Cerebral Palsy

Taken from:
FACT SHEEThttp://www.pecentral.org/adapted/factsheets/CerebralPalsy.htm
And
http://www.cust.educ.ubc.ca/wstudents/TSED/Portfolios1999/Tycho/ubccp/adapt.html

Cerebral palsy is a term used to describe a group of chronic conditions affecting body movement and muscle coordination. It is caused by damage to one or more specific areas of the brain, usually occurring during fetal development; before, during or shortly following birth; or during infancy. "Cerebral" refers to the brain and "palsy" to muscle weakness/poor control. Cerebral palsy itself is not progressive (i.e., it does not get worse); however, secondary conditions can develop which may get better over time, get worse, or remain the same. Cerebral palsy is not communicable. It is not a disease and should never be referred to as such. Although cerebral palsy is not "curable" in the accepted sense, training and therapy can help improve function.

The Teacher

What is necessary and valuable, more than in-depth knowledge of the disability, is to be a *good* teacher. The methods used to include a student with cerebral palsy (CP) will most likely benefit other disabled and non-disabled students. Teachers of students with CP:

1. must realize that every child in the class is their responsibility, not a “problem" to be dealt with

2. be flexible: be willing to make accommodations/ adaptations to the curriculum & materials, their instruction, and to re-write objectives for a student's needs
3. be able to work in a team
4. be a problem solver
5. believe in the student's ability to learn: although a CP student may not be able to speak or move fluently, they may be gifted (*eg.* Christy Brown)
6. realize that although a CP student may never become fully able to *conventionally* perform a skill, it is still valuable for them to learn it (*eg.* basketball for students in a wheelchair)
7. recognize that CP students may have high levels of frustration (not able to communicate, frequently misunderstood, etc.)

8. remember that the student's attitude to learning is very important -- must try to encourage a receptiveness to learning (class can be enjoyable and it should be challenging)
9. must differentiate between a student's misbehaviour and what is disability-related expression by the child
10. Use the resources available; get informed: watch videos, read books, etc.; communicate with others who have taught CP students

---

Team Work

Teaching a student with cerebral palsy should be done collaboratively:

1. consult with special education department, speech clinician, instructional aide, physical therapist, principal, parents, and the student -- work together to look at academic and therapeutic goals
    i. ask questions about the physical & instructional environment, social interactions, curriculum, etc.
2. consult with the student regularly
3. involve the family

Instruction

Physical Considerations

1. consult with school board physical and/or occupational therapists to identify the individual needs of a specific student
2. consider posture and movement -- the student's comfort will enhance their receptiveness to learning; similarly is important that they are physically receptive to taking in new information
3. Positioning: some CP students may find sitting in a desk uncomfortable; other positions may be recommended by an aide (*eg.* side sitting on the floor) -- consider this during instructional activities
    i. the student must change their position at least every 20-30 minutes (muscular tensions, fatigue, circulation)
4. CP students may have muscular stiffness, and may have difficulty with head "righting" (focusing on target) or orientation
    i. encourage students to stretch
    ii. assist child into proper head positioning if necessary, so that s/he can use a normal arc of vision to view the teacher or activity (check head & neck alignment)

5. because of poor motor skills, many CP students will have difficulty holding onto things (*eg.*pens, x-acto knives, etc.); learning aides may assist the student if necessary
6. muscle tightness may result in a student becoming fatigued; a few students may take naps

