

Course: Physical Handicaps-I
SEMESTER: AUTUMN, 2018



(3607)

ASSIGNMENT# 1

Q.1 Define physical handicapped. What are the causes of physically handicapped children?

ANS: A physical handicap is a physical or mental disability making participation in certain of the usual activities of daily living more difficult according to Noel (2010). There are many types of physical handicaps that people can acquire. They come in all shades, shapes and sizes. Some examples of handicaps can result from a disability such as blindness, deafness or injuries that can lead to paralysis or amputations. Noel (2010) tells us that some physical handicaps are not always a hindrance to someone's everyday lifestyle. This paper analyses this aspect of humanity in six sections. First is a brief discussion on physical handicaps. Second are the causes and characteristics of common physical disabilities. Third is the educational intervention towards physical handicaps while fourth comes a section discussing methods of prevention of these disabilities. Lastly, the paper draws a conclusion that after all, disability is not inability.

People who have a handicap can still have a normal life. They may not be able to do what they would like to do much less do regular activities like others. However, they are capable of being happy and productive. Many face discrimination or get treated as second class citizens or worse seen as a "poor soul." As a result, there were reportedly over 19,000 charges filed in 2008 claiming discrimination from disabled workers. People often mistake being disabled as handicapped and vice versa. Although both refer to someone being at a disadvantage, they are not the same. Noel (2010) is clear in his definition that a disability is the limitations of a function due to injury or illness such as being paralyzed or blind. Examples of someone with a handicap are not having the speed to make a track relay squad or the size and power to make a football team. A person suffering from a physical handicap that severely impairs someone's judgment and ability can become a hazard to themselves as well as others.

2.0 Various types of physical handicaps, their causes and characteristics

This section presents various types of physical handicaps, their causes and characteristics.

2.1 Causes and characteristics

Skeletal impairments

This include joint movement limitations (either mechanical or due to pain), small limbs, missing limbs, or abnormal trunk size. Some major causes of these impairments can be explained as follows.

Arthritis

Arthritis is defined as pain in joints, usually reducing range of motion and causing weakness.

Rheumatoid arthritis is a chronic syndrome. Osteoarthritis is a degenerative joint disease. The incidence of all forms of arthritis is now estimated at 900,000 new cases per year¹⁰.

Cerebral Palsy (CP)

Cerebral palsy is defined as damage to the motor areas of the brain prior to brain maturity (most cases of CP occur before, during or shortly following birth). CP is a type of injury, not a disease (although it can be caused by a disease), and does not get worse over time; it is also not "curable." Some causes of cerebral palsy are high temperature, lack of oxygen, and injury to the head. The most common types are: (1) spastic, where the individual moves stiffly and with difficulty, (2) ataxic, characterized by a disturbed

sense of balance and depth perception, and (3) athetoid, characterized by involuntary, uncontrolled motion. Most cases are combinations of the three types.

Spinal Cord Injury

Spinal cord injury can result in paralysis or paresis (weakening). The extent of paralysis/paresis and the parts of the body affected are determined by how high or low on the spine the damage occurs and the type of damage to the cord. Quadriplegia involves all four limbs and is caused by injury to the cervical (upper) region of the spine; paraplegia involves only the lower extremities and occurs where injury was below the level of the first thoracic vertebra (mid lower back). Car accidents are the most frequent cause (38%), followed by falls and jumps (16%) and gunshot wounds (13%)¹² as recorded by Connor, F. (1988).

Head Injury (cerebral trauma)

The term "head injury" is used to describe a wide array of injuries, including concussion, brain stem injury, closed head injury, cerebral hemorrhage, depressed skull fracture, foreign object (e.g., bullet), anoxia, and post-operative infections. Like spinal cord injuries, head injury and also stroke often results in paralysis and paresis, but there can be a variety of other effects as well.

Stroke (cerebral vascular accident - CVA)

The three main causes of stroke are: thrombosis (blood clot in a blood vessel blocks blood flow past that point), hemorrhage (resulting in bleeding into the brain tissue; associated with high blood pressure or rupture of an aneurysm), and embolism (a large clot breaks off and blocks an artery). The response of brain tissue to injury is similar whether the injury results from direct trauma or from stroke. In either case, function in the area of the brain affected either stops altogether or is impaired.

Loss of Limbs or Digits (Amputation or Congenital)

This may be due to trauma (e.g., explosions, mangle in a machine, severance, burns) or surgery (due to cancer, peripheral arterial disease, diabetes). Usually prosthetics are worn, although these do not result in full return of function.

Parkinson's Disease

This is a progressive disease of older adults characterized by muscle rigidity, slowness of movements, and a unique type of tremor. There is no actual paralysis. The usual age of onset is 50 to 70, and the disease is relatively common - 187 cases per 100,000¹⁵ as sourced from Connor (1988).

Multiple Sclerosis (MS)

Multiple sclerosis is defined as a progressive disease of the central nervous system characterized by the destruction of the insulating material covering nerve fibers. The problems these individuals experience include poor muscle control, weakness and fatigue, difficulty walking, talking, seeing, sensing or grasping objects, and intolerance of heat. Onset is between the ages of 10 and 40.

ALS (Lou Gehrig's Disease)

ALS (Amyotrophic Lateral Sclerosis) is a fatal degenerative disease of the central nervous system characterized by slowly progressive paralysis of the voluntary muscles. The major symptom is progressive muscle weakness involving the limbs, trunk, breathing muscles, throat and tongue, leading to partial paralysis and severe speech difficulties. This is not a rare disease (5 cases per 100,000). It strikes mostly those between age 30 and 60, and men three times as often as women. Duration from onset to death is about 1 to 10 years (average 4 years).

Muscular Dystrophy (MD)

Muscular dystrophy is a group of hereditary diseases causing progressive muscular weakness, loss of muscular control, contractions and difficulty in walking, breathing, reaching, and use of hands involving strength.

3.0 Educational Interventions

Education for physically impaired is special depending on the disability in question. Some students have no restrictions on what they can do and learn, while others are extremely limited in their activities and require intensive medical and educational help says Fraser (1983). A physical problem can hamper a student's mobility, coordination, stamina, communication, or learning abilities to such an extent that

educational objectives are difficult to accomplish and special education intervention is required. For example, children with cerebral palsy typically have deficits in gross and fine motor development as well as speech and communication problems. Some children have extremely debilitating physical conditions that result in low intellectual functioning, serious limitations in activities, and multiple primary handicaps. Others function in the average or gifted range intellectually and participate full time in regular classes.

According to Reynolds and Clark (1983), examiners must have a broad base of skills in order to measure adequately the functional and cognitive abilities of students who are physically disabled or health impaired. In addition to the areas traditionally evaluated in the assessment of children with mild handicaps, measures should be included in the areas of gross motor, fine motor, and daily living skills; perception; recreation and leisure skills; augmentative communication; and sensory input. Competent diagnosticians recognize their personal limitations and seek help from therapists, educators, physicians, nurses, social workers, and others to gather appropriate data. (Reynolds and Clark, 1983) tells us that developing a comprehensive pre-assessment plan ensures that the information necessary for establishing programs and setting priorities for intervention will be available when needed.

One of the main considerations is the use of the team approach in developing and carrying out a child's educational program. The team generally includes the parents, teachers, medical professionals, and health-related professionals such as a physical therapist. Parents are critical members of the team and should be involved in all educational decisions. Sirvis (1988) noted that the team should design a program that meets the needs of the student in five basic goal areas: "(a) physical independence, including mastery of daily living skills; (b) self-awareness and social maturation; (c) communication; (d) academic growth; and (e) life skills training" (p. 400). Interdisciplinary services such as occupational and physical therapy and speech and language therapy are of prime importance for youngsters who have physical disabilities.

Another important educational consideration is placement. Educational services are provided in a variety of settings including regular classrooms, resource rooms, special classes, and other, more restrictive settings including hospital and homebound programs. Approximately 8% of students with orthopedic impairments and 18% of students with health impairments are served in home and hospital environments (Tenth Annual Report to Congress, 1988). Since educational services may include extensive medical and health-related support, arrangements often need to be made to provide these services in diverse educational settings. The need for support services is often a vital consideration in fitting a program to an individual student. Most common among the related services are transportation, physical therapy, occupational therapy, diagnostic services, school health services, counseling, and school social work services (Tenth Annual Report to Congress, 1988).

