ORIENTATION AND MOBILITY (O&M)

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What is O&M?

Orientation is knowing who you are (body image), where you are, where you want to go and planning how to get there. Mobility is the action of moving from place to place.

What is an O&M Specialist?

The Orientation and Mobility Specialist (COMS) is a certified professional who teaches children and adults with visual impairments how to travel safely and independently in familiar and unfamiliar environments.

What skills does an O&M Specialist teach?

- Sensory awareness: learning about the world through the senses (vision, touch, smell, hearing and taste.)
- Body image: awareness and understanding of body parts and how they move.
- Object permanence: knowing that objects exist even when they are not felt, heard or seen.
- Spatial concepts: understanding the relationship between objects in the environment and one's body (in front of/behind, etc.); awareness of both near and distance space (close/far); awareness of distances between objects.
- Searching skills: locating items in all directions, within arm's reach and beyond.
- Independent movement: rolling, scooting, crawling and walking.
- Sighted guide: using a sighted person as a primary means of travel.
- Protective techniques: using one's arms for protection while moving through open space.
- Cane skills: using specific techniques with a cane or adaptive mobility device for more independent and safer travel.
- Trailing: using one or two hands to follow along a surface (wall, furniture) to locate a specific objective and/or maintain a straight line of travel.

O&M considerations for the child with CHARGE

Children with CHARGE need to learn about the world through their residual senses.

Sight gives us some of the most important information about our environment. When we enter a room, with a "quick look" we determine how big the room is, the size, colors, objects, etc. A child with CHARGE may have one or more visual problems (see section THE EYES IN CHARGE). Depending on how the eyes are affected, a child may or not have difficulties moving safely in his environment. The child with a retinal coloboma will have an upper field loss, and bring his head up to see better. This head position limits his ability to see low obstacles or changes in the terrain, and may cause stumbling or falling. The child with a coloboma of the macula or optic nerve will have blurry vision as well as large blind spots that affect his ability to see details. Being able to interpret visual cues with residual vision is an important skill for safe travel.

Hearing also tells us a lot about the world around us. Two important auditory skills used for orientation and mobility are sound localization and sound discrimination. Sound localization is the ability to determine where sounds are coming from, and can encourage a child to reach and move toward the sources of those sounds. Sound discrimination is the ability to distinguish between sounds. Children learn this skill by having repeated opportunities to hear everyday environmental sounds and pairing them with their sources, e.g., the blender, the radio, the car. Hearing loss is very common in children with CHARGE. Factors that will influence a child's ability to use residual hearing include the type and severity of loss, whether the child wears amplification, how long he has been aided, and the amount of appropriate auditory training the child has received to help him better understand what he is hearing.

Touch includes manipulation of objects, dexterity, exploration and identification of objects, as well as discrimination with the feet. A great deal of travel information is gained through the feet to determine the surfaces we are walking on.

Smell is an important sense for orientation and mobility. Many familiar locations can be identified through smell: bathroom, kitchen, different aisles in the grocery store, etc. (Because of cranial nerve damage, some children with CHARGE are unable to smell.)

Movement is an essential way we learn about our bodies and about our environment. Children with hearing and vision impairments need to feel safe when they are moving. They also need to be motivated and have a purpose for moving. They may have difficulty generalizing concepts and experiences from abstract toys or objects, and need opportunities to play with real objects. They can do this by being given opportunities to manipulate and explore tools used in daily routines such as spoons, cups, purses, boxes, containers, tooth brushes, other brushes, bottles, water, bread, etc.

Early Intervention

Early intervention in O&M for children who are visually impaired has become an important area of programming. It may be difficult at first, to distinguish O&M objectives from those of the OT, PT, or VI Teacher. The O&M and PT often have similar movement related objectives for a young child with CHARGE, and there may be some overlap. Good communication among members of the child's educational team (parents, professionals and paraprofessionals) is crucial. Initially, the OT may be directly involved with the child, while the PT, VI or O&M consult. The O&M specialist may become more directly involve with the child later, as she begins to move through space.

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THE IMPACT OF SENSORY INTEGRATIVE DYSFUNCTION IN CHARGE

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Sensory integration is the organization of sensation for use. Countless bits of sensory information enter our brain at every moment, not only from our eyes and ears, but also from every place in our body. Sensations are food for the brain that provide energy and knowledge needed to direct our body and mind. The greatest development of sensory integration occurs during an adapted response; a purposeful, goal directed response to a sensory experience. In an adaptive response, we master a challenge and learn something new. At the same time, the information of an adapted response helps the brain to develop and organize itself. The first seven years of life our brain is a sensory processing machine nourished by having fun through play and movement. The child who learns to organize his play is more likely to organize his activities that are required for daily living.

If the brain does a poor job of integrating sensations, this will interfere with many things in life. The brain is not processing or organizing the flow of sensory impulses in a manner that gives the individual good, precise information about himself or his world. Learning is difficult and the individual often feels uncomfortable about himself and cannot easily cope with demands and stress. If the individual is blind or visually impaired his difficulty is compounded when attempting to make sense of his world.

Complex medical problems associated with CHARGE Syndrome at birth may result in delayed sensory integration development. This delay may be due to either neurological disorders or the inability to partake in sensory experiences that nourish the brain because of medical fragileness. Symptoms of irregular sensory processing in the brain are different for each child. There are three basic sensory systems that impact how a child learns and behaves in his environment. They are the tactile, vestibular, and proprioceptive systems. The following outline is a brief description of symptoms observed in each of the three systems when dysfunction of sensory processing is present:

The Tactile System: discriminative touch versus protective touch

Dysfunction in the *discriminative* system may result in:

- Difficulty with fine motor skills for feeding, dressing, and writing
- Problems articulating sounds due to inadequate information from touch receptors in and around the face and mouth (cranial nerve VII abnormalities included)
- Difficulty with accurate visual perception and basic concepts
- Impaired awareness of body scheme
- Inefficiency in how one tactually explores an object or the environment in order to gain additional cues which may give meaning about the object or environment
- Appears to contribute to somato dyspraxia – a specific disorder in motor planning

Dysfunction in the *protective* system may result in:

- Interpreting ordinary contact as threatening
- May be frequently in a state of Red *Alert*
- May react with flight/fright/or fight – these behaviors may be physical or verbal
- May be termed tactually defensive
- Some feel too much; some feel too little. Some may have a high tolerance for pain because they do not accurately know what is happening to them
- They may not react to being too cold or too hot because they are unaware of temperature

Proprioceptive System: unconscious awareness of our muscles and joints that constantly send information to our brain to tell us of our body position and posture.

Dysfunction in *proprioception* results in:

- Slower body movements
- More clumsy movements
- Movements involve more effort
- Difficulty grading muscle force – muscle exertion is either too much or not enough when manipulating objects
- Difficulty feeling the weight of objects
- Difficulty planning body movements while performing gross or fine motor activities (getting on or off a riding toy, buttoning clothes, turning on a faucet, etc.)

Vestibular System: responds to the position of the head in relation to gravity and accelerated movement (are we moving?) or decelerated movement (are we still?). Vestibular receptors are the most sensitive of all sense organs and are major organizers of sensations in all other sensory channels.

The location of the vestibular system is in the inner ear called the “labyrinth”. Since abnormalities of the ears and hearing loss are common features in CHARGE, the influence of this system plays a major role in the developmental milestones of sensory processing and gross motor skills for these children.

Influence of vestibular system on *eye and neck muscles*:

- Ability to follow objects
- Ability to move eyes from one spot to another
- Ability to interpret -- is it an object, our head, or our whole body that is moving?
- Ability to interpret – is our head moving or tilted?
- Ability to maintain a stable visual field

Influence of vestibular system on *muscles of the* body:

- Helps to generate muscle tone
- Helps us to move smoothly, accurately, and with proper timing

Influence of vestibular system on *postural and equilibrium responses*:

- Helps with balance
- Facilitates spontaneous body adjustments
- Facilitates co-contraction of muscles
- Helps to elicit protective extension

Other areas influenced by the vestibular system:

- *Reticular Interactions* – responsible for arousal of nervous system (calming effects vs. arousal effects); vestibular system keeps level of arousal balanced.
- *Relation to Space* – perception of space; position and orientation within that space.
- *Auditory Processes* – helps the brain process what is being heard; vestibular disorders slow down speech development.
- *Emotional Development/Behavior* – for emotions to be balanced the limbic system (generates emotionally based behavior) must receive well-modulated input from the vestibular system.

Two types of vestibular disorders:

1. Underreactive vestibular system

    - Child may tolerate an enormous amount of movement (merry-go-round, swinging, spinning) without getting dizzy or nauseous.
    - Has poor integration of the two sides of the body
    - Is easily confused by directions or instructions
    - Hands do not work well together, nor do his feet

2. Overreactive vestibular system: the child is hypersensitive to vestibular input resulting in:

    - *gravitational insecurity* – a feeling of anxiety or stress when assuming a new position, or when someone else tries to control his movement or position; swings, merry-go-rounds, and other playthings that move the body in nonordinary ways is terrifying.

    - *intolerance to movement* – discomfort during rapid movement; the child is not necessarily threatened by movement, it just makes him uncomfortable, or possibly even become nauseous.

The Next Step: Evaluation/Intervention

Evaluation:

If there is suspicion that a child has dysfunction with sensory motor processing, an evaluation can be conducted by either an *occupational therapist* or *physical therapist*. Evaluation consists of both standardized testing and structured observations of responses to sensory stimulation, posture, balance, coordination, and eye movements. The therapist who conducts the testing may also informally observe spontaneous play, and may ask the parents to provide information about their child's development and typical behavior patterns. A report will follow the evaluation that provides test results and interpretation of what the results indicate. The therapist will then make recommendations regarding the appropriateness of therapy using a sensory integrative approach.

Intervention:

Providing intervention based on the principles of sensory integration theory requires that the therapist be able to combine a working knowledge of sensory integration theory with an intuitive ability to engender a child's trust and create the just right challenge. Therapy will involve activities that provide vestibular, proprioceptive, and tactile stimulation, and are designed to meet a child's specific needs for development. The activities will also be designed to gradually increase the demands upon a child to make an organized, more mature response. Emphasis is placed on automatic sensory processes in the course of a goal-directed activity, rather than instruction or drilling the child on how to respond. Parent or teacher involvement is also crucial to the success rate of the child's development with sensory processing. The therapist may make suggestions to the parent or teacher about how to help the child in the home or school environment.

