

## Some Selected Physical Fitness Parameters of Intellectual Disability Individuals: A Review

Tessy Onogimesike Angba

National Open University of Nigeria, Uromi Community Study Centre, Uromi Edo State Nigeria

### ABSTRACT

The benefits of physical activities are universal for all including those with intellectual disability. Individuals with intellectual disability are mostly neglected and hardly exercised. Hence, the opportunities for improved health and wellness are limited. Paucity of data that could guide ameliorative measures also presents another challenge. Therefore, this paper reviews some selected physical fitness parameters of intellectually disabled individuals.

**Key words:** Intellectual disability, Physical Fitness.

### INTRODUCTION

There are different classes of disability, but intellectual disability is a special class in the division. Individuals in this category are of persons with certain and prominent limitations in mental functioning, communication, personal care and social skills (Batshaw, 2000). Batshaw further asserts that intellectually disabled children are much slower than the average child at learning, speaking, walking and personal care or needs. Intellectual disability is usually characterized by a low intellectual functioning level of intelligence quotient (IQ), mostly below 70-75 and this exists concurrently with significant limitations in two or more of the adaptive skills such as communication, self care, home living, social skills, community use, self direction, health and safety, functional academics, leisure and work (Merrick, 2004). Eni-Olorunda (2001) notes that of all the categories of children with special needs such as the deaf, the visually impaired, the learning disabled and the orthopedically impaired, intellectually disabled individuals are the most neglected. Mba (1995) points out that universally, families are concerned about their image in the society, and as such instead of identifying with their intellectually disabled children, prefer to hide them at home, which invariably contribute to their late recognition for education and physical activity. Onwuchekwa (2005) describes intellectually disabled children as a heterogeneous group by virtue of their intellectual limitations. She further asserts that the heterogeneity of this group is usually apparent even to the casual observer because they may be grossly deformed and immobile. She claims that emotionally, they are disturbed and disruptive, immature and uncooperative. She further observes that some might be unable to feed themselves while others may not be able to travel on public transport. She then posits that variations in these children are due to the wide range of aetiological conditions, which are responsible for the handicaps. She concludes that the number of the children with intellectual disability may be as numerous as the range of the aetiological factors and that the great discrepancies among the intellectually disabled children are determined by the location and extent of the brain damage. Merrick (2004) asserts that persons who are intellectually disabled have been found by many researchers to be a population with deficient physical fitness measures, which result from inactive lifestyle, lack of awareness of the positive effects of physical exercise and lack of motivation for any motor activity. Although intellectual disability remains a source of emotional pain and shame to many families, the intellectually disabled, like the average person, need regular physical activity to maintain healthy lifestyles. According to Healthy Children 2010 Report (2002), the intellectually disabled are more unlikely to participate in sustained or vigorous and rigorous exercise than people without disabilities. Therefore, children with disabilities tend to be weaker and are more susceptible to early fatigue than their physically active peers. They have higher metabolic, cardio-respiratory and mechanical costs of mobility, which lead to early fatigue and decreased exercise performance.

The Special Olympics Incorporated's (2001) work on the health needs of the intellectually disabled has facilitated the study of the prevention of intellectual disability and has also shown that intellectually disabled individuals' health status is on the decline despite gains in life expectancy achieved in the field of medicine. Work by Maria, Stephen, Jeffrey & Kharasch (2004) has shown increased and undetected morbidity in groups of people who are intellectually disabled and have highlighted inadequate diagnosis and treatment of specific medical conditions including heart disease, hypothyroidism and osteoporosis. Man has always had to cope with individuals who are less endowed with the ability to learn and function in the society as the greater majority of the normal people. However, the limitations of these individuals are solely because of their inability to develop sufficient intellectual capacity to cope with societal or environmental demands and the inability to exist independently of constant supervision and support from others. These groups of individuals are referred to as the

intellectually disabled if their conditions come before the age of eighteen years, a period by which the brain is expected to have been fully developed (Merrick, 2004).

There are three classes of the intellectually disabled: The Totally Dependent, The Trainable and the Educable (Mba, 1995). The Federal Government of Nigeria in the National Policy on Education (2004) classifies them as the bedridden, the trainable and the educable. Although there are different categories of intellectual disabilities, which include Down syndrome, Autism, Prader-Willi Syndrome, Williams Syndrome, Fragile X, Inborn Errors, Cerebral Palsy, Neural Tube Defect. Only Down syndrome, Autism and Cerebral palsy will be examined for the purpose of this study and this is because they are easily accessible in schools. Down syndrome is the most common and easiest to identify. It is a chromosomal condition of intellectual disability, which is as a result of genetic aberration, which leads to the formation of 47 chromosomes instead of the normal 46. The additional but unnecessary chromosome disrupts the normal development of the body and brain. However, to confirm Down syndrome in an individual, a chromosome test is carried out on the individual. Individuals suffering from Down syndrome are characterized by poor strength; poor muscle mass and high percent body fat and so are predisposed to cardiovascular health problems (Andriolo, 2007; Hernandez, 1996).