It is often necessary to modify and adapt the school environment to make it accessible, safe, and less restrictive. Accessibility guidelines are readily available, and when these guidelines are followed the environment becomes easier for the child to manage independently. It is important that modifications be no more restrictive than absolutely necessary so that the student's school experiences can be as normal as possible. Many authorities stress the importance of avoiding overprotection of students with physical or health impairments. It is also important to permit students with disabilities to take risks just as their able-bodied cohorts do.

Recent advances in technology have helped to make life more nearly normal for students with physical disabilities. For example, students with cerebral palsy can use computer terminals to aid in communication. Through technology, even a person with the most severe handicaps can have greater control over communication and daily living skills.

Modifying the environment may mean providing special adaptive equipment such as specially designed desks, positioning devices, wedges, or standing tables. Adaptations also may include establishing procedures for dealing with medical emergencies when students have serious medical problems.

Though seemingly impossible, physical disabilities can be prevented. Many physical disabilities do not have cure. Also, scientist do not know causes for many physical disabilities. But, there are some things that can be done to prevent some physical disabilities. Here are some ways that people can try to prevent having physical disabilities. Prenatal care is when women visit doctor and lives healthy when they are expecting a baby. It is very important that women who are going to have a baby visit a doctor. Doctor can figure out if the women and the baby are healthy. The can also prescribe vitamins and medicine to keep a baby healthy. Another thing that doctor can do is inform people about their genetics. For example he can study family history to find out if a baby is at risk of inheriting some disorders. Prenatal care can lower risks of baby being born with disorders. Thomas (2008) says that healthy lifestyle includes nutrition and exercise, as well as staying away from alcohol and drugs. Alcohol and drugs can cause disorders for baby. So they should not be used when a person is pregnant. Also, smoke from cigarettes may make babies very little ad born to early. Premature babies are more likely to have a disability because their organs are not completely developed.

According to Meyer (2008), vaccination is another very important prevention. It prevents diseases for happening. Using vaccination means that diseases may not spread around in schools or community. Some disabilities may be prevented by simple shot or a pill. For example, Polio has been eradicated in the entire Western world. this is because al children are required to get a Polio vaccine .Because most of the people are vaccinated the polio virus cannot spread.

Accidents are a major cause of physical disabilities. We cannot always stop accidents from happening. But we can try. Many accidents happen on the roads. People have to make sure that they are wearing seat belts and that babies are in their car seats. In many poor countries people may not be able to afford this safety equipment, so it is important to make people aware and raise equipment or money to buy equipment in these countries. Also, roads in some countries are dangerous because they are old or not constructed well or not made for the cars. This is very expensive to fix, but could prevent many accidents. In addition to car accidents, there are many other accidents that people, especially kids, can get in For example riding a bike without helmets may be dangerous. Therefore, always wearing safety equipment that is made for the activity can help prevent accidents that cause physical disabilities. To conclude, we have observed that physical disability is part of humanity. No one is its victim out of choice. Therefore, we can not use it as a basis of discrimination to those that suffer from it. Instead, we should make effort on how we can empower those few that are disadvantaged, as we all deserve a life. Indeed, disability is not inability.

Q.2Discuss the affects of physical disabilities on the individual. How do the affects physical disabilities are different from other disabilities?

ANS: Factors Affecting The Impact Of Disability

People respond to disabilities in different ways. Some react negatively and thus their quality of life is negatively affected. Others choose to focus on their abilities as opposed to their disabilities and continue to live a productive life. There are several factors that affect the impact a disability has on an individual. The following are often considered the most significant factors in determining a disability's impact on an individual .

- **The Nature of the Disability** – Was the disability acquired (a result of an accident, or acquired disease) or congenital (present at birth)? If the disability is acquired, it is more likely to cause a negative reaction than a congenital disability. Congenital disabilities are disabilities that have always been present, thus requiring less of an adjustment than an acquired disability.
- **The Individual's Personality** - Is the individual typically positive or negative, dependent or independent, goal-oriented or laissez-faire? Someone with a positive outlook is more likely to embrace a disability than someone with a negative outlook. Someone who is independent will continue to be independent and someone who is goal-oriented will continue to set and pursue goals.

- **The Meaning of the Disability to the Individual** - Does the individual define himself/herself by his/her looks or physical characteristics? If so, he/she is more likely to feel defined by his/her disability and thus it will have a negative impact.
- **The Individual's Current Life Circumstances** - Is the individual independent or dependent on others (parents)? What is the economic status of the individual or the individual's caregivers? What is the individual's education level? If the individual is happy with their current life circumstance, they are more likely to embrace their disability, whereas if they are not happy with their circumstances, they often blame their disability.
- **The Individual's Support System** - Does the individual have good support from family, a significant other, friends, or social groups? If so, he/she will have an easier time coping with a disability and thus will not be effected negatively by their disability.

Impairment, Disability, Or Handicap?

The terms disability, impairment, and handicap have been used synonymously within the education, counseling, and health literature. Although, each of these three terminology can be used when discussing disabling conditions, they convey three different meanings. To promote the appropriate use of these terms the World Health Organization (WHO) provided the following definitions in their *International Classification of Impairment, Disability, and Handicap (1980)*:

- **Impairment** – any loss or abnormality of psychological, physiological or anatomical structure or function.
- **Disability** – any restriction or lack of ability to perform an activity in the manner or within the range considered normal for a human being.
- **Handicap** – the result when an individual with an impairment cannot fulfill a normal life role.

Based on these definitions, it should be understood a handicap is not a characteristic of a person, rather a description of the relationship between the person and the environment. Consider the following. A person who is born blind (the impairment) is unable to read printed material, which is how most information is widely disseminated (the disability). If this person is prevented from attending school or applying for a job because of this impairment and disability, this is a handicap. This person may be able to perform the daily activity (reading) using some type of assistive technology to overcome this handicap. By attributing the handicap to the environment as opposed to an individual, the emphasis is placed on using AT to produce functional outcomes as opposed to focusing on functional limitations.

Categorizing Disabilities

Disabilities are categorized for many reasons; a primary reason is to establish protocols for the distribution of benefits and services. Categorizing disabilities helps the government identify needs and allocate necessary resources to various populations of people with similar disabilities. Without categorizing disabilities by diagnosis, third-party payers would not reimburse for services and the government would not provide services (agencies, residential institutions, specialized interventions) (Smart, 2000). In addition, these classifications provide a basis around which individuals with disabilities can organize their legal, social, and advocacy efforts.

There are many different ways to classify disabilities, but no one way has been deemed the standard. The most general way to categorize disabilities is to categorize them into one of the following categories.

- **Visible Disabilities** – disabilities that can be objectively observed and measured by others. These disabilities often lead to marginalization or to the development of stereotypes of the person having the disability.

- **Invisible Disabilities** – disabilities whose manifestations do not evoke outward signs that may alert casual observers of a person's condition (Falvo, 2005).

The most widely accepted disability categorization is by symptoms and manifestations, not cause or source (Smart, 2000). This categorization is more specific than that previously mentioned. It is also the means by which the government officially categorizes disabilities. In this system, disabilities fall into one of four broad categories.

- **Physical Disability** – a condition that limits one or more basic physical activity, including mobility and sensory activities. Examples include: spinal cord injuries, paraplegia, quadriplegia, amputations, cerebral palsy, seizure disorders, muscular dystrophy, arthritis, visual impairments and hearing impairments.
- **Intellectual Disability** – a disability originating prior to the age of 18, characterized by significant limitations in conceptual, social, and practical adaptive skills, for example, mental retardation.
- **Cognitive Disability** – an impairment that affects an individual's ability to access, process, or remember information, for example, learning disabilities (dyslexia, attention deficit disorder) and traumatic brain injury.
- **Psychiatric Disability** – a disability characterized by emotional, cognitive, and/or behavioral dysfunction, for example, autism, substance abuse, different types of mental illnesses.