For a listing of therapists certified in the evaluation of sensory integration you may contact:

Sensory Integration International
P.O. Box 9013
Torrance, California 90508

Telephone: (310) 320-9986

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PHYSICAL THERAPY AND OCCUPATIONAL THERAPY IN CHARGE SYNDROME

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Dual Sensory Impairment: As dual-sensory impaired (deaf-blind, or hearing loss and vision loss), and medically fragile, children with CHARGE are at risk for a variety of motor and sensory delays. Even early on, when medical issues are huge concerns, it is important to begin some early intervention, especially with the child's sensory system. The child with CHARGE will need to learn to rely on his other senses (touch, smell, taste, vestibular and proprioception/pressure sense) to learn about his world.

The pyramid on the following page illustrates how the sensory systems are the basic building blocks for learning motor and cognitive skills. It also shows the importance of early intervention for infants by sensory and motor specialists.

The Central Nervous System represents the newborn, and Academic Learning represents the beginning of school. It becomes obvious that Occupational Therapy' (sensory motor and perceptual motor specialists) evaluations are important very early in an infant's development. Physical Therapy' (gross motor and developmental specialists) evaluations become important slightly later on. Orientation & Mobility Specialist (teachers of safe and independent travel, body concepts, and spatial concepts) evaluations and recommendations become important slightly later on yet. But all have a role quite early in the child's overall development. For example, the occupational therapist role can begin very early, in an infant's life, even before the infant is medically stable. As sensory-motor experts, they can help evaluate and address issues of hypersensitivity, oral-motor skills, mouthing/exploring objects, etc.

Since OT and PT roles often overlap, especially in the pediatric setting, PT can sometimes substitute for an OT evaluation if OT is not available. Also, it is important to note that an early-on O&M (Orientation and Mobility) consult can be very helpful. The whole concept of moving in space as a blind individual relies on pre-existing skills of exploration, using hands functionally, recognizing objects and their use, and recognizing object permanence, all of which the PT and OT are influencing.

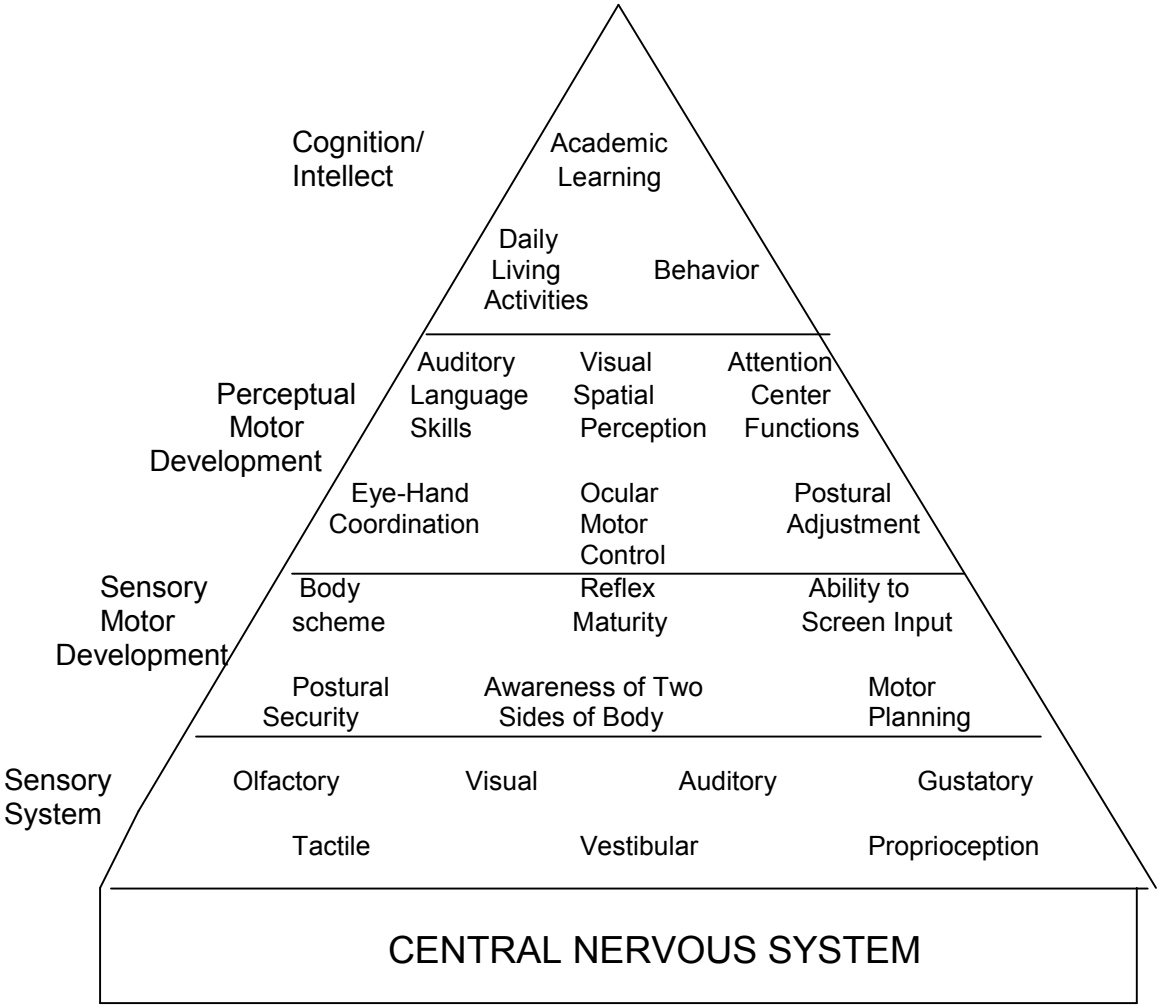

Chart is taken from Williams & Shellenberger: "How does your engine run"

Once a child enters school, the following information becomes important:

General Considerations:

- OT and PT in the school setting must be based on School/Educational issues. OT/PT services support the IEP (Individual Education Plan). School-based OT/PT services support school goals. *It is not the do all, end all, only source of OT or PT services the child should be accessing*.

- Although OT and PT may do certain evaluations without a doctor's referral*, all* PT services (and *some* OT services*) must* be prescribed by a doctor. *But,* not all doctor-prescribed OT/PT services is appropriate for a *School*-based Therapist to perform (school-based therapy is to support school goals).

General Roles of the OT and PT
The OT (Occupational Therapist) primarily supports arm/hand strength and coordination (fine motor) issues, sensory motor issues, sensory integration, activities of daily living, oral motor issues, arm/hand splinting and accompanying issues.

The PT (Physical Therapist) primarily supports gross motor issues of balance, walking, accessing doors, stairs, curbs, posture, wheelchair transfers and other wheelchair issues, leg bracing and accompanying issues.

Both OT and PT can be delivered in a Direct Services model or in a Consultation model (or in a combination of both). *Direct Services* are for those students who need one-on-one intensive physical programming (and are able to participate in such). *Consultative Services* are for those who would learn skills better with a more integrative approach to physical issues. For example, an OT could use direct service to teach a specific motor pattern for scooping, or a PT could teach a pattern for negotiating stairs or they could consult with the teaching and dorm staff on the pattern that the student should utilize for scooping and stairs, so the child could practice the skills daily (not just in a therapy session).

Specific Roles of OT/PT

Mobility: This entails evaluating and teaching students the skills needed to physically negotiate campus. It includes negotiating on level surfaces, unlevel surfaces (grass and inclines), doors, stairs, curbs. It includes recommending or evaluating any adaptive equipment needed to accomplish this (wheelchairs, crutches, support canes, etc).

- **Transfers/Transitions:** This entails evaluating and teaching students independent transfers to/from beds, chairs (including wheelchairs), the floor. It includes teaching staff how to safely assist those students who have weak transfer skills. It also includes recommending/evaluating any equipment which may be helpful to the staff and/or the student (footstools, safety belts, grab bars, special transfer devices/lifts etc).

- **Positioning:** This entails evaluating a student's muscle tone and function in relation to how he sits and participates in table-top activities. If a student is not able to rely on his trunk strength to support himself in an upright position, he will be unable to use his hands in a functional, meaningful way. He will need his arms and hands to prop himself and support himself on the table or desktop instead. Many times adaptive seating is indicated to obtain a nice supported, upright posture and to 'free up' the hands and arms for successful tabletop or desk-top activities.

- **Independent Living Skills:** This entails evaluating and teaching students independent skills in a variety of independent living areas. Examples:

  Dressing: Evaluating a student's skills and assisting w/ setting up a dressing program for improved independence. This includes consideration for adaptive equipment (button hooks, Velcro closures for clothing, adaptive shoe laces, etc). It can also include teaching the student or the staff shoe-tying techniques.

  Eating: Evaluating a student's skills w/ food. This includes the actual arm/hand skills of eating (how does the child finger feed? how does he hold a utensil? can he physically get his hand to his mouth? can he sit well enough to use his hands

to eat or does he need adaptive seating?). It also includes oral-motor issues (what does he do w/ the food once it is in his mouth? can he chew? does he have a mature swallow? is he overly sensitive to texture?). With all these considerations in mind, a feeding/ eating program is developed and shared w/ all staff involved w/ eating routines w/ the student. Adaptive seating, adaptive utensils, and texture (w/ doctor and/or dietitian consultation) is considered and recommended if appropriate.

Toothbrushing: Evaluating a student's motor skill w/ the toothbrush as well as oral sensitivity. This includes making recommendations for adaptations (beginning with toothettes or washcloths or Nuk trainers instead of toothbrushes; allowing the child to sit rather than stand for stability; considering electric toothbrushes, etc.)

Bed Making: Evaluating motor-planning, balance and sequencing skills of the student to assist in developing a routine for bed-making. This includes consideration for adaptations to the routine (adding buttons to the bedding to help the child locate top of bed or sheet, etc)

Bathing: Evaluating motor-planning, sequencing, hand/arm skills, balance of the student to assist in developing a routine for increased independence in bathing. This includes consideration for any adaptive equipment (bath benches, hand-held showers, long-handled sponges, etc).

Toileting: Evaluating standing balance, coordination, clothing manipulation, hand/arm skills for wiping, etc to assist w/ establishing a routine for more independent toileting.

- **Adaptive Equipment:** OT/PT evaluates, recommends and maintains much of the adaptive equipment on campus (eating utensils, braces, hand splints, wheelchairs, canes, walkers, adaptive seating, bathing equipment, dressing adaptations, etc.)