Autism is an abnormality that starts in early childhood with very debilitating effects on social and communicative skill development. The cause of autism is yet to be discovered, so it is not preventable and has no known cure or any effective treatment. Its symptoms are quite heterogeneous but involve deficits in social relatedness and communication. It also includes the presence of restricted interests and repetitive behaviours (Sigma & Spence, 2005). Cerebral Palsy is basically a disorder of movement and posture due to non-progressive abnormality of the immature brain. It is a condition in which the part of the brain controlling movement and posture does not develop properly. Though the brain continues to develop into early adulthood, the crucial events of its development occur during intrauterine life and early childhood (Batshaw, 2000). Individuals with cerebral palsy have low physical work capacity and low aerobic power. However, work done by Maria, Stephen Jeffrey and Kharasch (2004) has discovered an increase in maximal oxygen consumption, physical work capacity and aerobic power after an aerobic training for intellectually disabled individuals.

Varella, Sardinha & Pitetti (2001) revealed a significant improvement in the physiological variables of adults with intellectual disability in the intervention group following some days of exercise. Infact, Tsimeras, Giagazoglou, Fotiadou, (2003) revealed a significant increase in cardiovascular function of individuals with intellectual disability after a twelve-week period of sustained exercise. Wang (2003) research on individuals with intellectual disability revealed that exercise is beneficial to individuals with intellectual disability both in terms of health and lifestyle. Rosenthal-Malek & Mitchel (1997) asserted that individuals with intellectual disability may experience increase in attention span, on-task behaviour and level of correct responding after a moderate aerobic activities. Soper (1994) revealed that physical activity- based programme is easy to implement and has been shown to be effective in controlling many types of inappropriate behaviours associated with intellectual disability.

### **A Brief History of Intellectual Disability**

People tagged with the label “mentally retarded”, “cognitive disability”, “intellectually challenged”, or “development disability” – have been major targets of social prejudice and discrimination in Western societies. Dehumanization, status degradation and public mortification, involuntary sterilization, denial of fundamental rights and even euthanasia occupy prominent roles in the history of mental retardation. No one can deny that people labeled “mentally retarded” have endured much harm at the hands of non-disabled majority (Dada, 2006). The history of mental retardation is long and it dates back to antiquity. No doubt, some people have been slower to learn than others from the time people have populated the earth. The Greeks in 1552 B.C, and the Romans, in 449 B.C. were among the first to recognize people officially as mentally retarded.

Several special educators and historians have written detailed and interesting accounts on philosophies and treatment of people with mental retardation with their changes over the years. Gearheart and Litton (1986) characterized the early history of mental retardation prior to 1800 as consisting primarily of superstition and extermination; the 19th century as the era that produced institutions for persons with mental retardation; the 20th century as the era of public school classes; the 1950s and 1960s as the era of legislation and national support and the 1970s as the era of normalisation, child advocacy and litigation.

### **Definitions of Intellectual Disability**

Numerous definitions of “intellectual disability” have been proposed, debated and revised over the years.

“Intellectual disability” is a concept that affects and is affected by people in different disciplines. It has been defined from different perspectives. Physicians were the first professional group to work with people with intellectual disability. It is not surprising that the earliest definitions emphasized biological or medical criteria. A definition used by a professional within a given discipline may be functional only from the perspective of that particular field. Although a definition of intellectual disability based on biological or medical criteria may be useful to physicians, a medically oriented definition may be of little value to the teacher or psychologist. According to Payne & Patton (1981), a person with intellectual disability in the 20th century was defined as an idiot. The word idiot is derived from the Latin word *idiota*, meaning an ignorant person, and the Greek word *idiotos*, meaning unfit for public life. An idiot is one who has no understanding of his nativity. An idiot is such a person who cannot account for number, can either tells whom his father or mother is, nor state how old he is. So as it may appear, he has no understanding or reason of what shall be his profit or loss. Simpson (1997) defined mental retardation as “Idiocy”. Idiocy is a specific infirmity of the cranio-spinal axis, produced by deficiency of nutrition in utero and neo-nati. It incapacitates, mostly, the functions which give rise to the reflex, instinctive and conscious phenomena of life, consequently, the idiot moves, feels, understands, wills, but imperfectly; does nothing; thinks of nothing, cares for nothing (extreme cases), he is legally irresponsible, isolated, without associations and a soul shut up in imperfect organs.