For AT purposes, it is easier to categorize disabilities based on the function that the technology device will help improve. Categorizing disabilities this way guides those recommending AT as to what type of technology to pursue. These categories are as follows.

- **Physical Disability** - a condition that limits one or more basic physical activity
- **Sensory Disability** - a condition affecting one of the five senses, typically vision, hearing, or touch
- **Communication Disability** - an impairment to the capacity to use expressive and/or receptive language in one or more of the following areas: speech, conveying information, understanding information
- **Cognitive Disability** - an impairment that affects an individual's ability to access, process, or remember information

Although categorizing disabilities is necessary, it can have negative effects. Categorization can perpetuate generalizations, such as the idea that all people with the same disability share characteristics, experiences, and perceptions. Also, these categories tend to focus on the disability and not the strengths, abilities, and assets of the individual. Categorizing disabilities tends to put yet another label on an individual with a disability (Smart, 2000).

Dealing With Negative Stereotypes

Negative stereotypes of people with disabilities has always been an issue. In ancient times individuals with disabilities were often isolated in forests or institutions, treated as being possessed by evil spirits, or seen as a product of sinful relations of their parents. Unfortunately, those attitudes have not completely changed. More recently, people with disabilities have been seen as carriers of disgrace to their family or community because they were unable to be educated or obtain employment. These are examples of how in many cases, a disability may only affect a small percentage of an individual's life, however, it is considered his/her defining characteristic by others. People with disabilities experience many stereotypes that are originated in the fact that their disability **makes them different**. It wasn't until 1973, well after the Civil Rights Movement, that official United States policy (the Rehabilitation Act of 1973) proclaimed discrimination against people with disabilities would not be tolerated. Even today, with policies such as these in place, people with disabilities have to deal with forms prejudice, such as ableism, in aspects of their daily lives, most notably, when applying for jobs.

The following are definitions of the factors that impact how people view disabilities.

- **Ableism** - a form of oppression that emphasizes abilities and favors able-bodied individuals over individuals with disabilities (Robinson, 2005).
- **Attitudes** - an individual's inclinations, tendencies, or biases that manipulate their responses to situations, activities, people, or environments.

- **Stereotype** - theories that organize our mental representation of group differences (Smart, 2000).
- **Stigma** - a trait or a mark that makes an individual stand out of “normality”.

Attitudes and Awareness

As noted earlier, classifying disabilities assists in the justification and allocation of services, resources, and advocacy efforts. However, these classification systems also allow for the development and spread of stereotypes, such as the false stereotype that all people with the same disabilities share characteristics, experiences, and abilities (Smart, 2000). Although this section is not intended to discuss concepts such as *disability* and *stereotypes* in depth, it is important to briefly define some of these concepts. This will provide a frame of reference and a more complete understanding of the “*disability experience*”.

How Attitudes are Formulated

Researchers in the areas of counseling and education suggest that society develops attitudes toward disability in different ways. Some of the most important means of developing attitudes specifically toward people with disabilities are defined as follows.

- **Direct Experiences** – direct, one-on-one interaction with people with disabilities in various social, educational or personal contexts.
- **Indirect Experiences** – the reflections of popular media and how people with disabilities are represented in TV, radio, or literature. This affects opinions, attitudes, and perceptions of people with disabilities, especially with those who have not had direct experiences with people with disabilities.
- **Reference Group** – the ideologies and views on disabilities inherited from parents, peers, and society.

Reference groups and indirect experiences often have the earliest impact on one's attitudes toward people with disabilities. Parents' attitudes have a significant influence on young children and their initial attitudes on many aspects of life, including their attitudes toward people with disabilities. Also, because of the influence popular media has, many people will see a portrayal of an individual with a disability before an opportunity for a meaningful direct experience occurs.

Challenging Attitudes

There are many ways to combat negative attitudes toward individuals with disabilities by the general public. Some strategies are basic, such as treating people with disabilities with respect. Others take a little more effort. Enacting the following strategies are the best ways for people in general to combat negative stereotypes and attitudes toward people with disabilities.

- **See and treat individuals with disabilities as equals deserving of respect.** An individual's disability is not their defining characteristic. Nor does having a disability make anyone less of a person. People with disabilities deserve the same respect given to everyone else.
- **Be able to confront oneself or others when oppressive or stereotypical comments or behaviors are exhibited against an individuals with a disability.** The only way to prevent negative stereotypes from perpetuating is to confront those that express these negative stereotypes and educate them as to why their comments or behaviors are incorrect and highly offensive.
- **Don't be afraid to ask a person about their disability.** Many people with disabilities don't mind talking about their disabilities when asked. Instead of forming opinions without knowing the facts, ask an individual with a disability questions about their disability, such as how it affects various aspects of their life.
- **Ask before assuming.** Although it may seem that helping someone with a disability perform a task is the right thing to do, that person may not want help. Before acting, ask the individual if they need help, don't just assume that they do. Assuming an individual with a disability needs help, perpetuates the stereotype that people with disabilities are dependent on others. For example, before pushing someone in a wheelchair up a hill ask if they'd like some assistance getting up the hill. If the person does not accept, don't be offended.
- **Become knowledgeable on disability-related issues.** Understanding the issues that effect people with disabilities helps one to understand the difficulties that they face on a daily basis.

- **Become involved in awareness and advocacy activities.** The best way to educate large numbers of people on disabilities and issues related to disabilities is by participating in awareness and advocacy activities.

Q.3 Write a detailed note on the motor skills. Conduct a discussion on the relationship of physical fitness and motor skills.

ANS: What are motor skills?

A motor skill is a function, which involves the precise movement of muscles with the intent to perform a specific act.

Most purposeful movement requires the ability to "feel" or sense what one's muscles are doing as they perform the act. Motor difficulties occur when an individual lacks the ability to move in the way he or she originally intended. This can have a significant effect on classroom performance and motivation in school.

Does your child or student exhibit any of the following?

- Difficulty with handwriting or letter formation
- Cannot copy correctly from the board
- Loses place when reading, frequently
- Skips math problems on a page
- Bumps into others
- Falls out of chair
- Exhibits poor posture, seated or standing
- Difficulty organizing a desk or binder

Motor difficulties can be addressed in variety of ways. Some motor skills difficulties can be overcome through development and maturity. In education, a frequent response to motor difficulties is to refer the child to special education services. This is not always necessary or appropriate. Some students just need to be taught a simple activity or strategy, which they practice to remedy the problem. Others, whose difficulty is more involved, may require the intervention of a professional in special education.

Why are we seeing more children with motor skill difficulties today?

Numerous students in every classroom across the country, these days, experience difficulty writing, lose their place on a page, skip math problems, and have trouble paying attention. Many students lack the development and training of the muscles needed for fine and gross motor skills important for a successful classroom experience. Frequently, children hide their difficulties by becoming "class clowns" or "trouble makers" because they are embarrassed. Sometimes these behaviors are a mask for hiding the true problem of being unable to complete class work well. These students need brain engaging strategies, direct teaching and guided practice to assist their progress toward improvement and successful completion of schoolwork.

Over the years, school curricula have placed less emphasis on direct teaching of fine and gross motor activities in the classroom and yet we expect students to write neatly, which requires developed motor skills.

Integrating motor activities into the classroom and home environment can be a tremendous help in reading, writing, attention, and memory. Students who learn to develop specific motor movements can incorporate such skills into successful participation in school activities. The CLIME® Program's multi-sensory approach to learning and writing, is particularly helpful for students, kindergarten through third grade, including those with Attention Deficit Hyperactivity Disorder or learning disabilities. The CLIME® Program can also be applied to students in higher grade levels.

Armed with The CLIME® Program's effective strategies, teachers and parents can help students improve using simple exercises and interventions within or outside the classroom setting. Whether or not a student qualifies for any particular type of special services, incorporating motor activities, which are

easily performed on a regular basis, can help them improve their skills and obtain the best results.

A Motor Skill Solution!