- **Wheelchair Issues:** OT/PT problem-solves most wheelchair issues on campus including negotiating campus when in a wheelchair, modifications needed (one-arm drive, motorized, special seating...), transfer training for student and staff, toileting issues (hand-held urinal use, clothing manipulation, clothing adaptations such as Velcro closures). This includes consultation w/ doctors and/or funding sources and medical supply places as needed.

- **Job-site Evaluations/Modifications**: OT/PT can visit job sites and assist w/ evaluating and recommending adaptations for making a job task more successful. This can entail positioning issues, motor issues, adapting materials (or the task), setting up jigs, etc.

- **Serial Casting & Splinting:** Serial casting and splinting is undertaken only under a physician's referral. It is a process whereby a series of casts is applied for approx. 1 week, then removed and reapplied w/ the joint at a slightly greater angle of stretch than the previous cast. This is usually done for ankle stretching, but can also be done for knees and wrists. Serial casting is generally followed-up with a brace or splint to maintain the joint range gained through casting. The goal for serial casting is to improve

function (balance, coordination, or hand-skills). It is a time-consuming procedure which requires the participation and cooperation of the whole team, as the casts affect walking, bathing and all activities of ADL while they are in place.

- ## Some Gross Motor concerns in CHARGE

  - **Balance** is affected by the inner ear mechanism as well as by strength and vision skills. The child w/ CHARGE has disturbances in the ear and visions systems. Inner ear issues can lead to balance problems. Balance needs to be evaluated by a doctor who specializes in inner ear or vestibular problems before a proper treatment regimen can be established**.**

  - **Strength** may not necessarily be directly affected by CHARGE, but is affected by the medical issues and procedures the child is undergoing. It is also affected by the low tone that dominates the trunk and arms.

  - **Vision Related** issues of balance: The child with CHARGE has visual field loss which affect his head position and posture. Many children w/ CHARGE have visual field loss which prevent them from seeing in their upper visual fields. They will hold their heads in a raised position in order to see things in front of them. This head position affects what they see (or do not see) near the ground, and leads to missing changes in the ground's surface and stumbling. Some children w/ CHARGE also have difficulties w/ eye dominance (inconsistently use left vs. right eye as the dominant eye). This can lead to a sense of the object moving (as they gaze at it and change eye dominance during the gaze) and also affects balance.

PHYSICAL ACTIVITY, INCLUDING PHYSICAL EDUCATION, SPORT, AND RECREATION FOR CHILDREN WHO ARE DEAFBLIND

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INTRODUCTION

PHYSICAL ACTIVITY

Physical activity defined is any bodily movement produced by skeletal muscles that results in energy expenditure. Health-related fitness includes cardiorespiratory endurance, muscular strength and endurance, flexibility, and body composition (Caspersen, Powell, Christenson, 1985). The International Consensus Conference on Physical Activity Guidelines for Adolescents recommends that " all adolescents... be physically active daily, or nearly every day, as part of play, games, sports, work, transportation, recreation, physical education or planned exercise in the context of family, school, and community activities" (Sallis & Patrick, 1994). Patterns of health-related behaviors develop and become established during childhood and adolescence (Kelder, Perry, Klepp, & Lytle 1994), therefore, young people should be encouraged to become involved in physical activity. In addition, enhanced physical activity is a major component in weight management of obese children and adolescents (Bar-Or, et. al., 1998). According to the U.S. Department of Health and Human Services (1997), physical activity in schools should be promoted as part of a comprehensive school health program. Activities and services should be designed to promote the optimal physical, emotional, social, and educational development of students.

Physical activity is an umbrella term used to describe movement to significantly increase energy expenditure. Physical activity can be many things to many people. It includes physical education, active recreational activities, sports, and fitness activities. Individuals of all ages and abilities need to discover their preferred modes of physical activity.

PHYSICAL EDUCATION

Physical education "when planned and taught properly is 'education through the physical'. That is, the activity serves as a medium through which a total learning experience takes place" (Schmottlach & McManama, 1991 p. 1).

Under Public Law 105-17 the Individuals with Disabilities Education Act Amendments of 1997, Physical Education is a direct service under special education (IDEA Amendments of 1997). This means that physical education is **required** for every individual who has a disability. This law also means that physical education programs should be specially designed if necessary to meet unique needs. Under the law physical education consists of:

a. physical and motor fitness;
b. fundamental motor skills and patterns; and
c. skills in aquatics, dance, and individual and group games and sports (including intramural and lifetime sports).

SPORT

The meaning of sport varies according to the individual. Some individuals consider sport to be any physical competition between two or more people. Others consider sport to be any recreational activity such as fishing, canoeing, horseshoes, hunting, trapping or snowshoeing. Regardless of the meaning, it is important to honor the interests of all individuals. In addition, creating an environment in which the individual can be successful is critical. Use the recommendations in this section to ensure the most successful environment for each individual.

RECREATION

Recreation is defined as: ”Refreshment of ones mind or body after labor through diverting activity (Morris, 1978 p. 1090). Recreation gives us information about who we are (Haggard & Williams, 1992). It can take the place of inappropriate or self-stimulatory behavior (Honig, 1990). Lastly, it can reduce physical, social, and psychological isolation (Sauerburger, 1993).

BENEFITS OF PHYSICAL ACTIVITY

Regular physical activity can promote health and reduce the risk for all-cause mortality and the development of many chronic diseases in adults (U.S. Department of Health and Human Services, 1997). For example, physical activity may reduce obesity (Greendale, Barrett-Connor, Edelstein, Ingles, & Haile, 1995), depression and anxiety, (Ross & Hayes, 1988; Stephens, 1988) and build bone mass density (Dalsky, Stocke, Ehsani, Slatopolsky, Lee, & Birge, 1995). In addition, it decreases blood pressure in adolescence with borderline hypertension (Alpert & Wilmore, 1994), increases physical fitness in obese children (Gutin, Cucuzzo, Islam, Smith & Stachura, 1996), and decreases the likelihood of obesity among children (Epstein, Valoski &Vara, 1995). According to Calfas &Taylor, (1994), physical activity among adolescents is consistently related to higher levels of self-esteem and self-concept and lower levels of anxiety and stress. In addition, the child with low physical activity levels has a higher risk for “hypertension, hypercholesterolemia, hyperinsulinemia, decreased release of growth hormone, respiratory disorders, and orthopedic problems”. Also, “the obese child suffers both psychologically and socially. Self esteem and self image are often damaged by ridicule and scorn” (Bar-Or, et. al, 1998, p 2.)

American children are currently in a physical activity crisis (Kutzleman & Reiff, 1992; Sallis, 1993). The U.S. Surgeon General has determined that the Healthy People 2000 goal of 75% of vigorous activity for all young people has not been met. The goal of 30% for light to moderate physical activity for young people has also fallen short (US Department of Health and Human Services, 1996). The prevalence of overweight is at an all time high among children and adolescents (Nicklas, Webber, Johnson, Srinivasan, & Berenson, 1995; Sallis & Patrick, 1994).

CURRENT TRENDS

National objectives for health promotion set forth by Healthy People 2000 (U.S. Department of Health and Human Services, Public Health Service, 1995) include seven initiatives, which relate directly to improving weight management in children. Three of these relate to the physical activity levels of children:

a) increase to 30% those who engage regularly in light to moderate physical activity for at least 30 minutes a day:
b) increase to 75% those children who engage in vigorous physical activity that promotes the development and maintenance of cardiorespiratory fitness three or more days per week for 20 minutes or more per occasion:

c) reduce to 15% those who engage in no leisure-time activity.

Increasing the span of a healthy life most effectively and efficiently is the major objective of these initiatives.

Physical activity for individuals who are deafblind

Unfortunately, research indicates that children who are blind tend to have more body fat, less cardiovascular endurance, muscular strength, and muscular endurance than their sighted peers (Lieberman & Carron, 1998; Winnick & Short, 1985). Winnick (1985) has also determined that children who are blind are behind in activities such as throwing, catching, balancing, striking, and body and spatial awareness. *Researchers attribute these various delays not to genetic limitations of performance, but rather to overprotection and* ***discouraging attitudes*** *on the part of the parents or teachers* (Winnick, 1985; Nixon, 1988). To date, research on the fitness and motor ability of individuals who are deafblind is limited yet, one can logically conclude that children who are deafblind will exhibit the same or more severe characteristics due to the additional communication and mobility needs.

It is imperative to encourage individuals who are deafblind to participate in physical activity. The physical, social and psychological benefits of physical activity will increase the likelihood of independence and improve the quality of life for these children. We need to encourage individuals who are deafblind to pursue fitness activities in their recreational time.

Some well-documented problems associated with deafblindness are communication, (Ford & Fredericks, 1995; Greenfield & Ford, 1997; McInnis & Treffry, 1993; Sauerberger, 1993; Sauerberger & Jones 1997; Smith, 1994; Stremmel & Schutz, 1995), mobility (Gee, Houghton, Pogrund, & Rosenburg, 1995; Gense & Gense, 1997; Sauerberger, 1993), isolation, (Enos, 1995; Sauergerber, 1993), and spatial awareness or environmental awareness (Newton & Schafer, 1997). Physical activity is a normal, enjoyable, and productive way to overcome each of these major barriers.

The area of <u>communication</u> is a basic component of physical activity. When an individual is involved in an activity, interest is conveyed through expressive communication, and feedback is expressed through receptive communication. Continued involvement in a variety of physical activities increases normal vocabulary, improves receptive and expressive communication, and allows the individual to understand basic concepts, which are a fabric of everyday life.

<u>Example</u>: Pierre is an 8th grade boy who was congenitally deafblind. He has an intervener and goes through his daily class schedule with her. For physical education, Pierre walked around the gymnasium because the teachers at his school did not think he could do anything else. One day Pierre was walking past the gymnasium and he felt a lot of stomping and cheering. He asked his intervener what was going on. She said “Oh it’s just Judo.” Pierre was curious “What is Judo?” She explained it, but he was not satisfied. Pierre joined his school’s Judo team, learned new terms, made new friends, and recently competed in the 1996 Para Olympics in Atlanta, Georgia representing Canada.

Individuals who are deafblind face the challenge of <u>mobility</u> each day. Mobility is an area of emphasis in most books, conferences, and Individual Education Plans. Mobility for the sake of mobility can be frightening and difficult for many children. When individuals are involved in physical activity, mobility is functional, enjoyable, and can become easier with practice.