Signey Bijou in 1966 proposed a strictly behavioural definition that states that “A retarded individual is one who has a limited repertoire of behaviour shaped by events that constitute his history”. Dada (2006) has described an inter-behaviour analysis view of intellectual disability that attributes a limited behavioural repertoire to the hampering effects of biochemical impairment, handicapping socio-cultural conditions or both. Biomedical impairment can retard an individual’s development through injury to the response equipment or to the internal or external sources of stimulation. Handicapping socio-cultural conditions may include an impoverished home, environment, limited educational opportunities and negative parental practices such as indifference or abuse. Bijou’s view maintains that if the person’s environment provides the proper supports, the deficits in functioning associated with mental retardation can be replaced with more adaptive, age appropriate behaviour.

Intellectual disability refers to significantly general intellectual functioning, which originates during the developmental period and is associated with impairment in adaptive behaviour. Sub-average intellectual functioning refers to one or more standard deviations below the mean, an intelligence quotient of 85 or below. Adaptive behaviour means adaptation to the demands of the environment while the developmental period is between births to age sixteen (Heber, 1961). This definition, with its three components (sub-average intelligence, impaired adaptive behaviour and origination during the developmental period) became widely accepted.

Mercer a sociologist in 1973 believes that the concept of intellectual disability is a sociological phenomenon and that the label mental retardation is an achieved social status in a social system. Her research showed that many children from cultural minorities are labeled that because their behaviour does not meet the norms of the white, middle-class or social system. This definition, however, from Herber's definition in the following areas: sub-average intellectual functioning is at least two deviations below the mean. An intelligent quotient of 70 or below is accepted below the mean of 85. This reduced the number of individuals who met the criterion from 16% to a little more than 2% of the population. Adaptive behaviour in this definition means the ability to meet the standards of personal independence and social responsibility expected of his or her age level and cultural group, while developmental period ranges between births to age eighteen.

The American Association of Mental Retardation (AAMR) (1992) developed a definition based on a substantially different concept and set of beliefs about mental retardation, which was given by Heber (1961). This definition and its later revisions (Grossman, 1977) have become widely accepted. These criteria, remain in the current 1992 version of AAMR definition, which stated that; “Substantial limitations in present functioning. It is characterized by significantly sub-average general intellectual functioning, existing concurrently with related limitation in two or more of the following applicable adaptive skills areas: communication, self care, home living, social skills, community use, self-direction, health and safety, functional academic, leisure, and work. Intellectual challenge manifests before age 18 (AAMR, 1992). This specifies that the person’s adaptive behaviour must be impaired in at least two important areas. Intellectual disability is a developmental disability that can appear from birth through the age of 18. People who are intellectually challenged function at an intellectual level that is below average and have difficulties with learning and daily living skills. Batshaw (2000) further said that it is characterized by three criteria: significantly sub-average intellectual functioning; concurrent and related limitations in two or more adaptive skill areas; and manifestation before age eighteen. Batshaw, (2000) says there is controversy over the definition but that there is a general agreement that individual that is intellectually disabled must have. Despite this general agreement, disagreements over the details of these

definitions have arisen for both biological and philosophical reasons. Intellectual disability is defined by the American Association on Mental Deficiency (2008) as a non-progressive disorder evident during childhood, with disabilities in adapting to the environment, and a score on an IQ test below 70. The average score on an IQ test is 100, with scores of 85-115 being seen as the average range. The borderline range is usually applied to those with scores of 70-84. Scores in the intellectual disability range may be in the mild range (55-69 IQ), moderate (40-54), severe (25-39) or profound (less than 25). Disabilities in adapting to the environment refer to delays in life skills, not just academics. (Harris, 2005) With regards to the intellectual criterion for the diagnosis of intellectual challenge, limitations in intellectual functioning are generally thought to be present if an individual has an IQ test score of approximately 70 or below. IQ scores must always be considered in light of the standard error of measurement, appropriateness, and consistency with administration guidelines. Since the standard error of measurement for most IQ tests is approximately 5, this represents a score approximately 2 standard deviations below the mean, considering the standard error of measurement. It is important to remember, however, that an IQ score is only one criterion: Significant limitations in adaptive behavior skills and evidence that the disability was present before age 18.