The CLIME® Program offers the avenue for learning tried and true activities that address the motor skills listed above and more. Designed by EduCLIME, with contributions from special education teachers, occupational therapists, physical therapists and adapted physical education teachers, The CLIME® Program helps improve motor skills for both general and special education students

Partb: Physical activity is fundamental to the early development of each child and affects many aspects of a child's health .Contemporary health organizations propose that higher levels of physical activity in school-aged children are associated with important short- and long-term health benefits in physical, emotional, social, and cognitive domains across the life span .As such, it is vital to integrate physical activity into the lives of children and set the foundation in facilitating and maintaining a healthy, active lifestyle throughout adulthood .It has been reported that more than 41 million young children under the age of 5 were overweight or obese in 2014, worldwide .The health implications of physical activity during early childhood cannot be disregarded; therefore, it is warranted to investigate the relationships between physical activity and health outcomes and cognition in early ages.

Although early childhood represents a critical period to promote physical activity, the long-term health benefits of being physically active from early ages have yet to be confirmed .It is suggested that promoting physical activity in early childhood may help develop motor skills This postulation is echoed by evidence showing a reciprocal relationship, albeit cross-sectionally, between physical activity and motor development .In fact, motor skills in young children are considered to be linked with various health outcomes such as adiposity ,self-esteem ,cardiorespiratory fitness ,and cognition ,among others. Hence, developing and implementing effective interventions to improve young children's motor skills have become a priority. As studies examining the effects of physical activity on motor skills continue to increase in frequency, a more recent and thorough review is needed. Although a review study on the topic is available from 2009 ,the authors failed to include only randomized controlled trials (RCTs), indicating cause-effect relationships cannot be inferred. In addition, the article defined preschool-aged children as aged under 5 years old, which is quite different from national or international interpretation. Therefore, the effectiveness of physical activity interventions on motor skills in this population is still unclear.

Today, advances in neuroscience have generated substantial progress in connecting physical activity to brain structure and cognitive development .It is hypothesized that physical activity has a positive effect on cognitive functions, which is partly due to the physiological changes in the body. For example, increased levels of brain-derived neurotrophic factor (BDNF) can facilitate learning and maintain cognitive functions by improving synaptic plasticity and serving as a neuroprotective agent, which leads to improved neuroelectric activity and increased brain circulation .It is also suggested that one's motor skills may influence cognitive development given that motor and cognitive skills have several common underlying processes, including sequencing, monitoring, and planning .In addition, both motor and cognitive skills may have a similar developmental timetable with accelerated development during childhood .In fact, the literature consistently reports that increased physical activity time in school has no detrimental effect on academic performance and may even enhance academic attainment, executive functions, and on-task behaviors in children and adolescents .In addition, emerging evidence suggests that active children tend to have better health and cognitive outcomes when compared to their less active peers .While interest in the relationship between exercise and cognitive functioning has grown over the past decade, the literature concerning the benefits of physical activity on cognition has been addressed in research with older children or adults for the most part. Regrettably, to date, there has been no known comprehensive review specifically examining the effectiveness of physical activity on cognitive outcomes in early childhood.

Early childhood is the most critical and rapid period of complete and healthy motor and cognitive development in human life ,increased physical activity may provide motor and cognitive benefits across

childhood and adolescence. Therefore, gaining a better understanding of physical activity's potential in improving motor skills and cognition in young children is critical and can inform pediatricians and other health professionals regarding its efficacy as an intervention strategy. There is an urgent need to synthesize RCT studies to definitively establish the presence of effects of physical activity on motor skills and cognitions as well as identify the dose-response relationships for the population of preschool children. Therefore, the purpose of this paper was to systematically evaluate the available evidence examining the effects of physical activity on motor skills and cognitive development in healthy preschool children. Specifically, this systematic review aims to identify, synthesize, and interpret the best available evidence for minimal and optimal amounts of physical activity needed to promote motor skills and cognitive development among children aged 4–6 years. Further, this review attempts to help inform scholars and health professionals concerning the benefits of regular physical activity participation and the development of evidence-based physical activity guidelines for this age group.

Physical activity is fundamental to the early development of each child and affects many aspects of a child's health. Contemporary health organizations propose that higher levels of physical activity in school-aged children are associated with important short- and long-term health benefits in physical, emotional, social, and cognitive domains across the life span. As such, it is vital to integrate physical activity into the lives of children and set the foundation in facilitating and maintaining a healthy, active lifestyle throughout adulthood. It has been reported that more than 41 million young children under the age of 5 were overweight or obese in 2014, worldwide. The health implications of physical activity during early childhood cannot be disregarded; therefore, it is warranted to investigate the relationships between physical activity and health outcomes and cognition in early ages.

Although early childhood represents a critical period to promote physical activity, the long-term health benefits of being physically active from early ages have yet to be confirmed. It is suggested that promoting physical activity in early childhood may help develop motor skills. This postulation is echoed by evidence showing a reciprocal relationship, albeit cross-sectionally, between physical activity and motor development. In fact, motor skills in young children are considered to be linked with various health outcomes such as adiposity, self-esteem, cardiorespiratory fitness and cognition, among others. Hence, developing and implementing effective interventions to improve young children's motor skills have become a priority. As studies examining the effects of physical activity on motor skills continue to increase in frequency, a more recent and thorough review is needed. Although a review study on the topic is available from 2009, the authors failed to include only randomized controlled trials (RCTs), indicating cause-effect relationships cannot be inferred. In addition, the article defined preschool-aged children as aged under 5 years old, which is quite different from national or international interpretation. Therefore, the effectiveness of physical activity interventions on motor skills in this population is still unclear.

Today, advances in neuroscience have generated substantial progress in connecting physical activity to brain structure and cognitive development. It is hypothesized that physical activity has a positive effect on cognitive functions, which is partly due to the physiological changes in the body. For example, increased levels of brain-derived neurotrophic factor (BDNF) can facilitate learning and maintain cognitive functions by improving synaptic plasticity and serving as a neuroprotective agent, which leads to improved neuroelectric activity and increased brain circulation. It is also suggested that one's motor skills may influence cognitive development given that motor and cognitive skills have several common underlying processes, including sequencing, monitoring, and planning. In addition, both motor and cognitive skills may have a similar developmental timetable with accelerated development during childhood. In fact, the literature consistently reports that increased physical activity time in school has no detrimental effect on academic performance and may even enhance academic attainment, executive functions, and on-task behaviors in children and adolescents. In addition, emerging evidence suggests that active children tend to have better health and cognitive outcomes when compared to their less active peers. While interest in the relationship between exercise and cognitive functioning has grown over the past decade, the literature concerning the benefits of physical activity on cognition has been addressed in

research with older children or adults for the most part. Regrettably, to date, there has been no known comprehensive review specifically examining the effectiveness of physical activity on cognitive outcomes in early childhood.

Early childhood is the most critical and rapid period of complete and healthy motor and cognitive development in human life, increased physical activity may provide motor and cognitive benefits across childhood and adolescence. Therefore, gaining a better understanding of physical activity's potential in improving motor skills and cognition in young children is critical and can inform pediatricians and other health professionals regarding its efficacy as an intervention strategy. There is an urgent need to synthesize RCT studies to definitively establish the presence of effects of physical activity on motor skills and cognitions as well as identify the dose-response relationships for the population of preschool children. Therefore, the purpose of this paper was to systematically evaluate the available evidence examining the effects of physical activity on motor skills and cognitive development in healthy preschool children. Specifically, this systematic review aims to identify, synthesize, and interpret the best available evidence for minimal and optimal amounts of physical activity needed to promote motor skills and cognitive development among children aged 4–6 years. Further, this review attempts to help inform scholars and health professionals concerning the benefits of regular physical activity participation and the development of evidence-based physical activity guidelines for this age group.

Q.4 Elaborate the classification causes diagnosis of cerebral palsy. Discuss the management of spastic cerebral palsies of hemiplegic, diplegic and quadriplegic type.

ANS: What is cerebral palsy?