<u>Example</u>: Jake is an 11 year old who has Ushers Syndrome. He is losing his vision and has 10 degrees of vision left. Due to his decreasing vision, Jake is very fearful of movement. Jake’s mobility instructor and his physical education teacher have decided to infuse many of his mobility concepts into his physical education class. In physical education, he works on running the bases, walking to and from the pool, swimming widths, lengths, and jumping into the pool,

and playing tag with his peers utilizing a peer tutor. He has overcome his fear of mobility, and enjoys movement again.

Many individuals who are deafblind experience isolation. This feeling is devastating especially for youth when their emphasis should be on socialization, and peer involvement. Many individuals who are deafblind even experience isolation when in a room full of people. In order to overcome isolation, individuals who are deafblind need to first develop a common interest with peers with a similar mode of communication to have something to share and participate in together. Physical activity and recreation can be an ongoing bond between a child who is deafblind, and her hearing and sighted or deaf and sighted peers.

Example: Monica is an eight-year-old girl with CHARGE Syndrome. She has some vision, is deaf, and can function independently in her activities of daily living. She uses total communication to communicate, and can be understood by most people who take the time to listen. She has recently entered the second grade and does not have any close relationships with her peers. She has never been to any other kids birthday parties and feels very isolated. Monica is a natural swimmer due to aquatic therapy following several operations. She joined the local YMCA's swim program and has made several new friends. Two friends have spent the night at her house and she was even invited to her first birthday party! She will go to the YMCA's swim camp this summer, and she may earn a spot on the junior varsity swim team.

Spatial awareness and awareness of the environment are concepts which can be difficult even if one is sighted and hearing. Children, born without adequate vision and hearing, will have a developmental delay in this area unless intervention is incorporated early on in development. When early intervention is incorporated early in life, children with deafblindness can appreciate and understand the world around them and increase the likelihood that they will be independent in most activities of daily living. This fact has been recognized and many early intervention programs have been implemented in recent years. There are a few books and articles which recognize early movement experiences as a key to increasing understanding of the world and independence (Haring & Romer, 1995; McInnis & Treffry, 1993.

Example: Jessica is a 2-year-old girl with congenital deafblindness due to prematurity. She has been crawling slowly and recently learned to pull herself up to a stand. Her grandmother had been her guardian, and had watched her every day at home. She was not aware of early intervention services. When the local 307.11 representative discovered her existence, she developed an early intervention program for her four mornings a week. The specialists in the program were trained on strategies that would work with Jessica. Jessica was stimulated to go through obstacle courses, given opportunities to jump on a rebounder, encouraged to feed and dress herself, encouraged to explore the diverse environment, involved in co-active movement, and given immediate positive feedback for her actions. Her grandmother and siblings were taught these strategies and they were also implemented at home. In three months, Jessica was walking, playing and asking for more!

DISCUSSION

Options for physical activity Physical education curriculums differ from school to school. The following are many of the typical units found in physical education classes around the country.

Pre-school & Lower Elementary

- Body awareness
- Spatial awareness
- Locomotor skills
- Manipulative
- Rhythms
- Hula hoops
- Parachute
- Simple tumbling

Object control
- kicking
- throwing (over and underhand)
- batting
- catching
- Tag games
- Scooter boards
- Fitness games

Upper Elementary & Early Middle School Sports skills lead-up activities
- Tennis
- Softball
- Gymnastics
- Soccer
- Flag football
- Dance
- Basketball
- Aerobics
- Volleyball
- Wrestling
- Badminton
- Bowling
- Golf
- Hiking/Backpacking
- Cross Country Skiing
- Canoeing
- Rock climbing
- Martial arts
- Aquatics

It is important to note that the activity should be age appropriate therefore, taught at the developmental level. The skills for the activities should be taught as the focus of the unit, and cooperative games and lead-up games should be played as opposed to the sport for a competitive purpose. It is important to focus on the child's skills in order to encourage enjoyment of physical activity. These sport concepts are later applied to competitive games and sports after they have mastered all the skill components.

Recreation

Outdoor activities
- Canoeing
- Kayaking
- Boating
- Camping
- Hiking/Backpacking
- Rock climbing
- Fishing
- Horseshoes
- Tether ball
- Rollerblading
- Rollerskating
- Skateboarding
- Frisbee
- Parks

Indoor activities
- Bowling
- Ice-skating
- Board games
- Darts
- Roller-skating
- Theater
- Museums

Fitness
- Bicycling
- Running
- Fitness
- Aerobics
- Aquatics
- Dance

OPPORTUNITIES FOR PHYSICAL ACTIVITY

Key Points to remember when getting involved in physical activity involve individual strengths and abilities

A. Communication

It is important to know what form of communication the student uses. As an example, if the child is participating in swimming, the instruction will vary depending on whether the child communicates by visual sign language, hand-over-hand signs or by pictures. Please see the communication chapters for more information on these systems.

Example: Mrs. Mason's beginning dance class. A student, Christine, is a 12-year-old girl who is deafblind. Mrs. Mason observes Christine in her art class at school. She sees Christine using signs and gestures as her receptive form of communication with her peers, and speech as her expressive language. Mrs. Mason then learned some basic signs for each dance step she was teaching, and took the time to listen to feedback from Christine. Because Christine uses sign for her receptive communication, Mrs. Mason understood that Christine had limited hearing. She then utilized strobe lights to set the beat for her beginning dance classes. Christine enjoyed her class so much she enrolled in the intermediate class with the same teacher!

B. Ambulation

It is important that the teacher knows how the child ambulates. Important questions include the following: Does he/she use a wheelchair, a walker, a cane, a guide, or independently? What surfaces are best for him/her? Does he/she use multiple forms of ambulation such as a wheelchair to get places and a cane once he/she gets there? When developing physical activity programs, this is very important information to attain prior to instruction

Example: Jose is a student in Mr. Jones's 8th grade physical education class. Jose's class will be doing a soccer unit. Mr. Jones knows that Jose uses a wheelchair to get places, and usually crutches once he gets to the class. He is totally deaf, yet has some low vision. Mr. Jones gives Jose the option to practice and/or play in the chair or using his crutches. Jose tries different skills utilizing both methods and he decides to practice kicking using his crutches, but when it came to the game, he wanted to be in his chair because he moved much better. With a simple rule adaptation that all children had to touch the ball before they could score, Jose was an active part of the game.

C. Range of motion, motor skill and strength

Determining how much range of motion, motor skill and strength your participant has is imperative in order for the instructor or program director to write individual goals and objectives for class and the IEP. This information can be collected using the Brockport Physical Fitness Test (Winnick & Short, 1998) for flexibility and strength and the Test of Gross Motor Development (Ulrich, 1985).

Example: Julie is a six-year-old girl who is deafblind as a result of prematurity. Her physical therapist and physical education teacher have collaborated to determine her areas of need that should be highlighted in the IEP. She has weakness in the areas of upper body strength, upper body flexibility, and locomotor skills. The therapist and teacher added these components to her IEP, and she worked on these areas daily with her physical education class, family, and therapist. Julie participated in activities such as an obstacle course, monkey bars, tumbling, wheelbarrow races, relay races, and parachute activities with peer tutors in each. At the age of seven Julie has improved her locomotor skills, and has upper body strength and flexibility very close to her same-age-peers.

D. Independence

The degree of independence for individuals who are deafblind is often determined by how much previous exposure the individual has had in a given activity. Some children will be able to perform all activities independently, while some will need total assistance. Other factors that influence the level of independence include the amount of hearing and vision a child possess, secondary disabilities, and the instructor's ability to demonstrate. It is imperative that the instructor determines the child's level of independence in order not to give too much or too little assistance in an activity. If an instructor starts an activity with too much assistance, she will not really know how independent the child is, and if the instructor starts out with too little assistance, the child may not reach any significant level of success, and may become frustrated or bored. The instructor can determine what level of assistance to use by task analyzing a skill into it's component parts and asking the child to perform each part of the skill with little or no assistance. If the child has difficulty on one or more parts, the instructor may give the child some physical assistance in order to be able to perform all the parts, and decrease assistance as the child becomes more proficient at that skill.

Example: Robert is a 13-year-old boy in 6th grade. He is in summer camp and his camp counselor; Mr. Winnick wants to teach all the boys how to cast a fishing rod. Robert has been in camp before, but Mr. Winnick was not there and had no idea if he had experienced fishing. The other kids in the bunk did not remember how independent Robert was, but Robert said that he had fished before, but could not describe his level of independence. Mr. Winnick wanted Robert to be involved to the fullest extent possible, but did not want him to hurt himself or others, or become frustrated. Mr. Winnick task analyzed a cast and tested Robert to see what he could do. The following is the task analysis by used Mr. Winnick:

Fishing Task Analysis
_____Bait the hook with a worm
_____Reel in the remaining line
_____Bring the rod back over the shoulder
_____Release and cast the rod forward
_____Lock the release on the reel

Mr. Winnick walked through each step with Robert to determine what he could do independently. When he finished the task analysis, it was apparent that Robert could bait the hook, reel in the line, bring the rod back over his shoulder and lock the release independently. He needed assistance with the timing of the casting and release of the reel. After some hand-over-hand assistance with the cast and release, Robert was able to perform the task independently. On his next fishing trip Robert caught two fish! Now, taking the fish off the line is a different story!

IMPORTANT RULES

A few important rules of thumb to follow when developing and adapting activities for children or adults who are deaf-blind include the following:

1) Ecological Task Analysis (Davis & Burton, 1991). Ecological Task Analysis theory suggests that aspects of motor performance emerge from the constraints of the performer, the environment, and the task. Manipulating one or more of these three types of constraints will improve success for the individual. Participants should be afforded the opportunity to use a variety of equipment, and have choices about how to optimally perform the desired activity. This will allow the individual, when possible, to have some input on the type and extent of adaptations made.

2) Link movement to language (Van Dijk, 1966). Once the child knows the movement and what it is called, he/she has the potential to execute the skill independently.
3) Utilize Partial participation. Partial participation is better than no participation (Block, 1992). If a child needs moderate to total physical assistance to participate in an activity, that is better than a lack of participation. The person assisting can be a peer, a sibling, the teacher, or a volunteer.
4) The fewer adaptations the better. Always begin with the amount of assistance that will ensure desired performance and success (Lieberman, 1995).
5) Adaptations are not a one-time occurrence. Adaptations must be constantly monitored to determine whether further adaptations are necessary and to ensure success of the individual.
6) Utilize the name of the sport, skill or activity even if it is drastically modified from the original version. As an example, if you have made several adaptations to a game such as golf, with a different ball, a different club, and holes closer together, you can still call it golf. If we call activities different names because they look different than the original or "normal" version, then individuals who are deaf-blind will not have the satisfaction of knowing that they can really play golf. For example if the individual goes to a group home and is asked if he plays golf, he can say "Yes but I use this type of ball, and this type of club, and I will try to golf on your course". If we call golf something else he would say "no" and perhaps be excluded unnecessarily.