Instruction & Student Participation

1. Try to incorporate multi-sensory learning materials {CP students have limited development in Piaget's "object concept"/sensorimotor period (0-2 years of age)}:
    i. audio-visual
    ii. tactile (touch)
    iii. proprioceptive
2. "learning requires the active participation of the learner" : encourage discussion and active participation (statistics show that CP students are given few opportunities to participate)
    i. if possible, lab work, hands-on experience, creating something themselves
    ii. don't do everything for them if they can do some things by themselves
    iii. students can use any method, from speech to augmentative technology to eye-pointing, to communicate in the classroom
    iv. writing, if not possible by the student (or if spech-to-text software is not available) is usually done thru an aide
3. allow time for responses (at least 5 seconds)
    i. doing this will encourage participation & multi-word answers
    ii. ask open-ended as opposed to yes/no questions
    iii. encourage the student to use their augmentative device if available (over head nodding) -- some students will not be proficient with the technology
    iv. don't fill silence gaps between your question and the student's response
4. "learning is a social and individual process": peer and teacher interaction with the student should be a priority: cooperative learning, peer tutoring, discussion
    i. students need to succeed socially; include them in group activities, encourage peer interaction
    ii. to teach social and communication skills, the teacher will serve as a model for the student
5. choose learning activities, not simply to keep CP students busy or for evaluation purposes, but because it helps them learn & has educational value

6. be cautious of how much time is being spent on instruction, and how much is being lost to transitions, technology concerns/ repairs, therapies, toitleting, etc.
7. use better management & preparation to prevent interruptions or delays -- if interruptions do occur, give the student an independent activity to engage in while the teacher is busy with management activities

---

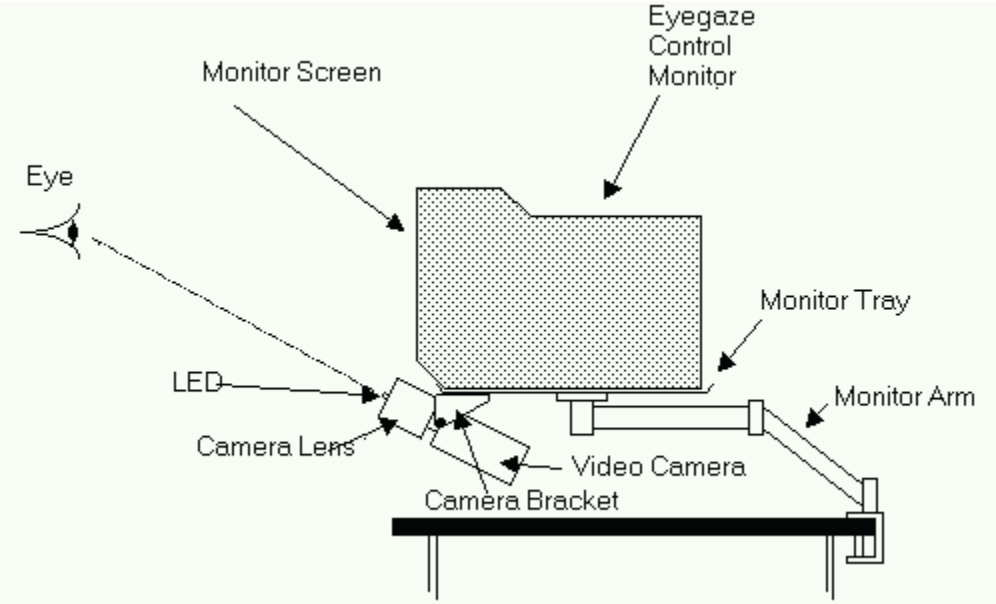
Curriculum

1. create a specific curriculum considering student's needs and that involves the student
2. get student input & let student help establish an academic program. Ask the student:
    1. is the work too hard/easy?
    2. is the pace too fast/slow?
    3. what teaching methods they prefer
3. provide opportunity for student choice (*eg.*let them select certain books to read, or give them a choice of topics, etc.)
4. consider the student's interests & their internal motivation to develop needed skills
5. find out what skill level they are at; don't make assumptions; build on their strengths
6. figure out what skills a CP student needs -- go beyond the standardized curriculum
7. keep high expectations
8. any curriculum should encourage active participation, discussion, cooperative learning
9. structure the curriculum and activities to allow the students to experience success, and demonstrate their competence
10. recognize that everyone is working toward a common goal; not everyone has to be doing the same thing
11. Assessment: don't time tests or give students longer to complete it; mark with different criteria if the student's disability puts them at an unfair disadvantage
12. consider accessibility/transportation (esp. with field trips, out of class assignments)