Cerebral palsy (CP) refers to a group of disorders that affect muscle movement and coordination. In many cases, vision, hearing, and sensation are also affected.

The word “cerebral” means having to do with the brain. The word “palsy” means weakness or problems with body movement.

CP is the most common cause of motor disabilities in childhood. According to the Centers for Disease Control and Prevention (CDC), it affects at least 1.5 to 4 out of every 1,000 children worldwide.

What are the symptoms of cerebral palsy?

The symptoms of CP vary from person-to-person and range from mild to severe. Some people with CP may have difficulty walking and sitting. Other people with CP can have trouble grasping objects.

The symptoms can become more severe or less severe over time. They also vary depending on the part of the brain that was affected.

Some of the more common signs include:

- delays in reaching motor skill milestones, such as rolling over, sitting up alone, or crawling
- variations in muscle tone, such as being too floppy or too stiff
- delays in speech development and difficulty speaking
- spasticity, or stiff muscles and exaggerated reflexes
- ataxia, or a lack of muscle coordination
- tremors or involuntary movements
- excessive drooling and problems with swallowing
- difficulty walking
- favoring one side of the body, such as reaching with one hand
- neurological problems, such as seizures, intellectual disabilities, and blindness

Most children are born with CP, but they may not show signs of a disorder until months or years later. Symptoms usually appear before a child reaches age 3 or 4.

Call your doctor if you suspect your child has CP. Early diagnosis and treatment are very important.

What causes cerebral palsy?

Abnormal brain development or injury to the developing brain can cause CP. The damage affects the part of the brain that controls body movement, coordination, and posture.

The brain damage usually occurs before birth, but it can also happen during birth or the first years of life. In most cases, the exact cause of CP isn't known. Some of the possible causes include:

- asphyxia neonatorum, or a lack of oxygen to the brain during labor and delivery
- gene mutations that result in abnormal brain development
- severe jaundice in the infant
- maternal infections, such as German measles and herpes simplex
- brain infections, such as encephalitis and meningitis
- intracranial hemorrhage, or bleeding into the brain
- head injuries as a result of a car accident, a fall, or child abuse

Who's at risk for cerebral palsy?

Certain factors put babies at an increased risk for CP. These include:

- premature birth
- low birth weight
- being a twin or triplet
- a low Apgar score, which is used to assess the physical health of babies at birth
- breech birth, which occurs when your baby's buttocks or feet come out first
- Rh incompatibility, which occurs when a mother's blood Rh type is incompatible with her baby's blood Rh type
- maternal exposure to toxic substances, such as methylmercury, while pregnant

What are the different types of cerebral palsy?

There are different types of CP that affect various parts of the brain. Each type causes specific movement disorders. The types of CP are:

Spastic cerebral palsy

Spastic CP is the most common type of CP, affecting approximately 80 percent of people with CP. It causes stiff muscles and exaggerated reflexes, making it difficult to walk.

Many people with spastic CP have walking abnormalities, such as crossing their knees or making scissorlike movements with their legs while walking. Muscle weakness and paralysis may also be present.

The symptoms can affect the entire body or just one side of the body.

Dyskinetic cerebral palsy

People with dyskinetic CP have trouble controlling their body movements. The disorder causes involuntary, abnormal movements in the arms, legs, and hands.

In some cases, the face and tongue are also affected. The movements can be slow and writhing or rapid and jerky. They can make it difficult for the affected person to walk, sit, swallow, or talk.

Hypotonic cerebral palsy

Hypotonic CP causes diminished muscle tone and overly relaxed muscles. The arms and legs move very easily and appear floppy, like a rag doll.

Babies with this type of CP have little control over their head and may have trouble breathing. As they grow older, they may struggle to sit up straight as a result of their weakened muscles. They can also have difficulty speaking, poor reflexes, and walking abnormalities.

Ataxic cerebral palsy

Ataxic CP is the least common type of CP. Ataxic CP is characterized by voluntary muscle movements that often appear disorganized, clumsy, or jerky.

People with this form of CP usually have problems with balance and coordination. They may have difficulty walking and performing fine motor functions, such as grasping objects and writing.

Mixed cerebral palsy

Some people have a combination of symptoms from the different types of CP. This is called mixed CP. In most cases of mixed CP, people experience a mix of spastic and dyskinetic CP.

How is cerebral palsy classified?

Cerebral palsy is classified according to the Gross Motor Function Classification System (GMFCS). The World Health Organization (WHO) and the Surveillance of Cerebral Palsy in Europe developed the GMFCS as a universal standard for determining the physical capabilities of people with CP.

The system focuses on:

- the ability to sit
- the capability for movement and mobility
- charting independence
- the use of adaptive technology

The five levels of the GMFCS increase with decreasing mobility:

Level 1 cerebral palsy

Level 1 CP is characterized by being able to walk without limitations.

Level 2 cerebral palsy

A person with level 2 CP can walk long distances without limitations, but they can't run or jump. They may need assistive devices, such as leg and arm braces, when first learning to walk. They also may need to use a wheelchair to get around outside of their home.

Level 3 cerebral palsy

A person with level 3 CP can sit with little support and stand without any support. They need handheld assistive devices, such as a walker or cane, while walking indoors. They also need a wheelchair to get around outside of the home.

Level 4 cerebral palsy

A person with level 4 CP can walk with the use of assistive devices. They're able to move independently in a wheelchair, and they need some support when they're sitting.

Level 5 cerebral palsy

A person with level 5 CP needs support to maintain their head and neck position. They need support to sit and stand, and they may be able to control a motorized wheelchair.

How is cerebral palsy diagnosed?

A doctor will diagnose CP by taking a complete medical history, performing a physical exam that includes a detailed neurological exam, and evaluating the symptoms. Additional testing can also be performed:

- An electroencephalogram (EEG) is used to evaluate the electrical activity in the brain. It may be ordered when someone is showing signs of epilepsy, which causes seizures.
- An MRI scan uses powerful magnets and radio waves to produce detailed images of the brain. It can identify any abnormalities or injuries in the brain.
- A CT scan creates clear, cross-sectional images of the brain. It can also reveal any brain damage.
- A cranial ultrasound is a relatively quick and inexpensive method of using high-frequency sound waves to get basic images of the brain in young infants.
- A sample of blood may be taken and tested to rule out other possible conditions, such as bleeding disorders.

If your doctor confirms CP, they may refer you to a specialist who can test for neurological problems that are often associated with the disorder. These tests may detect:

- vision loss and impairment, such as blurred vision in one or both eyes
- deafness
- speech delays
- intellectual disabilities
- movement disorders

What other conditions are associated with cerebral palsy?

People with CP may have other problems, such as:

- communication difficulties, including speech and language disorders
- drooling

- spinal deformity such as scoliosis (curvature), lordosis (saddle back) and kyphosis (humpback)
- osteoarthritis
- contractures, which occur when the muscles get locked in painful positions
- incontinence
- osteopenia, or poor bone density that can make bones easily breakable
- dental problems

How is cerebral palsy treated?

The goal of treatment is to improve limitations and prevent complications. Treatment may include assistive aids, medications, and surgery.

Assistive aids

Assistive aids include:

- eyeglasses
- hearing aids
- walking aids
- body braces
- wheelchairs

Medications

Oral anticonvulsants and muscle relaxants are commonly used as first-line treatments for CP. Your doctor might prescribe:

- diazepam (Valium)
- dantrolene (Dantrium)
- baclofen
- tizanidine (Zanaflex)

Your doctor might also suggest local injections of botulinum toxin type A (Botox) or intrathecal baclofen therapy, where the drug is delivered by an implantable pump.

Surgery

Orthopedic surgery may be used to relieve pain and improve mobility. It may also be needed to release tight muscles or to correct bone abnormalities caused by spasticity.

Selective dorsal rhizotomy (SDR) might be recommended as a last resort to reduce chronic pain or spasticity. It involves cutting nerves near the base of the spinal column.

Other treatment

Other types of treatment for CP include:

- speech therapy
- physical therapy
- occupational therapy
- recreational therapy
- counseling or psychotherapy
- social services consultations

Although stem cell therapy is being explored as a potential treatment for CP, research is still in the early stages.