Example: Cory, a 17-year-old young Deaf woman with a visual impairment and cerebral palsy. She uses a wheelchair for ambulation, and has travel vision with corrective lenses. Cory lives in an environment which has long winters. Cory was introduced to cross-country skiing by her high school physical education teacher. She sat in a sled, and used cut-off poles for propulsion. Cory was given occasional directional cues by her teacher or a friend in order to cross-country ski successfully. When she moved to a group home, they offered cross-country skiing every week. Cory became involved because she knew she could ski with her minor adaptations. She now cross-country skis regularly with her friends and family.

7) Incorporate disability awareness simulation activities. Modify activities in a way which students without disabilities assume the impairment of the individual with a sensory impairment (Winnick, 1978).
8) Emphasize activities which force the participant to use their remaining hearing and sight. It is imperative that individuals with deafblindness learn to use their remaining senses to the best of their ability and any activity presented should encourage them to do so.
9) Emphasize activities which promote movement. Individuals who are deafblind are often reluctant to move. It is imperative that these individuals are encouraged to reach their physical potential and eventually govern their own movement experiences. For many individuals with deafblindness, this will not occur unless it is taught. Beginning activities which promote movement are:
    a. Parachute swing: two people hold on to the parachute and swing the child inside the parachute.
    b. Incline roll: place the child on top of a low incline and allow him/her to roll or crawl to a motivating sound source at the bottom.
    c. Scooter pull: child sits on a scooter and allows the teacher to pull him/her around the gymnasium with a hula hoop. The child must hold on to one end of the hula hoop.
    d. Scooter push: child sits on a scooter and pushes him/herself around cones or from one sound source to another. The child can also lie on his/her stomach and pull him/herself with their hands around the room.

e. Therapy ball push: in an assisted sitting position, the child pushes a large heavy therapy ball to a sound source or a person. This builds upper body strength to assist in crawling and creeping.
f. Rebounder heaven: the child jumps on a rebounder while holding the wall, the teacher, or a bar.
g. Bell Balloon bash: Child chases a bell balloon around the room crawling, walking, or running guided if necessary and kicking it when he/she can (Lieberman & Cowart, 1996).

* Material taken in part from :Lieberman, L.J. (1996). Adapting games, sports and recreation for children and adults who are deaf-blind. Deaf-Blind Perspectives, 3(3).

OPTIONS FOR INSTRUCTIONAL MODIFICATION:

Explanation- explaining what you want the child to do in simple terms.
- should be done in the mode of communication the child understands
- should be repeated in a different way if the child does not understand the first time
- should be used with demonstration to ensure understanding if the child has any usable vision

Demonstration/Modeling- showing the child what you want him/her to do.
- should be done in the child's field of vision
- should be done by someone as close as possible to the child's size and ability
- should be done whole-part-whole when possible. This means that you should demonstrate the whole skill, then parts (task analysis), then the whole thing again.

Physical assistance/Guidance- assisting the child physically through the desired skill or movement.
- should be documented where you physically assisted, how much assistance was given, and for how long.
- should tell the child you are going to touch him/her before you physically assist
- should try to fade assistance to "normal" touch cues when possible

Brailling- allowing the learner to feel a peer or the instructor execute a skill or movement which was previously difficult to learn with the three previous approaches.(Lieberman & Cowart, 1996)
- should tell the child where and when to feel you or a peer executing a skill
- should document when and where the child touched you or a peer and why
- should be repeated as many times as necessary to ensure understanding
- should be combined with the other teaching methods to increase understanding

Teaching Techniques- These involve utilizing different teaching approaches depending upon the students learning strengths.

Command Style: This is when the teacher is in total control of all decisions.

Task Style: The teacher develops a series of task cards (may be brailled or in pictures) that progressively lead to the achievement of an instructional objective.

Guided Discovery: Students are encouraged to discover movement solutions that meet the criteria stated by the teacher. Using questions or short statements, the teacher guides the students in a progressive series of steps.

Problem Solving: Similar to Guided discovery style, the Problem Solving style emphasizes the development of multiple solutions to a given problem posed by the teacher. (Winnick, 1995)

Example: Mrs. Merritt is a horseback riding instructor and has taught at her farm for 18 years. Every year she gives eight weeks of lessons to the local church camp group. This year as part of her extended summer school recommendation Annette joined the church camp. Annette is

13 years old and has congenital Rubella. She has some balance difficulties, uses gestures and some signs, is totally deaf, and has some usable vision close up. In camp Annette used an intervener for most activities. The intervener, Mary, came along for the outing to interpret during the experience. Mrs. Merritt has taught in the same manner since she started (command style) and considers herself very successful. On the first day of class she began to teach using the methods she had been using for years. As a result, the girls quickly remembered the skills they had acquired in previous years. They all wore a velvet horseback riding helmet, stepped with the left leg, swung the right leg over, and rode with the reigns in their palms with thumbs up and sitting upright. When it was Annette's turn, she insisted on wearing her biking helmet, stepping with the right and swinging the left leg over, wearing the reigns around her wrist so she could sign, and leaning over hugging the horses neck. Mrs. Merritt was very confused and frustrated with Annette's technique and attempted to change the way Annette rode. Her intervener Mary explained why she needed to ride this way and after great consideration, Mrs. Merritt decided that there were other ways to ride, and that Annette's way was best for her and it was fine. From that day on Mrs. Merritt gave more options in her lessons (guided discovery, problem solving) and allowed her students to explore what was best for them. Annette attends camp every summer and she now rides with her own helmet, sitting up, and with the reigns around her wrists.

Adaptations

Many children who are deafblind will not be able to be successful in regular activities without some type of modification. Modifications may include changing the rules, equipment and environment.

Rules: A rule modification can be anything that deviates from the original or culturally acceptable rules of the game. Individuals who are deafblind may need the rules adapted in order to be successfully included.

Example: Adam is a 13-year-old boy in seventh grade. His physical education class is starting a hockey unit. Adam is deaf and has low vision with cerebral palsy and mild mental retardation. Adam, along with his physical therapist, mother, and physical education teacher, collectively determined what would make him most successful in this unit. They decided that he should start the unit with minor physical assistance and use a frisbee instead of a small puck. His class worked on skill development for two weeks, and Adam worked successfully with his peer tutor. When it came time for the game, Adam was allowed ten seconds to hit the frisbee. In addition, Adam was required to touch the frisbee before his team could score.

Equipment: Equipment modification is any modification that would make the participant more successful than using the pre-existing equipment. Individuals who are deafblind may need equipment adapted for a number of reasons such as assistance in grip, increased auditory awareness, limited range of motion, increased tactile cues, increased visual stimulation, increased independence, etc..

Example: Hanna is an 8-year-old girl. She is visually impaired, hard of hearing and has mild cerebral palsy in her legs. Hanna uses a wheelchair as her primary means of ambulation. Hanna can push her chair independently, yet is slow, and often has a hard time gripping her wheel rims. She uses signs, gestures, and speech as her primary means of communication. Hanna's classmates are learning signs and enjoy her participation in all activities. Hanna's physical education class is working on a parachute unit. Hanna's teacher was thrilled by this because one of Hanna's priorities on her IEP

was upper body and grip strength. In order for Hanna to fully participate in the parachute unit, her teacher made some modifications with the input of Hanna's mother, the teacher, and the physical therapist. The handle on the parachute was small for Hanna, so the teacher wrapped duct tape around it to increase the size. The teacher used a bright flashlight for Hanna to follow, when the light went up, she was to lift the parachute up, and when the light went down, she brought the chute down. When they played a ball game with the parachute the teacher had big, bright balls so she could track them in the game. In addition, Hanna had a trained peer tutor with her during class to assist in understanding, feedback, and physical assistance when needed. Hanna and her peers enjoyed the game so much, they asked to borrow the parachute at recess and successfully included Hanna in each game.

Environment: Environmental modifications may be needed in order to successfully include a child with deafblindness. Often times these modifications are not noticed until they become a problem. It is never too late to modify the environment to increase the success of an individual. In order to know what needs to be modified the instructor may ask the parent, previous teachers, or the participant himself. Environmental modifications include: decreasing distractions, increasing visual cues, limiting noise, changing lighting, increasing accessibility of the playing area, etc.

Example: Sal is nine years old and was recently diagnosed with Usher Syndrome. He is adjusting to his change in vision, but often finds certain things annoying or frustrating. He has been best friends with four friends in his neighborhood since he was young. They know the majority of signs and use gestures for communication. Before he was diagnosed with Ushers he played kickball every weekend at his friends house in the back yard. Sal found it more and more frustrating to kick their faded red ball on the grass, and run on the uneven grass to the shirt they laid down for a base. He was even more distracted in the outfield with the two birdhouses and kite in the trees, the houses, and the satellite dish in the neighbors yard. It was hard to distinguish between the ball, the bases and all the distractions in the background. Sal's friends noticed this and thought maybe they should stop playing kickball, but this thought made Sal even more frustrated. As a group they decided how Sal could participate more successfully. They moved their game to a cul-de-sac about 3 blocks away. The blacktop was smooth, and there were only green trees and one dark house in the background. Their parents bought them a yellow ball and four orange cones. They used chalk to draw a white line from home to first, second and third so Sal could run without confusion. They continued to play kickball and now even play baseball with the same yellow ball. Although Sal was losing more and more of his vision, his friends understood his needs and changed what was necessary to include him as much as possible.

Curriculum modification examples

The tables at the end of this section are adapted units. Each unit has a title and four variables; equipment, instruction, environment, and rules. Listed under each variable are a variety of options from which the teacher can choose. The teacher determines what adaptations will enable the child to become most successful and checks all that apply. The adaptations should be documented and kept in the student's file for the parents, administrator, future teachers, and the IEP.

It is important to keep in mind that the order of teaching for successful learning and maximum enjoyment is skill development, cooperative games, and finally, once these two components are mastered, competition. In addition, adaptations, modifications, and variations are not a one-time occurrence. They need to be continually monitored to ensure the success of the child.