Technology

1. 85-95% of CP students have a speech disability; 30% have severely limited speech which cannot be easily understood. Students may use:

    i. Digitized Speech Generator (*Chat Box, Liberator*)
    ii. Bliss Board
    iii. Eye Movement Recognition Hardware



1. some devices do not match cognitive ability
2. it is important for teachers to become generally familiar with the devices
3. augmentative: not education itself, but a tool to facilitate education (a means to an end)
    i. the teacher needs to see the student behind the technology
4. books on tape; written instructions on tape or orally
5. computers:
    i. text-to-speech; speech-to-text (multi-sensory)
    ii. large fonts/ display
    iii. non-standard keyboards: single keystrokes= frequently used words
6. technology may need to be adapted for each classroom (entering in new vocabulary onto a board)

TYPES OF CEREBRAL PALSY

- ***Spastic cerebral palsy.*** In this form of cerebral palsy, which affects 70 to 80 percent of patients, the muscles are stiffly and permanently contracted. Doctors will often describe which type of spastic cerebral palsy a patient has based on which limbs are affected, i.e spastic diplegia (both legs) or left hemi-paresis (the left side of the body). The names given to these types combine a Latin description of affected limbs with the term plegia or paresis, meaning paralyzed or weak. In some cases, spastic cerebral palsy follows a period of poor muscle tone (hypotonia) in the young infant.
- ***Athetoid, or dyskinetic cerebral palsy***. This form of cerebral palsy is characterized by uncontrolled, slow, writhing movements. These abnormal movements usually affect the hands, feet, arms, or legs and, in some cases, the muscles of the face and tongue, causing grimacing or drooling. The movements often increase during periods of emotional stress and disappear during sleep. Patients may also have problems coordinating the muscle movements needed for speech, a condition known as dysarthria. Athetoid cerebral palsy affects about 10 to 20 percent of patients.
- ***Ataxic cerebral palsy.*** This rare form affects the sense of balance and depth perception. Affected persons often have poor coordination; walk unsteadily with a wide-based gait, placing their feet unusually far apart; and experience difficulty when attempting quick or precise movements, such as writing or buttoning a shirt. They may also have intention tremor. In this form of tremor, beginning a voluntary movement, such as reaching for a book, causes a trembling that affects the body part being used and that worsens as the individual gets nearer to the desired object. The ataxic form affects an estimated 5 to 10 percent of cerebral palsy patients.
- ***Mixed forms.*** It is not unusual for patients to have symptoms of more than one of the previous three forms. The most common mixed form includes spasticity and athetoid movements but other combinations are also possible.

CHARACTERISTICS

- Underdeveloped motor skills
- Slow to reach developmental milestones (rolling over, sitting, crawling, smiling, walking)
- Abnormal or vacillating muscle tone
- Decreased muscle tone- Hypotonia
- Increased muscle tone- Hypertonia (stiff and rigid)
- May favor one side of the body or one movement pattern
- Unusual and often awkward posture

- May walk on tip toes or may carry arms high in “high guard position” for balance
- May focus locally on surroundings and not view the larger play area – may demonstrate poor visual acuity
- When under age 3 may demonstrate difficulty with head control and older may hold head in awkward position
- Possible seizures and tremors – often take medication to reduce frequency

CAUSE

A large number of internal and external factors can injure the developing brain and may lead to cerebral palsy or cerebral palsy like conditions. One identified cause of cerebral palsy is an insufficient amount of oxygen reaching the fetal or newborn brain. Oxygen supply can be interrupted by premature separation of the placenta from the wall of the uterus, awkward birth position of the baby, labor that is too long or too abrupt, or interference with circulation in the umbilical cord. Premature birth, low birth weight, RH or A-B-O blood type incompatibility between mother and infant, infection of the mother with German measles or other virus diseases in early pregnancy, and microorganisms that attack the infant's central nervous system also are risk factors for cerebral palsy. Most causes of cerebral palsy are related to the developmental and childbearing processes and, since the condition is not inherited, the condition is often called congenital cerebral palsy. A less common type is acquired cerebral palsy, usually occurring before two years of age. Head injury is the most frequent cause, usually the result of motor vehicle accidents, falls, or child abuse. Another possible cause of post child bearing cerebral palsy like conditions include severe brain infection.