How can cerebral palsy be prevented?

The majority of problems that cause CP can't always be prevented. However, if you're pregnant or planning on becoming pregnant, you can take certain preventive measures to minimize complications.

It's important to get vaccinated against diseases that can cause fetal brain damage, such as rubella. It's also crucial to receive adequate prenatal care. Attending regular appointments with your doctor during pregnancy can help prevent premature birth, low birth weight, and infections.

What's the long-term outlook for people with cerebral palsy?

There's no cure for CP, but the condition can often be treated and managed effectively. The specific type of treatment varies from person to person. Some people with CP may not need very much assistance, and others might need extensive, long-term care for their symptoms.

Regardless of the severity of the condition, treatment can improve the lives of those with CP. The following can help many people enhance their motor skills and ability to communicate:

- assistive aids
- medications
- therapy
- surgery

partb: Spastic cerebral palsy is a developmental disorder caused by damage to the brain before birth, during delivery, or within the first few years of life.

This condition prevents the normal development of motor function.

Spastic CP is characterized by jerky movements, muscle tightness and joint stiffness.

This type of cerebral palsy often makes simple tasks more challenging, such as walking or picking up small objects. Some children with spastic CP also develop co-occurring conditions as a result of their brain injury. These coexisting conditions can range from attention deficit hyperactivity disorder (ADHD) to epilepsy.

Types of Spastic CP

There are 4 main types of cerebral palsy, and each CP diagnosis can be further broken down to more accurately describe one's brain damage and related symptoms. The various types of spastic cerebral palsy are classified based on the location of movement issues. For example, children with spastic CP may have muscle stiffness in one arm, both legs or one full side of their body.

Spastic diplegia

Muscle stiffness occurs primarily in the legs. This type of CP may also slightly affect mobility in the child's arms.

Spastic hemiplegia

One side of the body is affected by movement problems, with the arm typically being stiffer than the leg.

Spastic quadriplegia

All four limbs are affected, as well as the torso and face. Children with quadriplegia often have co-occurring disorders, such as epilepsy.

Causes and Risk Factors

Cerebral palsy is a catch-all term for developmental movement disorders caused by a brain injury. Each type of cerebral palsy is caused by damage to a specific part of the brain.

Spastic cerebral palsy is caused by damage to the motor cortex and the pyramidal tracts of the brain, which connect the motor cortex to the spinal cord. Understanding the function of the motor cortex and pyramidal tracts helps to explain how damage to these systems affects movement in those with spastic CP.

Damage to the Motor Cortex

The motor cortex is located in the cerebral cortex, which is the largest part of the brain. The motor cortex is composed of several parts that are responsible for relaying signals to other parts of the brain to control movement.

The most important aspect of the motor cortex in relation to cerebral palsy is its regulation of voluntary movement. Damage to this region of the brain makes voluntary movement harder to control and less fluid, or "spastic".

Damage to the Pyramidal Tracts

The pyramidal tracts in the brain are the roads of communication between the cerebral cortex and the nerves in the spinal cord. If pyramidal tracts are damaged, the motor cortex can't send proper signals to the spinal cord. The spinal cord is one half of the central nervous system, with the other half being the

brain and brain stem. These parts of the brain are essential for sensory functions such as sight, touch and movement.

The motor cortex and pyramidal tracts may be damaged by:

- Prenatal brain hemorrhage or infection
- Lack of oxygen to the brain during birth
- Brain trauma or infection after birth

Several risk factors may increase the likelihood of a developmental brain injury occurring. Poor maternal health and a low birth weight are just some of the risk factors for any type of cerebral palsy.

Signs and Symptoms

The signs and symptoms of spastic cerebral palsy are different for every child. Differences in symptoms depend on the severity of the child's brain injury and any co-occurring disorders that may be present.

In general, the most common symptoms of spastic CP are:

- Stiff, tight muscles (hypertonia) on one or both sides of the body
- Exaggerated movements
- Limited mobility
- Abnormal gait
- Crossed knees
- Joints don't full extend
- Walking on tiptoes
- Contractures
- Abnormal reflexes

Co-occurring issues may also present themselves, such as hearing and vision impairment, but these aren't directly related to the cerebral palsy; they are caused by the initial birth injury.

In the first years of a child's life, it can be very hard to recognize the signs of cerebral palsy. This is because symptoms typically do not present themselves until a child begins missing developmental milestones. During toddlerhood, many children tend to exhibit some of the same jerky reflexes associated with spastic CP. It can take up to 5 years of age before a full cerebral palsy diagnosis is reached

Treatment for Spastic Cerebral Palsy

Treatment for spastic CP varies with each case. The severity of symptoms, the location of movement problems and any secondary conditions are the biggest factors in outlining treatment. However, there are five main routes of treatment for CP: physical, occupational and speech therapy, medication and surgery.

Physical therapy

The first type of treatment prescribed to children with spastic CP is typically physical therapy. The goal of physical therapy is to provide as much independence to the child as possible. This treatment is centered on flexibility exercises and stretching out stiff muscles.

Physical therapists will typically use daily range-of-motion (ROM) and stretching exercises to improve mobility of joints and soft tissues. Physical therapists often use age-appropriate toys and games to make the therapy enjoyable for the child. This type of therapy can help improve overall motor function and prevent any future complications.

Occupational therapy

Another form of therapy used to treat children with spastic CP is occupational therapy. The goal of occupational therapy is to improve a child's ability to perform daily tasks and activities independently in the home, school, work and public environments.

Occupational therapists perform exercises that target certain muscles in the wrist, forearm, thumb and upper body. This treatment is beneficial for spastic CP because it focuses on improving motor control, bilateral coordination and upper body strength. Occupational therapists can also assess the need for various assistive devices, such as adaptive scissors or writing utensils.

Speech therapy

Speech therapy is used to improve oral movements in children with spastic CP. The objective of speech therapy is to strengthen the muscles used for speech, which helps with articulation and coordination. Some children with this type of CP may experience drooling or difficulty swallowing or speaking. Performing exercises that incorporate assistive communication devices can help improve motor and cognitive abilities, as well as confidence.

Speech therapy provides the tools for children with spastic CP to clearly communicate their thoughts and socialize with others. This form of therapy can also help make chewing, breathing and swallowing less difficult, allowing for normal growth and development.

Medications

Medications, such as Benzodiazepines, are taken orally to relieve muscle stiffness and improve movement throughout the body. There are also medications that can treat muscle stiffness in specific parts of the body, such as the legs or arms.

For a child with spastic CP that also experiences seizures, doctors often prescribe medications that can control the frequency of these episodes. Similarly, medications such as diazepam (Valium) can be used to relax muscles. This is particularly helpful in treating spasticity in the lower legs. The goal of using medications to treat this type of CP should be to find medications with the most effective results, as well as the lowest amount of negative side effects.

Surgery

Surgery may be a large part of treatment for children with spastic cerebral palsy. There are several types of surgeries that are used to correct joint dislocations, shortened muscles and sensory impairments that hinder normal motor function. Selective Doral Rhizotomy (SDR) is a common surgery associated with children who have spastic cerebral palsy. The goal of this surgery is to relax the muscles and improve mobility in various areas.

Life with CP

Every child with CP is different, and some require more treatment than others. All parents should have the same goal when it comes to treatment, which is to give their child the best life possible. There is help available for parents exploring treatment options and the **costs** associated with their child's condition.

Q.5 What is your understanding about convulsive disorders? Mention your role, being a special education teacher, in the management of convulsive disorders in the a classroom setting.

ANS: A **convulsion** is a medical condition where body muscles contract and relax rapidly and repeatedly, resulting in an uncontrolled shaking of the body. Because epileptic seizures typically include convulsions, the term *convulsion* is sometimes used as a synonym for *seizure*. However, not all epileptic seizures lead to convulsions, and not all convulsions are caused by epileptic seizures. Convulsions are also consistent with anelectric shock and improper enriched air scuba diving. For non-epileptic convulsions, see non-epileptic seizures.