Tables are at the end of this section

Fitness modification examples (Lieberman & Taule, 1998)

Bicycling:

* Independently: Individuals who have some usable vision may be able to ride a bicycle independently in a quiet park or around a track. It is always safer if there are peers or individuals with sight to ensure safety if this is the chosen mode of fitness.
* Tandem bicycles: Tandem bikes allow the sighted participant to ride in the front of the bike, while the participant who is deafblind rides in the back. The person in front is responsible for steering, peddling and stopping. The person in the back is responsible for peddling. Tandem bikes can be purchased through most bicycle stores and range from $400-$2,000. Be sure to try out several bikes before you purchase one. If you are not sure who to ride with, contact your local bicycling club, university, or deaf club. When riding be sure to develop specific signals for turning, stopping, or emergencies.
* Surrey or duo bikes: Surrey, or duo bikes are bikes where the participants ride side by side. The sighted participant is responsible for steering and stopping. This is more conducive to communication for individuals who are deafblind because the riders are side-by-side. The purchase of these bikes usually takes place through specialty bike stores. Your local bike store will give you directions about where to get a catalogue for these neat bikes.
* Stationary bicycles: These bicycles can be used independently by anyone who has some functional use of their legs. Many stationary bikes will read the distances traveled and amount of time ridden. These can be purchased for $100-$1,000 in most sporting good stores. Be sure that you have a way to record the distance traveled if this interests you. You may also wish to ride for a certain period of time.
* Bicycle stand: Bicycle stands can turn an ordinary ten -speed into a stationary bike. These are now similar to stationary bicycles and can be purchased for under $100 from any sporting good stores.

Jogging:

* Sighted Guide: The runner grasps the guides elbow, shoulder or hand depending upon what is most comfortable for the runner and guide.
* Tether: The runner and guide grasp a tether, which is a short string, towel or shoelace. This allows the runner full range of motion of the arms, while remaining in close proximity to the sighted runner.
* Sound source: The guide rings bells or shakes a noisemaker for the runner to hear while they run side-by-side. This works best in areas with limited background noise and for runners with enough residual hearing.
* Guidewire: The runner holds onto a guidewire and runs independently for time or distance. Guidewires can be set up permanently, or temporarily. A guidewire is a rope or wire pulled tightly across a gymnasium, or track. A rope loop, metal ring, or metal handle ensures that the individual will not receive a rope burn and allows for optimal performance. The runner holds onto the sliding device and can run for as long as he or she wishes independently.
* Sound source from a distance: The runner runs to a sound source such as a clap or a bell. This can be done as a one time sprint or continued for a distance run.
* Sighted Guides shirt: The runner with partial vision runs behind a guide with a bright shirt. This must be done in areas where it is not too crowded. Be sure to pick a color which is recognized easily by the runner.
* Independently around a track: Runners with low vision can follow white lines on a track when the track is relatively empty. A dark track with bright lines should be used.
*Treadmill: Running on a treadmill provides a controlled and safe environment. Treadmills can be purchased at most sporting good stores. They will cost anywhere from $200-over

$1,000. Be sure to purchase a treadmill with a safety feature in case you want to stop quickly. Also, many will come with timers, or mileage readers. If you want this feature, be sure to tell the sales person.

* Wheelchair racing: An individual in a chair can use any of the above adaptations if necessary and appropriate. The individual can push him/herself in the chair for long distances to gain the same aerobic effect. Again, this can be around a track, their neighborhood, or on a paved path with assistance.

Fitness/Exercise Training

This section will discuss the bulk of a fitness program, the exercise phase, specifically focusing on techniques for teaching individuals who are deafblind muscular strength and endurance training. The safest way to perform muscular strength and endurance training is to utilize a circuit of stationary machines. The machines may consist of a bench press, or a leg flexion-extension machines, a sit-up board, or a universal machine. The following are some strategies to introduce and instruct circuit training.

*Allow time for exploration: When introducing an individual to a machine allow time for tactile and/or visual exploration.

* Demonstration: The instructor should demonstrate the movement and link the movement to language, including the name of the exercise and muscle involved.

* Option to perform: The individual is encouraged to try everything yet, it is important that they understand that they can decline.

The following are some adaptations to the physical environment:

* Pictorials/Braille instructions: Allow time for the person to look at performance pictorials and/or the opportunity to read about it.

* Visual/Tactual perimeter: For safety, mark the perimeter of the exercise machines with rope or contrasting colored tape on the floor.

* Adaptations to equipment: Use large print, hi-mark and braille on/off switches. Vibrating timers can be worn around the neck or in the pocket.
    - Number stations: Use large print, hi-mark and braille each piece of equipment with a designated number. You could also have a rope, tape or tactile guide from one piece of equipment to the next one.

Aerobics:

The term aerobics means literally “with oxygen” or the “steady state transport of oxygen to the working muscles” (Shephard, 1990 p. 5). The fitness activity called aerobics involves sustained physical activity to a point where the body is utilizing oxygen. This means that the body has to utilize 60%-80% of its maximum heart-rate over a period of time. To determine your working heart-rate, subtract your age from 220, then multiply that number by .60, .70, or .80 depending upon how hard you want to work (American College of Sports Medicine, 1991).

Example: Nancy, who is 32 wants to work at 60% of her maximum heart-rate. She would take 220-32= 188x.60=112.8. This means that Nancy’s working heart-rate is 110-120 beats per minute. To ensure that Nancy is working up to this level, she would sustain an activity such as aerobic dancing, cycling, or jogging in place for 5-10 minutes. While continuing this activity, she would take her pulse for 6 seconds, then add a 0 to her pulse score and compare that to 120. If she came up with 14, that translates to 140 heartbeats per minute and she should slow down a little. If she came up with 10, that translates to 100 beats per minute and she needs to step up the pace a little to maintain her desired heart-rate. Try to sustain the working heart rate for over 15 minutes, preferably 30 minutes. Remember to start out slowly.

Some examples of aerobic activities include:

*Step aerobics: This is sustained stepping on and off a 4, 6 or 8-inch high platform at varying tempos and in different directions. This type of activity is adaptable to any level of ability. If an individual cannot step onto a step he/she can do the same activities without a step.

* Low impact aerobics: sustained activity keeping one foot on the ground at all times. You can march with high knees, kick to the front, bring your knee up and clap under your leg, march in place and bring your arms up and down, do toe touches to the front, right and left, or just walk briskly around the room. As long as the individual is moving and keeping his/her heart rate up this activity can be executed successfully by anyone who is ambulatory.

* High Impact aerobics: This is sustained activity with both feet leaving the floor at some point during the movement. You can do jumping jacks, kicks to the front, jog in place, bring your knee up and clap under your leg with a jump with the other leg, pendulum leg swings out to the sides, side jumps and front jumps alternating directions, etc..... An individual obviously has to be in condition to sustain this activity for a long amount of time.

*Wheelchair aerobics: This is aerobics done in a wheelchair. The individual moves his/her arms up in the air, out to the sides, punches down, or twists at the hips for eight counts or more to elevate the heart rate. If the individual can move his/her legs they can move their legs at the same time as their arms. The idea is to increase the heart rate and amount of energy expenditure. Any amount of movement can elevate the heart and if this is continued for over 5 minutes it is considered aerobic. Make sure the point is to elevate the heart rate and have fun!

* Physical assistance and/or Brailling (Lieberman & Cowart, 1996): This can be used when the individual does not have enough vision and/or hearing to understand the movement. The physical assistance and brailling needs to be explained so the participant will know what to do. The instructor can then simplify all the moves to one touch cue or a sign cue that the participant will understand. An example would be if the instructor wants the participant to march in place as part of a low impact aerobics routine. Once the concept is understood the instructor does the sign for soldier, or taps the individual's knee to signal marching. The participant now knows he will march for eight counts then a new cue will be given for the next move.

* Others: Any activity which brings your heart-rate up for a sustained period of time is considered an aerobic activity. Cycling, running, swimming, walking, or aerobics can accomplish this.

The instructor can also set up routines so that one eight count move is always followed by the next eight count move and so on. This will depend upon the ability and level of condition of the participant. Once the moves are understood the instructor should try to fade out the touch cues for physical assistance and brailling to promote independence.

**Note these activities can be enjoyed with or without music. It is much easier to practice them without music first, then add that variable when you so desire.

Aquatics: Swimming is one of the best activities for individuals who are deafblind. There are few barriers, and the swimmer can move freely without worrying too much about obstacles. Water can aid in range of motion, balance, stability, locomotion, and socialization. A few adaptations for the aquatics area include:

* Flotation devices: Utilize a variety of flotation devices when needed. An individual can still receive an aerobic workout with a flotation device. If the individual is afraid to swim in the deep end without a flotation device, that is fine. He/she can swim laps with the flotation

device if this makes them more comfortable. Kickboards are helpful because the board hits the side of the pool before your head does!
* Trailing: Use the wall and lane lines as guides for lap swimming the length of the pool.
* Distance traveled: Use some type of counter devices such as flip cards, counters, or rings to assist in understanding of distance traveled or number of laps.
* Improved skills: The pool is a wonderful medium for teaching locomotor and object control skills because water provides full-body support and balance is naturally enhanced.
* Beginner swimmers: Utilize a lot of hand-over-hand teaching and brailling for the instruction of beginners (Lieberman & Cowart, 1996)
* Tread water: For individuals who do not feel comfortable swimming laps, treading water is a good aerobic workout and you don't have to worry about bumping your head on the wall of the pool!

Dance: Dancing is an opportunity for free movement and exercise as well as a chance to be involved in a crowd, bumping bodies, moving, holding hands, and socializing (Smith, 1994).
* Decibels: Play music very loud and turn up the bass. Be sure to inform those with hearing aids before you turn the music up so they can adjust the setting if necessary.
* Beats of music: Utilize strobe lights that reflect the beat of the music. You could also have participants hold a balloon which can pick-up the vibrations from the music (Smith, 1994).
* Wooden floor: Dance on a wooden floor to increase vibrations and tactile cues.
* Peer tutors: Utilize peer tutors to give modeling, and physical assistance (Lieberman & Cowart, 1996; Houston-Wilson, Lieberman, Horton, Kasser, 1997). Deaf peer tutors are also excellent role models!

