of motor tasks is not easy. The difficulty of the task must be compatible with the narrow band of acceptance in children and youth who have experienced derision and failure. Well trained adults must become sensitive as to why an individual withdraws, asking themselves if it is because the task was perceived as too easy (insulting) or too difficult (threatening). Then difficulty level should be adjusted accordingly for maximum motivated participation.

7. The gifted?

Although the title of this article contains the word *special*, most of this discourse has focused on *handicapped* students. Children and youths who are labeled *gifted* comprise a special group, too, whose needs have rarely been accorded specific consideration by those offering them physical activity. Studies of the gifted (Terman & Oden, 1951) demonstrated that the stereotype of gifted children as being physically inferior may be in error, that the gifted population contains as many physically vigorous youngsters as are found within average populations. I suspect also—without the support of any available data—that the academically gifted population contains about as many motorically handicapped youngsters as are found within groups of academically average individuals. In a program I have administered during the past 18 years for the needs of awkward children, a number of intellectually superior youngsters have been served whose movement attributes were far less than average.

Thus, for the most part, cognitively gifted youngsters are likely to be as physically able or unable as intellectually average youngsters. To enhance their gifts while incorporating physical development, the following provisions might be made when working with academically gifted students.

- Gifted youngsters should be given an important role in the formation of their own activity programs. This participation could be preceded by learning about the nature of human body functions, including the cardiovascular and neuromuscular systems.

- Gifted students may at times be given a chance to make up new games using "different" equipment (e.g., a broken box) and rules formulated especially for the game. And they could be invited to modify game rules from traditional games to create other games. They could be challenged with "absolute novelty" in inventing games unlike any of the traditional games to which they have been exposed.

- Gifted pupils could be asked to integrate specific academic learning into physical development classes by devising their own exercise programs to suit their individual needs.

- Game selection can be aided by historical reviews of presently available game forms. Surveys of games played around the world, both in past and contemporary times, could spark interest on the part of gifted young-

sters to devise their own versions of these games, using authentic equipment, rules, and facilities.

AN OVERVIEW

As a result of current national and state legislation, administrators of special education programs must give more than lip service to providing services intended to improve the physical functioning of their charges. The degree to which youngsters are served in this area of the curriculum depends in part upon the background of the adapted physical educator and others offering these services, including the dance specialist, occupational therapist, physical therapist, and recreational therapist.

Understanding the nature of normal motor development is important in serving special needs individuals. Atypical youngsters, the axiom goes, develop as do typical ones but at a different rate, exhibiting the same qualities but at a different time of their lives. Thus, motor development specialists should be well versed on the sequences and subsequences of this development.

The integration of personnel — lay, parent, and professional — provides the best basis for improving movement capacities of special populations—all of which can benefit to varying degrees from such programming. With a sound underlying structure and well trained people to carry out the programs, the issues and problems of today can be steadily resolved.

REFERENCES

- Ayres, J. *Sensory integration and learning disorders*. Los Angeles: Western Psychological Services, 1972.
- Corbin, C. *Inexpensive equipment for games*. Dubuque, IA: W. C. Brown 1972.
- Cratty, B. J. *Physical expressions of intelligence*. Englewood Cliffs, NJ: Prentice-Hall, 1972.
- Cratty, B. J. *Teaching about human behavior through active games*. Englewood Cliffs, NJ: Prentice-Hall, 1975.
- Cratty, B. J. *Perceptual and motor development of infants and children* (2d ed.). Englewood Cliffs, NJ: Prentice-Hall, 1979.
- Cratty, B. J. *Adapted physical education for handicapped children and youth*. Denver, CO: Love Publishing Co., 1980.
- Cratty, B. J. *Coding games: Active ways to enhance reading and thinking*. Denver: Love Publishing Co., forthcoming.
- Cratty, B. J., & Breen, J. E. *Educational games for the physically handicapped*. Denver, CO: Love Publishing Co. 1972.
- Cratty, B. J., Ikeda, N., Martin, M., Jennett, C., & Morris, M. *Movement activities, motor ability, and the education of children*. Springfield IL: Charles C Thomas, 1970.