The word "fit" is sometimes used to mean a convulsion or epileptic seizure.

Signs and symptoms

When a person is having a convulsion, they may experience several different symptoms. These may include: a brief blackout, confusion, drooling, loss of bowel/bladder control, sudden shaking of entire body, uncontrollable muscle spasms, temporary cessation of breathing, and many more. Symptoms usually last from a few seconds to around 15 minutes. If someone has a fit like this, it is advised to make sure they don't fall and injure themselves, cushion their head and loosen any restricting clothing/jewelry, and also call for medical help. Do not try to pin/hold them in place, as this could possibly cause harm or injury to the individual. Do not place anything between the person's teeth during a seizure (including your fingers).

Generalized seizures

The most common type of seizure is called a generalized seizure, also known as a generalized convulsion. This is characterized by a loss of consciousness which may lead to the person collapsing. The body stiffens for about a minute and then jerks uncontrollably for the next minute. During this, the patient may fall and injure themselves or bite their tongue and lose control of their bladder. A familial history of this puts a person at a greater risk for developing them.

Causes

Convulsions are often the result of abnormal electrical activity in the brain. The specific cause is often not clear. Convulsions can be caused by specific chemicals in the blood, as well as infections like meningitis or encephalitis. A common cause in children is febrile seizures. Other possibilities include celiac disease, head trauma, stroke or lack of oxygen to the brain. Sometimes the convulsion can be caused by genetic defects or brain tumors. Convulsions can also occur when the blood sugar is too low and deficiency of vitamin B6 (pyridoxine). In Nigeria, Malaria, is a very important cause of Convulsions among children under 5 years of age.

Partb: My role in this regard written below

educators consider working with parents on several dimensions that predict good attendance among ill students.

A first step is to emphasize for parents the unequivocal value of their youngster daily coming to and staying at school (unless his/her doctor indicates otherwise). Thus, a student's individual plan can specify circumstances in which staying home (or going home) is permitted; alternatively, a method might be created for contacting the doctor's office to okay leaving school on a per situation basis. Such a plan conveys parents' commit to school attendance and can help circumvent potential parental overprotection, an understandable reaction to a student who might seize at school.

A second step is to enable parents to become informed about epilepsy and, more broadly, to help parents adjust to the reality of their child's epileptic status. Sites such as the Epilepsy Foundation provide parents with valuable information. For families with limited literacy or limited internet access, learning about epilepsy and its management directly from a school nurse or a health care provider may promote regular attendance.

A third step is to foster home-school communication. Teachers can help by using daily report cards that outline work completion, assignments to be completed, and any medically relevant changes in school behavior (see the Teacher Toolbox for an example of a daily report card). Frequent (doctor-approved) absences suggest that a formal plan for conveying assignments to home or setting up homebound instructional services might be needed. Because intense school avoidance problems can crop up in students with epilepsy, any homebound (or extended absence) arrangement should be approached with circumspection and periodically reviewed to assure that it remains in the student's best interest.

Poor work completion

What we know:

As a group, students with epilepsy score worse on measures of attention, concentration, and verbal short-term (working) memory than classmates without epilepsy. In fact, research documents rates of ADHD three to four times greater (12%-25%) for students with epilepsy than students in general (3%-7%).

Other students have slowed information processing. Thus, teachers may note some students with epilepsy who routinely struggle to complete their school work, even when trying to do their best. Less familiar to teachers are intermittent problems that characterize a few students with epilepsy. Specifically, it appears that working memory and language can be disrupted by very brief (e.g., 3 second) subclinical brain discharges. Research suggests that although these disruptions, termed *transitory cognitive impairments* (see Medical Facts), are brief and intermittent, they can nonetheless keep students from mastering subject area skills necessary for academic success. What is

more, side effects from anti-epileptic drugs (AEDs) and sleep disturbances prompted by nighttime seizures can also hamper work completion and constrain attention via daytime sleepiness and lethargy. The risk of work incompleteness is not equal among all students with epilepsy. Students with poorer seizure control tend to experience more problems. The same is true of those who must take more than one medication (AED) to achieve seizure control. Students with symptomatic epilepsy (see [Medical Facts](#)) are especially vulnerable to classroom problems, including inattention and work incompleteness. Not surprisingly, problems with depression and anxiety have the potential to compromise classroom performance.

Parents and health care providers need to hear from teachers when attention, concentration, memory, lethargy-related, or language problems arise; this is in part because these problems might be AED side effects. EdMedKids suggests that any epilepsy treatment adjustments targeting improved classroom attention or work completion include monitoring the student's classroom attention (or work completion) before, during, and after treatment adjustments. Feedback to the health care team via school team members such as school nurses, school psychologists, or school counselors, is important in these circumstances. Use of observation checklists when treatment changes are made can help determine if there is a concomitant improvement in attention and work completion (see the [Teacher Toolbox](#) for a sample observation checklist).

Interventions that teachers can use (and monitor for effectiveness on a per case basis) include:

- Frequent repetition of material
- Redirection
- Cueing
- Memory learning strategies such as mnemonics
- Extra time for assignments and exams
- Non-timed assessments to measure performance
- Break tasks down into simpler steps
- Provide several brief tests instead of one long one
- Use a recognition format for exams rather than a recall format
- Test for understanding rather than specific facts

When work completion or classroom inattention remains problematic, an OHI or 504 designation may be in order (see [Disability Rights](#)). With or without such a designation, using a behavioral consultant or school psychologist to conduct a functional behavioral analysis (often simply called an FBA) may reveal antecedents and consequences associated with effective and ineffective work completion (see the [Teacher Toolbox](#) for sample letters requesting assistance). Considerable educational research confirms the utility of FBAs for promoting classroom success, including improved work completion.

Interpersonal and emotional problems

What we know:

It will surprise few teachers that students who seize risk diminished self-esteem and anxiety about being stigmatized. Research, however, suggests that children with epilepsy may perceive their own characteristics and their illness much worse much than others do. Understandably, children with epilepsy risk feeling loss of control and learned helplessness, in part because of the inherent unpredictability of when and where a seizure might appear. Children's low self-esteem also has been shown to contribute to peer-rejection, age-appropriate activity avoidance, and social isolation. Furthermore, research has shown that low self-esteem predicts poor academic performance. In fact, one study found that students with more frequent seizures and poorer self-concepts were at greatest risk for academic problems.

Besides low self-esteem, children with epilepsy risk a host of related psychological disorders and adjustment problems. For instance, research documents that children with epilepsy are three to six times more likely (21%-60%) to develop psychopathology than the general population (6.6%). Increased rates of anxiety and depression are also linked to childhood epilepsy. Depression appears to be especially problematic, as an estimated one in four children with epilepsy will develop that psychiatric condition. Those who experience actual or perceived stigma, feelings of a loss of control, and negative attitudes

about epilepsy appear to be especially depression prone. Needing more than one AED for seizure control (see [Medical Facts](#)) is also associated with childhood psychiatric disorder. In addition, overprotective parents of more apt to have a student (with epilepsy) with poor interpersonal adjustment.

There are interpersonal risks, as well. Students with epilepsy appear disproportionately the target of bullying. One recent study confirmed that twice as many children with epilepsy (42%) reported being bullied than healthy controls (21%); children with another illness (chronic kidney disease) encountered no such added risk (18%). Epilepsy's stigma was also evident in a very large study of U.S. adolescents – three-quarters thought that adolescents with epilepsy were more likely to get bullied, and just one-third would agree to date someone with epilepsy..

What to do:

Teachers who observe a seemingly depressed or extremely anxious student may want to refer to the school psychologist, school counselor, or alert the family who can then access health care or mental health services. If severe depression is suspected, such steps are essential. EdMedKids provides a link to the [Substance Abuse and Mental Health Services Administration](#) website, which lists community-based mental health centers across the U.S.