ETIOLOGY AND PROGNOSIS

Cerebral Palsy is not a progressive disorder. A person with the disorder may improve somewhat during childhood, if they receive extensive care from specialists. Some individuals with the disorder will need to stay under the immediate care of another person for their entire lives, while others have a mild enough case to pursue fully independent lives.

ASSESSMENT SUGGESTIONS

- Authentic Assessment- Testing that provides the teacher with the needed information to develop a meaningful physical education program

- Criterion- Referenced Test- Determine whether a skill has been mastered, it is not compared to other students in the class.

RECOMMENDED ACTIVITIES

- **Stretching:** Stretching of muscles is done by moving the arms or legs in a way that produces a slow, steady pull on the muscles to keep them loose. Children with cerebral palsy have increased tone and tend to get very tight muscles. Therefore, it is extremely important to perform daily stretches to keep arms and legs limber so the child can continue to move and function.
- **Strengthening:** Strengthening exercises work specific muscle groups to enable them to support the body better and increase function.
- **Positioning:** The body is placed in a specific position to attain long stretches. Some positions help to minimize unwanted tone. Positioning can be done in a variety of ways, including: bracing, abduction pillows, knee immobilizers, wheelchair inserts, sitting recommendations, and handling techniques.

Riding a specially adapted tricycle can be very exciting and provides excellent exercise. An outdoor activity that can benefit almost any child with cerebral palsy is swimming. Not only does swimming give children a freedom of movement they don't have on land, but it can also help improve respiratory ability. It is important to note that cold water can increase muscle tone, but warm water often has a relaxing effect and help reduce muscle tone. This means you should look for a pool with a water temperature best suited to the child's tone. Other activities you may want to investigate include therapeutic horseback riding and Special Olympics/Paralympic opportunities.

EFFECTIVE TEACHING STRATEGIES

- Work on muscle stretching and reduction of tone (work closely with PT)
- Gross motor skills to include those that work away from midline (e.g. sliding)
- Modify equipment:
    - use ball sacks, balloons or beach balls
    - modify rules of games
    - enlarge targets
    - use large scooters
    - extensions for tag games

- Always consider safety issues, make sure the class understands the rules and modifications of activities. ALWAYS include a student with any disability in the class, do not leave them standing on the sideline.

- Students with cerebral palsy do not always demonstrate appropriate use of reflexes, especially protective and postural reflexes found with typical development.

RESOURCES

http://www.ninds.nih.gov/disorders/cerebral_palsy/cerebral_palsy.htm

Cerebral Palsy Multimedia Tutorial
http://hsc.virginia.edu/cmc/tutorials/cp/cp.htm
Excellent multimedia description of a child's life with cerebral palsy. Therapy, equipment and problems are described along with more personal topics.

CP Parent List Archives
http://maelstrom.stjohns.edu/archives/cpparent.html
Publicly accessible archives for the CP Parent listserv are a great resource for parents who wish to catch up on discussions on the list or search for a particular topic.

United Cerebral Palsy (UCP) Research Fact Sheets
http://www.ucpa.org/ucp_generalsub.cfm/124/4/24
Summaries of research on cerebral palsy covering a number of years - informative but easy to read.

Scope
http://www.scope.org.uk
Scope is the United Kingdom's largest charity providing support and services for children and adults with cerebral palsy, their families and carers. Online articles address lifestyle issues such as cerebral palsy and aging and cerebral palsy and pregnancy.

REFERENCES

http://www.asdk12.org/Depts/ape/common/cerebralpalsy.html

http://en.wikipedia.org/wiki/Cerebral_Palsy

http://www.ndsaonline.org/

http://gait.aidi.udel.edu/res695/homepage/pd_ortho/clinics/c_palsy/cpweb.htm