- Edgar, C. L. The adaptation of perceptual-motor training techniques to the profoundly retarded. In *Some educational implications of movement*. Seattle: Special Child Publications, 1970.
- Freeman, R. D. Controversy over "patterning" as a treatment for brain damage in children. *Journal of the American Medical Association*, 1967, 202, 385-388.
- Gearheart, B. R., & Weishahn, M. W. *The handicapped child in the regular classroom*. St. Louis: C. V. Mosby Co., 1976.
- Getman, G. N. *How to develop your child's intelligence—A research publication*. Luverne, MN: G. N. Getman, 1952.
- Gilbert, A. G. *Teaching the three R's through movement experiences*. Minneapolis, MN: Burgess Publishing Co., 1977.
- Glass, B. B. *A critique of experiments on the role of neurological organization in reading performance*. Champaign, IL: Center for Instructional Research and Curriculum Evaluation, University of Illinois, 1967.
- Hammill, D. D. Training visual perceptual processes. *Journal of Learning Disabilities*, 1972, 5, 552-559.
- Hammill, D. D., & Wiederholt, J. L. Review of the Frostig visual perception test and the related training program. In L. Mann & D. Sabatino (Eds.), *The first review of special education*. Philadelphia: Grune & Stratton, 1972.
- Itard, J-M G. *The wild boy of Aveyron*. (G. & M. Humphrey, trans.). New York: Appleton-Century-Crofts, 1932.
- Kellogg, R. *Analyzing children's art*. Palo Alto, CA: National Press Books, 1969.
- Keogh, B., & Smith, C. E. Changes in copying ability of young children. *Perceptual & Motor Skills*, 1967, 26, 773-774.
- Licht, S. History. Chapter 13 in S. Licht (Ed.) *Therapeutic Exercise* (2d ed). Baltimore, MD: Waring Press, 1965, pp. 426-471.
- Mosston, M. *Teaching: From command to discovery*. Belmont, CA: Wadsworth Publishing Co., 1972.
- Myers, P. L., & Hammill, D. D. The perceptual motor systems. Chapter 9 in *Methods of learning disorders* (2d ed.). New York: John Wiley & Sons, 1976.
- Seefeldt, V. Perceptual-motor programs. In J. Wilmore (Ed.), *Exercise and sport sciences reviews* (Vol. 2). New York: Academic Press, 1974, pp. 265-288.
- Terman, L. W., & Oden, M. The Stanford studies of the gifted. In P. Witty (Ed.), *The gifted child*. Boston: Heath, 1951, pp. 23-24.

ADDITIONAL REFERENCES

- Goodman, L., Hammill, D. D. The effectiveness of the Kephart-Getman activities in developing perceptual-motor and cognitive skills. *Focus on Exceptional Children*, 1973, 4 (9), 1-9.
- Hammill, D. D., Goodman, L., & Wiederholt, J. L. Visual-motor processes: Can we train them? *Reading Teacher*, 1974, 27, 469-486.
- Humphrey, J. H., & Sullivan, D. D. *Teaching slow learners through active games*. Springfield, IL: Charles C Thomas, 1970.
- Johnson, D. L., Brekke, B., & Harlow, S. D. Appropriateness of the motor-free visual perception test when used with the mentally retarded. *Education & Training of the Retarded*, 1977, 21, 312-315.
- Mann, L. Perceptual training, misdirections and redirections. *American Journal of Orthopsychiatry*, 1970, 40, 18-23.
- Robbins, M. P., & Glass, G. V. The Doman-Delacato rationale: A critical analysis. In J. Hellmuth (Ed.), *Educational therapy* (Vol. 2). Seattle: Special Child Publications, 1968.
- Whitsell, L. J. Delacato's "neurological organization," a medical appraisal. *California School Health*, 1970, 3, 1-13.
- Wiederholt, J. L., & Hammill, D. D. Use of the Frostig-Horne visual perceptual program with kindergarten and first grade economically disadvantaged children. *Psychology in the Schools*, 1971, 8, 268-274.
- Zigler, E., & Seitz, V. An experimental evaluation of sensorimotor patterning, a critique. *American Journal of Mental Deficiency*, 1975, 79, 483-492.

CLASSROOM FORUM

Beverly Dexter
Lynchburg College

How can I best use assessment results for remediation of specific learning problems?

Proper remediation is dependent upon the use of assessment techniques to determine a student's weaknesses, strengths, and needs. Some questions to ask yourself before using assessment tools are: What is the specific purpose of this tool? What will the results tell me about the child's learning style? How will these results relate to my teaching strategies with this particular student?

Formal assessment involves using standardized tests and is done outside the classroom situation. The instruments yield quantitative information such as standard scores that may or may not be relevant to the teacher's strategies in developing an educational program for the student. If a test reveals only scores based on a normative population, with little or no regard to teaching strategies that might be used during remediation, such scores have relatively little value for the teacher or the learner. Knowing a student's grade level equivalency in a certain academic area gives the teacher little useful information. It is analogous to discovering that a person is ill based merely on a temperature reading of 103° — which gives a doctor no indication as to why the temperature is above normal or what should be done to bring it within the normal range.