Intellectual disability or developmental disability is the currently preferred term for the disability historically referred to as mental retardation. Although the preferred name is intellectual disability, the authoritative definition and assumptions promulgated by the American Association on Intellectual and Developmental Disabilities (AAIDD and previously, AAMR) remain the same as those found in the Mental retardation (Luckasson, 2002). The term intellectual disability covers the same population of individuals who were diagnosed previously with mental retardation in number, kind, level, type, and duration of the disability and the need of people with this disability for individualized services and supports. Furthermore, every individual who is or was eligible for a diagnosis of mental retardation is eligible for a diagnosis of intellectual challenge (AAIDD, 2008). Intellectual disability is a lifelong condition of impaired or incomplete mental development.

### **Classifications of Intellectual Disability**

In classifying the mentally retarded persons, Adima (1987) observes that many factors such as the degree of mental retardation, clinical symptoms, educational objectives and causes are considered. Adima classifies them into totally dependent mentally retarded; trainable mentally retarded; and educable mentally retarded. The classification has met with widespread acceptance, although it has also been suggested that intellectual disability be simply dichotomized into mild (IQ score of 50 to approximately 70) and severe (IQ score below 50) because of the discrete biological division between mild and the more severe forms of intellectual individuals with different etiologies and outcomes. This dichotomy has not been widely accepted for clinical purpose because the medical, educational and habilitative needs are quite different within the moderate to profound group. American Association of Mental Retardation (1992) takes a different approach in defining the degree of severity of intellectual disability relying not on IQ scores but rather on the patterns and intensity of supports needed which is intermittent (mild) limited (moderate) extensive (severe) or pervasive (profound). This definition by AAMR marks a philosophical shift from an emphasis on degree of impairment to a focus on the abilities of individuals to function in an inclusive environment. This is controversial as it assumes that adaptive behavior is independent of cognition and does not provide clear guidelines for establishing eligibility of children with IQ scores in the upper limits of the range connoting intellectual challenge.

### **Down syndrome**

Down syndrome is the most common and readily identifiable chromosomal condition associated with intellectual disability. It is caused by a chromosomal abnormality: for some unexplained reason, an accident in cell development results in 47 instead of the usual 46 chromosomes. This extra chromosome changes the orderly development of the body and brain. In most cases, the diagnosis of Down syndrome is made according to results from a chromosome test administered shortly after birth. People with Down syndrome are first and foremost human beings who have recognizable physical characteristics and limited intellectual endowments which are due to the presence of an extra chromosome 21 (Uong et al, 2001) Chromosomes are the materials that store people's genetic information. Each person inherits 23 chromosomes from their mother and twenty-three chromosomes from their father. Sometimes an accident occurs and one of the parents gives an extra chromosome. In addition, Batshaw (2000) says three types of chromosomal abnormalities lead to Down syndrome trisomy 21 (which accounts for about 95% of individuals with the disorder), translocation (which accounts for 4%) and mosaicism (which accounts for 1%). Trisomy 21 results from non disjunction, most commonly during meiosis 1 of the egg, Translocation Down syndrome involves the attachment of the long arm of an extra chromosome 21 to chromosome 14, 21 or 22 mosaicism implies that some but not all cells have the defect, resulting from non disjunction during mitosis of the fertilized egg.

### **Causes of Down syndrome**

Down syndrome is caused by the presence of the whole or part of an extra copy of chromosome (21) The disorder can be diagnosed in utero by screening or karyotyping, or early after birth by muscle hypotonia (poor muscle tone) and other symptoms and confirmed by karyotype analysis of a blood sample (Saenz, 1999). Global estimation of the incidence of Down syndrome is 1 in 1,000 to 1 in 1,200 live births (WHO, 2004). Children born with Down syndrome often have certain physical traits in common including smaller than average heads (microcephaly) and some abnormalities of shape and facial features. Retardation of normal growth (including height) and development is typical, and congenital heart problems are of concern. Moreover, Down syndrome is the main genetic cause of moderate learning disabilities. Recent biomedical and molecular studies have suggested that the chromosomal anomaly in Down syndrome determines several alterations in protein expression patterns (Pritchard, 1999) which result in particular biochemical, physiological, anatomical, and behavioural characteristics such as imbalance of the oxidative metabolism (Pastore et al, 2003), mitochondrial dysfunction (Arbuzova, Hutchin & Cuckle, 2002), impaired nervous system (Nadel, 2003), musculoskeletal disorders (Merrick, 2002), congenital problems of the heart (Grech, 2001), narrowed airways (Schloo, 1991; Uong et al, 2001), obesity (Kawana et al, 2000), premature ageing (Roth et al, 1996), poor sleep quality associated with low oxygen saturation (Dyken, 2003), high risk of psychopathologies (Nicham et al, 2003) and mental disabilities.