SUMMARY

The benefits of physical activity have been well documented, yet many children who are deafblind are excluded from participation. In addition, the success or failure of the individual in physical fitness, or aquatics is largely dependent upon the attitude of the physical educator, teacher, parent, support staff, and individual him/herself (Downs &Williams, 1994; Rizzo & Kirkendall, 1995). It is important to remember that individuals who are deafblind can achieve the same benefits and success as their hearing and sighted peers as long as those working with these individuals creatively adapt the activities in order to meet each individual's unique needs.

* The previous material was taken directly from: Lieberman, L.J., & Taule, J. (1998). Including physical fitness into the lives of individuals who are deafblind, Deafblind Perspectives, 5(2), 6-10.

INCLUDING PHYSICAL EDUCATION ON THE INDIVIDUAL EDUCATION PLAN (IEP)

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Physical education is found in Public Law 105-17, the Individuals with Disabilities Education Act (IDEA) under special education. Specifically, in the law physical education covers fundamental motor skills, physical and motor fitness, play, games and sport activities, rhythms, dance, aquatics, leisure and recreation, and community based activities. Because physical education is listed in the law it is a **direct service**. This means that it must be included in every child's schedule and on every IEP. Many physical educators and teachers do not include physical education on the IEP because they do not know how to test the student who is deafblind. There are no specific tests to evaluate a child who is deafblind. This minor problem can be overcome by following the principle of the three P's.

ASSESSING FOR PHYSICAL EDUCATION: THE 3 P'S

One way to use authentic assessment data in the development of IEP's is to follow the procedure known as the 3 P's. This procedure has the teacher analyze the *Process* of the movement, the *Product* or outcome of the performance and the *Parameters* under which the performance is exhibited. The following provides a description as well as an example of each term.

Process

Process information relates to the form or quality of a movement. Skills can be analyzed into component parts through task analysis or through the use of ready-made checklists. Fronske (1997) provides a variety of task analyzed sport skills which teachers can utilize in authentic assessment. For example, Fronske (1997) task analyzes the underhand volleyball serve as follows:

Underhand Volleyball Serve
___step toward net with opposite foot of serving arm
___palm up making fist with serving hand
___weight shift forward
___contact ball in front of body
___follow through

This example could be used as authentic assessment data on the ability of students to master the underhand serve. Furthermore, it could be used to develop IEP goals and objectives for students with disabilities in inclusive classes without additional expenditure of time as all students would be assessed on this particular skill

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Product

The product of the skill relates to the quantitative value produced by the student's performance. Skills will be quantified differently depending upon the desired outcome, age of the student and goals of the class. Using the underhand volleyball serve, the product could be quantified by:

1. the number of components of the skill the student was able to master;
2. the number of times the student served the ball;
3. the number of times the ball went over the net or (4) the number of times the ball lands in a pre-determined placement.

Parameter

Parameter refers to the conditions under which the skill was performed. Examples of parameters which could be examined include: (1) type of equipment used; (2) distance from where the skill is executed; (3) environmental arrangement including indoors, outdoors, group or 1:1 setting; and (4) levels of assistance (independent, verbal cue, demonstration, physical assistance) if required. Again, using the underhand volleyball serve, the equipment parameters, which could be chosen, include a regulation volleyball, a volleyball trainer or a beach ball. The distance parameter may include the distance served from the net. The environmental parameter in which the serve takes place could be either indoors or outdoors, during a game situation or drill situation, or in small or large groups. Lastly, the level of assistance required will depend on the individual student's functional level. Students may require verbal cues, demonstration or physical assistance. Assistance may come from a peer, teachers aid or the teacher directly.

Taken in part from: Houston-Wilson, C., & Lieberman, L.J. (in press). Becoming involved in the Individualized Education Plan process: A guide for regular physical educators. Journal of Physical Education Recreation & Dance.

IMPORTANCE OF BECOMING INVOLVED IN THE IEP PROCESS

Every child needs stimulation in all behavioral domains for healthy development. It is imperative that the psychomotor domain be represented on the IEP. By documenting in a measurable way what the child can do, the teacher is diagnosing strengths and weaknesses. This information is imperative in future programming and goal setting for the child and their family. In addition, by documenting what the child can do in the psychomotor domain, the school, physical educator, parent, and administrators are committing to improving weaknesses which will eventually assist in a better quality of life. A teacher who documents progress and learning is held accountable for her teaching, and will benefit in the future by knowing that she made a difference, no matter how big or small.

Many children with deafblindness do not have physical education on the IEP. The following is a checklist to assist in IEP involvement:

Checklist for IEP involvement:

__Assess the current IEP for any information which may help you
__Determine who would know about the child's psychomotor abilities (parents, teachers interveners)
__Test the child on at least two areas and document present level of performance (utilizing the 3 P's)
__Document strength and weak areas in positive terms
__Develop short term objectives
__Meet with the multidisciplinary team to ensure common goals
__Attend the IEP meeting when possible
__Re-evaluate often to ensure goals and objectives are being met

EQUIPMENT COMPANIES:

Access to Recreation:- Adaptive Recreation Equipment for the Physically Challenged.
1-800-634-4351- to order catalogue
1-805-498-8186-fax
Community Play Things:-Safe and adapted playground equipment for young children.
1-800-777-4244-customer service
1-914-658-8065-fax
Jesana Ltd.- Adapted communication, recreation, play, and game equipment specifically for individuals with more involved disabilities. (walkers, bikes, tricycles, prone standards, etc.)
1-800-443-4728-to order catalogue
1-914-376-0021-fax
Project Adventure Equipment Catalogue- A source book for ropes courses and adventure programs.
1-508-524-4556 in MA or 1-770-784-9310 in GA
Sporttime/Abilitations- Sports, recreation, and games equipment for all individuals including those with sensory impairments and physical disabilities. (varieties of textures, shapes and colors)
1-800-850-8602- to order catalogue
1-800-845-1535 fax
S&S World Wide Games- Sports equipment for every occasion
1-800-243-9232- to order catalogue
1-800-566-6678- fax
Snitz- Sports, recreation and games adapted equipment for every occasion.
1-800-558-2224-to order catalogue
1-800-432-2842-fax
Team Rehab- Innovative assistive technology to increase independence for individuals with involved disabilities.
1-310-317-4522- for catalogue and journal
1-310-317-9644- fax
Things From Bell- A variety of sports, recreation and game equipment in many colors, shapes and textures.
1-800-642-7337- to order catalogue
1-800-543-1458- for orders only
1-800-432-2842-fax
Toledo- Physical Education supply company with inexpensive sports and playground equipment.
1-800-225-7749-to order catalogue
Wolverine Sports- sports, gymnastics, & coaching equipment.
1-800-521-2832-to order catalogue
1-800-654-4321-fax
Vital Signs- Instrumentation for rehabilitation, sports medicine, and physical fitness
1-608-735-4718-to order catalogue
1-608-735-4859-fax

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ELEMENTARY PHYSICAL ACTIVITY EXAMPLES

Jump rope

Equipment	Rules	Environment	Instruction
__Light rope	__Roll over rope	__Lay rope on floor	__Physical assistance
__Heavier rope	__Crawl over rope	__Student holds one side of rope	__Peer tutor
__Shorter rope	__Step over rope	__Student holds both sides of rope	__Peer holds one side
__Longer rope	__Leap over rope	__Student in wheelchair rolls over rope while holding rope	__1:1
__Velcro glove	__Jump forward over rope	__Use music	__Task analyze
__Bells on rope	__Jump sideways over rope	__No music	__Slow down
__Bright rope	__Swing rope and step over	__Limit stimulation	__Demonstrate
__Handled rope	__Swing rope and jump over	__Increase stimulation	__Feedback
__Cloth rope	__Swing rope and jump consecutively		__Brailling
__Plastic Rope	__Swing rope and jump double		__Homework
__No rope	__Swing rope and jump crossed in front		__Guided Discovery
__Rope cut 1/2	__Swing rope and jump back & double back		__Command Style

Spatial Awareness

Equipment	Rules	Environment	Instruction
__Mats	__Personal space	__Guided discovery	__Peer tutor
__Beanbags	__Control speed	__Visual boundaries	__Close proximity
__Balls	__Right	__Sequence centers	__Physical assist
__Ropes	__Left	__Play stations	__Verbal command
__Tunnels	__Up	__Give and get	__Brailling
__Hoops	__Down	__Exploration	__Stations/Tasks
__Scooters		__Obstacle	__Demonstration
__Tires		__Course	__Explanation
__Yarn balls			__Guided Discovery
__Balloons			__Problem Solving
			__Tactile Discovery
			__ Intervener Assistance

Laterality and Verticality

Equipment	Rules	Environment	Instruction
__Mats	__Up hill	__Play stations	__Peer tutor
__Cones	__Down hill	__Visual boundaries	__Close proximity
__Ropes	__Fast	__Stations	__Physical assist
__Stairs	__Slow	__Small space	__Brailling
__Tunnels	__Distance	__Give and get	__Verbal command
__Hoops	__Obstacles	__Exploration	__Stations
__Scooters	__Right	__Smooth surface	__Enlarged task cards
	__Left		
__Tires		__Textured surface	__Demonstrate
__Ramps		__Obstacle courses	__Guided Discovery
__Rhythm instruments			__Problem Solving
__Foot prints			__Tactile
__Climbing ropes			__Discovery
__Balls			__Intervener
__Bridges			

Balance

Equipment	Rules	Environment	Instruction
__Balance beam	__Holding objects	__Play stations	__Peer tutor
__High beam	__Forward	__Sequence centers	__Verbal command
__Low beam	__Backwards	__Give and get	__Brailling
__Narrow beam	__Dodging	__Stations	__Indirect
__Wide beam	__One foot	__Boundaries	__Physical assist
__Balance board	__Two foot	__Small space	__Enlarged task cards
__Bean bags	__Hands free	__Large space	__Close proximity
__Jump rope	__Sideways	__Obstacle	__Guided Discovery
__Mat	__Step over		__Task Style
__Ladder	__Step through		__Problem Solving
__Chair	__Step in		
__Tilt boards	__Step out		
__Bench	__Moving		
__Lines	__Stations		
__Rebounder			
__Steps			
__Tires			
__Hula Hoops			