Informal assessment involves classroom observation, which is important to the teacher in planning strategies. Observing seatwork activities allows the teacher to determine exactly where a student is making mistakes. Observing academic as well as social activities gives the teacher further information about the total child and how he or she interacts with the environment. Informal evaluation/observation should be an ongoing process in the classroom, not just an activity presented at the beginning and end of the year for "growth" and IEP evaluations.

Remedial instruction should be based on a task analysis of sequential steps leading to final task completion. If some steps present problems to the learner, the entire sequence should be repeated or the "stumbling block" should be approached by different strategies until the student has mastered that particular task.

A difficult, yet basic, reality to accept is that overcoming learning difficulties takes time. The student did not reach this point in his or her academic career overnight and should not be expected to "catch up" in a short time. Often, once a child is placed in a resource room, he or she is expected to begin working at grade level back in the regular classroom within a few weeks. This has been one of the most difficult obstacles for resource teachers to overcome in their dealings with parents and classroom teachers.

Learning problems basically result from a lack of readiness for mastering a particular skill. Young children demonstrate this by learning to run only after mastering the skill of walking. And in the area of math, certain concepts like *size*, *shape*, and *time* are basic to mastering later arithmetic skills. Readiness prerequisites for learning math are the ability to discriminate size and shape, the ability to obtain one-to-one correspondence,

the ability to count meaningfully, and an understanding of place value and ordering of numbers. Problems in any of these areas can be related to other academic areas, especially memory-type skills.

Although memory cannot be taught *per se*, the skills necessary for memory utilization can be taught. Auditory, visual, motor, and recall skills are all integrated in memory. The strategies a child uses for remembering are vital to learning, and if the child is weak in one area, he or she may need to learn how to best utilize and integrate these skills before being subjected to other remediation procedures.

Helping a youngster learn how to remember should be a systematic process. First, the information to be remembered must be organized in a way that is meaningful to the student. The misuse of rote memorization in certain academic areas has resulted in many students' "learning" only what is necessary for testing purposes, with little or no regard for meaning or later usefulness. Without a purpose or reason for retaining the information, the facts are likely to be forgotten once the testing situation is over.

Second, when presenting the information to be remembered to the student, attention should be focused on relevant cues. What is discriminating about this piece of information? Can it be related to or compared to information that the student already knows?

Third, some type of rehearsal or practice procedure for learning the information should be established. The exact process depends greatly on the child's individual learning style. How does he or she best "take in" information — which modality appears to be the strongest for learning? If the child learns best by repeating information subvocally, this is the way he or she should practice it for retention purposes.

Finally, some type of recall or retrieval strategy should be developed. What cues can the student use to help recall the total information? Many adults use mnemonic devices for recalling needed information. For decades, music students have learned the treble cleff lines on sheet music by memorizing the sentence, "Every Good Boy Does Fine."

Many students approach the learning situation fully prepared to memorize information but are unable to generalize or transfer this information to other situations. Thus, they have not applied the proper techniques for learning. Instead, they have learned only how to memorize, and only under situation-specific conditions. By observing a youngster in the classroom and carefully analyzing assessment results, the teacher can formulate hypotheses about how this information can all be tied together, with appropriate remedial techniques geared toward the individual learner.

Something Special for the Physical Education Teacher . . .

ADAPTED PHYSICAL EDUCATION FOR HANDICAPPED CHILDREN AND YOUTH

By Bryant J. Cray
University of California, Los Angeles

- A MUST book for the special or adaptive physical education teacher . . . includes references to new legislation dealing with the handicapped and discusses IEPs.
- Achieves balance between theory and practicum, and between categorical and generic content.
- Visually pleasing and well illustrated with charts, figures, drawings, and photographs.
- Includes actual activities for the teacher to follow in instruction.
- Discusses the relationships among professionals in education, medicine, psychology, and social work, while toning down medical terminology in lieu of helpful behavioral strategies.

Special 20% Discount Offer to Readers of This Issue

Regular Price: \$15.95 Special Discount Price: \$12.76

Love Publishing Company
1777 South Bellaire Street, Denver, Colorado 80222

Title	Reduced Price	Quantity	Total Enclosed
ADAPTED PHYSICAL EDUCATION FOR HANDICAPPED CHILDREN AND YOUTH	\$12.76	_____	_____
Name _____			
Address _____			
City _____ State _____ Zip _____			

Mail this coupon and include payment or purchase order.
Offer Expires March 31, 1981