Regarding treatment for clear anxiety or depressive symptoms, cognitive-behavioral therapy, a treatment for depressive symptoms in general populations, has demonstrated effectiveness. Cognitive-behavioral therapy, sometimes used by psychologists or counselors at school or clinic sites, teaches students to identify negative attributions that lead to counterproductive behavior, and replace them with alternative attributions that lead to more effective behavior. Teaching relaxation techniques and coping skills have also been found to be beneficial for improving the self-esteem of children with epilepsy. EdMedKids provides a link to the [Association for Behavioral and Cognitive Therapies](#) which summarizes some evidence-supported cognitive-behavioral therapy.

In part because family stress seems to contribute to depression and low self-esteem in children with epilepsy, programs that address family communication and educate parents (and children) about epilepsy have been found effective. Thus, educators working as formal or informal teams may alert families to outside services that can help.

One way for teachers themselves to help is by limiting overprotection at school. Many doctors conclude that students with well-controlled seizures need not skip sports or vigorous physical activity. Still, clinicians usually recommend extra supervision during activities such as swimming and advise against contact sports, such as tackle football. Being allowed to participate in the same activities as peers can lead to better-developed social skills and more self-confidence. Teachers should work with the student's parents and treatment care team to develop an individual plan for each student with epilepsy. The student's plan should specify what activities are acceptable for the student to participate in and what safety precautions are needed for specific campus activities.

If there is concern that a seizure might occur in class and engender emotional scars, a preemptory classroom discussion of epilepsy may be advised. This can often be done without identifying a specific student. Any such discussion, however, must be cleared by parent(s)/guardian of the student with epilepsy. If a seizure does occur during class, classmates will likely be frightened and need an explanation of what happened. It seems logical that the social impact on the student experiencing the seizure is reduced by an effective teacher explanation and class-wide discussion. No research, however, exists to substantiate this point. If a teacher (perhaps with the help of a counselor, school psychologist or nurse) conducts a post-seizure explanation, the student with epilepsy should be allowed to choose to participate or go elsewhere. The [Epilepsy Classroom](#) website provides comprehensive lesson plans for teaching grades K-12 about epilepsy. EdMedKids also provides a link to a [sample letter](#) that can be sent home to parents in anticipation of a class-wide discussion about epilepsy.

Unfortunately, school-based interventions addressing self-confidence, stress reduction, or friendship building still lack empirical support. Nonetheless, school-based counseling services, or accommodations/interventions as part of an IEP's related services, seem reasonable. This is even more

reasonable when baseline and follow-up data are collected to help judge actual improvement on target behaviors

Cognitive and academic impairment

What we know:

Especially regarding cognition and learning the precise nature of a student's epilepsy matters. As a group, children with epilepsy fare worse than children with other chronic illnesses. But research shows that much of the cognitive and academic risks occur among children with symptomatic epilepsy (who have another brain-related diagnosis) rather than those with idiopathic (epilepsy free of other brain-related diagnoses).

There are three main areas of risk for students with epilepsy:

1. General cognitive development (i.e., IQ)
2. Specific cognitive development (e.g., language or memory)
3. Academics themselves (e.g., reading and math skills; science or geography knowledge)

Regarding general cognitive development, many children with epilepsy have IQs in the normal range but some research finds the entire distribution of IQs shifted downward compared to students in general. Some children with intellectual disability also have epilepsy, but in these cases another underlying condition (e.g., a genetic or traumatic cause) rather than epilepsy per se largely explains the cognitive delay. That is, children with symptomatic epilepsy are at an increased risk for intellectual disability. Regarding specific cognitive development, the type of epilepsy and the brain location of any particular seizure focus can matter. Students with partial seizures involving the temporal lobes appear to be especially at risk for delimited and potentially important cognitive effects. For example, because portions of the temporal lobes support consolidation of memories, a temporal lobe focus sometimes predicts problems memorizing factual material or subsequent recalling of specific facts. Epilepsy affecting other portions of the temporal lobes may also be associated with understanding and using language. As another example, a generalized seizure resulting from a severe traumatic injury to the frontal lobes might be associated with executive and attention problems.

Regarding academics skills, several factors appear to contribute to the risk. One of these is greater frequency of seizure occurrence. Positively, one research study demonstrated that students who had infrequent seizures enjoyed achievement comparable to national norms. Also encouraging is the research finding that when symptoms improve, academics also improve. Unfortunately, another study found that 24% of children with well-controlled seizures were receiving special education services. Furthermore, research demonstrates that the academic trajectory of students with frequent seizures may decline compared to healthy classmates. As this suggests, the status of students with epilepsy may change with time. For example, academic decline over a three year period in reading and math has also been observed in children with new-onset epilepsy. Children who were younger at time of diagnosis changed the most, suggesting that early disruption by epilepsy, when basic academic skills are still being learned, might be especially problematic.

Experimental investigations have yet to find an association between specific subject matter (e.g., reading, math) learning problems and epilepsy. Instead, all areas appear at risk. In fact, one recent study found that 41-62% of students with epilepsy suffered a learning disorder in at least one subject area. Indeed, research routinely documents academic underachievement (compared to IQ) among students with epilepsy when considered as an entire group.

When teachers see a struggling student with epilepsy they should consider several steps:

1. An important first step is to refer the student to the school psychologist for a comprehensive evaluation; such an evaluation can determine cognitive and academic strengths and weaknesses. A detailed neuropsychological evaluation (perhaps by a clinic-based neuropsychologist) that assesses language, memory, visual processing, attention, and executive functioning may also be warranted.
2. Once the student's general and specific strengths and weakness are determined, teachers should try to match the curriculum and instructional approach to the student's skills.

3. Next teachers are encouraged to collaborate with behavioral specialists, special educators, or school psychologists to develop scientifically-supported accommodations to help the student succeed in class (this might involve an FBA, as mentioned above). Accommodations need to be tailored to each student's pattern of strengths and weaknesses. The [What Works Clearinghouse](#) website summarizes scientifically supported accommodations for struggling learners and can sometimes help to teachers with intervention planning.

4. If informal attempts at accommodation are unsuccessful, then formalized supports for the student via a 504 Plan or Other Health Impairment (OHI) special education designation might be considered. Given the elevated risks for learning problems among students with epilepsy, it is not surprising that they are frequent users of special education services. What is surprising is that the special education category entitled "other health impairment" (OHI) is seldom the basis for services. One study found just 16% of students with epilepsy had an OHI designation, compared to 48% for several non-OHI categories added together. Teachers are referred to the EdMedKids section on [Disability Rights](#) for more facts on these categories and considerations for special services for students with pediatric illnesses. In general the EdMedKids website encourages educators to consider the OHI options for struggling students with epilepsy, even though it historically has had low national usage.

Regarding accommodating specific memory deficits, teachers might consider:

- Frequent repetition of material
- Redirection
- Cueing
- Memory learning strategies such as mnemonics
- Extra time for assignments and exams
- Non-timed assessments to measure performance
- Break tasks down into simpler steps
- Provide several brief tests instead of one long one
- Use a recognition format for exams rather than a recall format
- Test for understanding rather than specific facts

Regarding accommodating specific language deficits, teachers might consider:

- Provide extended time for verbal responses
- Limit oral examinations and/or presentations
- Allow rewording of verbal material and instructions
- Slow the pace of verbal directions
- Provide written directions
- Pair student with a classmate to help clarify directions
- Use examples and visual guidance

Direct instruction is a general teaching strategy that seems well suited to students with epilepsy. It uses scripts of designated examples and a specific order of presentation. Scripted instruction may help students focus better on instructional content because they need not contend with differences in instructional delivery. Scripts can also ensure students encounter familiar language during classroom discussions that they may have missed because of seizures. More frequent learning checks via content-specific questions may also be needed to identify skill gaps EdMedKids provides a link to the [National Institute for Direct Instruction](#) where teachers can learn more about how to implement this instructional strategy in their own classroom.

The ideas above represent sound teaching practice. However, their precise effectiveness for students with epilepsy has yet to be established by research. Thus, educators are encouraged to monitor the effectiveness of their intervention by collecting data. Asking a school psychologist or school counselor for help in collecting data may make this process more feasible. If informal attempts to gain assistance are unsuccessful, then EdMedKids website recommends considering a formal OHI designation or using a 504 accommodation plan