Locomotor skills

Equipment	Rules	Environment	Instruction
__Cones	__Fast	__Boundaries/Tactile	__Physical assist
__Scooters	__Slow	__Small space	__Peer tutor
__Foot prints	__Directions	__Large space	__Task analyze
__Dots	__Rhythm	__Cones	__Demonstrate
__Ropes	__Holding objects	__Secluded	__Feedback
__Hoops	__Left	__Use music	__Brailling
__Tires	__Right	__No music	__Verbal command
__Mats	__Up	__Play stations	__Indirect
__Tunnel	__Doen	__Sequence centers	__Small group
__Stairs	__Low	__Give and gets	__Problem Solving
__Sound source	__High	__Bright Lines	__Guided discovery
__Video	__Down		

Object Control Skills

Equipment	Rules	Environment	Instruction
__Large balls	__Varied distance	__Non stimulatory	__Physical assist
__Small balls	__Against a wall	__Boundaries	__Peer tutor
__Auditory balls	__One hand	__Small space	__Task analyze
__Yarn balls	__Two hand	__Large space	__Demonstrate
__Wiffle balls	__Dominate hand	__Cones	__Feedback
__Tactile balls	__Nondom hand	__Secluded	__Brailling
__Heavy balls	__Dominate foot	__Use music	__Verbal command
__Light balls	__Non dominate foot	__No music	__Indirect
__Bright balls	__Underhand	__Play stations	__Small group
__Ball on a rope	__Overhand	__Sequence centers	__Problem Solving
__Hockey puck	__Sidearm	__Give and gets	__Guided Discovery
__Rackets	__Stationary		
__Bats	__Traveling		
__Paddles			
__Tee			
__Hockey stick			
__Bean bags			
__Sponges			
__Baskets			
__Buckets			
__Goals			
__Bases			
__Auditory Bases			

Parachute

Equipment	Rules	Environment	Instruction
__Large parachute	__Limit range of motion	__Smooth surface	__Explanation
__Small parachute	__Increase range of motion	__Grass	__Physical assistance
__Towel	__Change objective	__Mats	__Guided discovery
__Straps on chute	__Limit # of shakes	__Lighting dim/bright	__Problem solving
__Ace bandage around hand	__Increase # of shakes	__Stimulating	__Demonstration
__Bells on chute center/perimeter	__Limit amount of movement	__Limit distractions	__Close proximity
__Balls in chute bright or auditory		__Consistency	__Peer tutoring
__Parachute bright			
__Parachute tactile			

Twister

Equipment	Rules	Environment	Instruction
__Bed sheet	__Use only hands	__Limit space	__Explanation
__Blanket	__Use only feet	__Add space	__Demonstrate
__Raised shapes	__Use right and left	__Limit distractions	__Physical assist
__Shapes in different textures	__Count number found	__Add support staff	__Brailling
__Raised shapes	__Play with partner	__Give commands on a board	__Peer tutor
__Different colors	__Change rules	__Lighting dim/bright	__Problem solving
__Numbers in rows	__Change objective	__Limit sound distractions	__Teach signs for for shapes, colors, textures
__Letters in rows	__Limit space/objects to touch	__Cues given ex: light for right and left	
__Braille spinner	__Add space/objects to touch		
__Large print spinner	__Commands written		
__Tactile spinner	__Increase time allotted		

Roller-skating/Rollerblading

Equipment	Rules	Environment	Instruction
__Velcro skates	__Skate slow	__Smooth surface	__Explanation
__Brakes front & back	__Skate forward	__Soft surface	__Demonstrate
__Wrist, knee pads helmet	__Skate backwards	__Inclined surface	__Physical Assistance
__Trash can on wheels for support	__Skate in a circle	__Limited space	__Problem solving
__Shopping cart for support	__Skate w/partner	__Larger space	__Guided discovery
__Walker on wheels	__Skate in a line with group	__Lighting dim/bright	
__Tether	__Obstacle course	__Limit distractions	
__Bar held by peer	__Skate for distance	__Challenging using obstacles	__Peer tutor
__Hula hoop held	__Skate for time	__Limited people in the way	__Small group
	__Skate & dance	__Supportive	__1:1
	__Roller hockey		__Intervener explanation by peer
	__Skate for transportation		

SECONDARY PHYSICAL ACTIVITY EXAMPLES

Volleyball

Equipment	Rules	Environment	Instruction
__Volleyball	__No change	__Tactile boundaries	__Physical assistance
__Larger ball	__One bounce	__Visual boundaries	__Peer tutor
__Smaller ball	__Two bounces	__Limit distractions	__1:1
__Lighter ball	__Catch the ball	__Success oriented	__Task analyze
__Beach ball	__Walk with ball	__ Limit space	__Slow down
__Balloon	__3 passes		__Demonstrate
__Heavier ball	__4 passes		__Feedback
__ V-ball trainer	__Unlimited passes		__Task style
__Lower net	__Serve closer to net		__Intervener play by play explanation
__Higher the net	__No dunking		
__Auditory ball	__Limited space		
	__Cooperation vs. Competition		
	__More than 1 hit		

Swimming

Equipment	Rules	Environment	Instruction
__Personal floatation	__Cooperation vs competition	__Small space	__Physical assist
		__Large space	__Brailling
__Kick boards	__Elementary stroke	__Shallow end	__Verbal cues
__Lane lines	__Side stroke	__Deep end	__1:1
__Deck rings	__Breast stroke	__Lane assignments	__Direct
__Inner tubes	__Back stroke	__Tactile	__Indirect
__Rafts	__Floating	__Auditory	__Task analyze
__Mats	__Diving	__Boundaries	__Peer tutor
__Bright balls	__Surface diving	__Bright tape	__Proximity
__Bell balls	__Breath control	__Roped areas	__Demonstrate
__Radio	__Propulsion	__Padding	__Feedback
__Extension pole	__Kicking	__Lights lighter/dimmer	__Guided discovery
__Whistle	__Arm stroke games		__Task style
__Beach ball	__Object control skills in pool		__Small group

Basketball

Equipment	Rules	Environment	Instruction
__Auditory balls	__Bounce pass	__Bright boundaries	__Peer tutor
__Bright balls	__Double dribble	__Carpet squares	__Physical assist
__Tactile balls	__Undefended	__Shooting line	__Verbal cues
__Bell balls	__Time limitations	__Tactile lines	__Close proximity
__Buzzer basket	__Boundary limits	__Auditory lines	__Brailling
__High basket	__Free shooting	__Cones	__Bright clothing
__Low basket	__Throw-ins	__Ropes	__1:1
__Bright basket	__Walk with ball	__Clap under basket	__Task analyze
__Whistle	__Run with ball		__Slow down
	__Cooperation vs. competition		__Demonstrate
			__Feedback
	__Space limit		__Indirect
	__Keep away		__Direct
			__Task style

Soccer

Equipment	Rules	Environment	Instruction
__Auditory balls	__Ground pass	__Bright boundaries	__Peer tutor
__Bright balls	__Timed dribble	__Carpet squares	__Physical assist
__Tactile balls	__Undefended	__Shooting line	__Verbal cues
__Bell balls	__Time limitations	__Tactile lines	__Close proximity
__Nerf balls	__Boundary limits	__Auditory lines	__Brailling
__Bells on net	__Free shooting	__Cones	__Bright clothing
__Buzzer on net	__Throw-ins	__Ropes	__1:1
__Radio	__Walk with ball	__Clap behind goal	__Task analyze
__Fan	__Run with ball		__Slow down
	__Cooperation vs. Competition		__Demonstrate
	__Peer place ball		__Feedback
	__Free kicks		__Indirect
			__Direct
			__Task style

Track and Field

Equipment	Rules	Environment	Instruction
__Bright lane lines	__Set # of trials	__Bright boundaries	__Peer tutor
__Auditory start/ finish	__Time limitations	__Carpet squares	__Physical assist
	__Boundary limits	__Throwing line	__Verbal cues
__Soft hurdles	__Guide runner	__Tactile lines	__Close proximity
__Low hurdles	__Cooperation vs. competition	__Auditory lines	__Brailling
__Ropes		__Cones	__Bright clothing
	__Peer runners	__Ropes	__1:1
__Tethers	__Limited space		__Task analyze
__Sand pits	__Clap in target areas	__Jumping line	__Slow down
__Auditory jump board	__Form vs. time	__Success oriented	__Demonstrate
		__Limited distractions	__Feedback
__Tactile jump boards			__Indirect
__Auditory high jump			__Direct
__Bright colored bars			__Tandem run
__Various throwing objects			__Play by play action
			__Task style

Baseball/Softball

Equipment	Rules	Environment	Instruction
__Beep ball	__Set # of strikes	__Guide rails	__Peer tutor
__Auditory balls	__Set # of batting trials	__Carpet squares	__Physical assist
__Bright balls	__Hit off ground	__Shooting line	__Verbal cues
__Tactile balls	__Hit off tee	__Tactile lines	__Close proximity
__Bell balls	__Hit off fly	__Auditory lines	__Brailling
__Nerf balls	__No tag-outs	__Cones	__Bright clothing
__Whiffle ball	__Tag-outs on bases	__Ropes	__1:1
__Bells on bases	__Ground pass	__Clap behind goal	__Task analyze
__Buzzer on bases	__Time limitations	__Bright lines	__Slow down
__Radio	__Boundary limits	__Open space	__Demonstrate
__Fan	__Throw ball out	__Success oriented	__Feedback
__Tee	__Cooperation vs. competition	__Increase stimulation continuous explanation	__Indirect
	__Peer place ball		__Intervener
	__Peer runs		__Direct
	__2 bases only		__Tandem run
	__Limited space		__Play by play action
	__Hit hanging ball		__Task style

Golf

Equipment	Rules	Environment	Instruction
__Larger heads	__Limit distance	__Uncluttered- no sand or ponds	__Explanation
__Larger balls	__Add distance	__Limit distractions	__Demonstration
__Auditory balls	__Count every other hit or every third	__Predictable	__Physical assistance
__Brighter balls	__Move ball to preferred spot	__Braille description of course	__Brailling
__Larger grip	__Pair up w/buddy	__Consistent	__Peer tutor/buddy
__Shorter club	__Play in teams	__Play on cloudy day	__Command style
__Hockey stick in place of club	__Play for fun w/ no score	__Play at night w/ bright ball	__Task style
__String tied to ball and club	__Play frisbee golf	__Practice at a range	__Problem solving
__Golf cart w/driver	__Allow participant to make up own course	__Supportive	__Intervener explain game play by play
__Lighter clubs	__Allow more than one attempt at each hole		__Task analyze
			__Cooperative games
			__Show course on

*The previous curriculum concept was created by Michele Carron. Assistant Professor at SUNY Brockport.

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