### **Characteristics of Down syndrome**

Children with Down syndrome have a widely recognized characteristic appearance. Their head may be smaller than normal and abnormally shaped. Other prominent characteristics of Down syndrome are: a flattened nose, protruding tongue, upward slanting eyes, short hands and fingers, and a single crease in the palm. There are over 50 clinical signs of Down syndrome, but it is rare to find all or even most of them in one person. Individuals with Down syndrome are usually smaller than their non-disabled peers, and their physical as well as intellectual development is slower. Besides having a distinct physical appearance, children with Down syndrome frequently have specific health-related problems. A lowered resistance to infection makes these children more prone to respiratory problems. Visual problems such as crossed eyes and far- or nearsightedness are higher in those with Down syndrome, as are mild to moderate hearing loss and speech difficulty. Approximately one third of babies born with Down syndrome have heart defects, most of which are now successfully correctable. Some individuals are born with gastrointestinal tract problems that can be surgically corrected. Some people with Down syndrome also may have a condition known as Atlantoaxial Instability, a misalignment of the top two vertebrae of the neck. This condition makes these individuals more prone to injury if they participate in activities, which overextend or flex the neck. Parents are urged to have their child examined by a physician to determine whether or not their child should be restricted from sports and activities, which place stress on the neck. Although this misalignment is a potentially serious condition, proper diagnosis can help prevent serious injury.

Children with Down syndrome may have a tendency to become obese, as they grow older. Besides having negative social implications, this weight gain threatens these individuals' health and longevity. A supervised diet and exercise program may help reduce this problem. It is important for parents and caregivers to have a full understanding of Down syndrome facts and access to support in order that they can best help the child reach their full potential.

People with Down syndrome have a reputation for being warm and friendly individuals, although some children and adults may have behavioural difficulties (Osatuyi, Ajobiwe, Adebisi, Dada & Atikpui, 2008). Children with Down syndrome are usually smaller, and their physical and mental developments are slower than youngsters who do not have Down syndrome. There is a wide variation in mental abilities and developmental progress in children with Down syndrome. Also, their motor development is slow; and instead of walking by 12 to 14 months as other children do, children with Down syndrome usually learn to walk between 15 to 36 months. Language development is also markedly delayed. It is important to note that a caring and enriching home environment, early intervention, and integrated education efforts will have a positive influence on the child's development. Although individuals with Down syndrome have distinct physical characteristics, generally they are more similar to the average person in the community.

### **Trisomy 21**

Trisomy 21 is caused by a meiotic nondisjunction event. With nondisjunction, a gamete is produced with an extra copy of chromosome 21; the gamete thus has 24 chromosomes. When combined with a normal gamete from the other parent, the embryo now has 47 chromosomes, with three copies of chromosome 21. Trisomy 21 is the cause of approximately 95% of observed down syndromes, with 88% coming from nondisjunction in the maternal gamete and 8% coming from nondisjunction in the paternal gamete (Down Syndrome Research Foundation, 2005).

### **Mosaicism**

Mosaicism is a malfunction of the division of the pair of the chromosome 21. However, mosaicism takes place shortly after egg fertilization, where non-disjunction occurs at conception. This process is very rare, and accounts for less than 2% of all cases of Down syndrome. There is a mixture of two different types of cells in people with Down syndrome due to mosaicism, some cells with forty-six chromosomes total, and some with forty-seven.

### **Translocation**

The third type of cell division problem responsible for the occurrence of Down syndrome is called translocation. There are still forty-six chromosomes seen in people with Down syndrome due to translocation, but that extra piece of the chromosome 21 present in the cell causes some of the features of Down syndrome in the child (Cauldwell, 2006).

### **Definition of Autism**

Autism is a biological disorder that is associated with a range of developmentally significant problems in communication and language, verbal and non-verbal social interaction and behavioural excess. Autism adversely affects a child's educational participation at home and school (Osatuyi, Ajobiwe, Adebisi, Dada & Atikpui, 2008). To Stock (2004) Autism is a developmental disability affecting verbal and non – verbal domination and social interaction generally evident before age three that adversely affects child's educational performance. Professional descriptions of autism and intellectual difficulties closely relate them to areas of deficiencies, loopholes and gaps in development that intervention should fill up. Autistic symptoms appear as communication difficulties, poor social interaction and stereotyped and challenging behaviours (Osatuyi, Ajobiwe, Adebisi, Dada & Atikpui, 2008). Cognitive and intellectual difficulties are seen as characterized by significant limitations in both intellectual functioning and conceptual, social and practical adaptive skills (Heward, 2003). Power (2000) describes autism as a physical disorder of the brain that causes a lifelong development disability.

### **Characteristics of Autism**

Autism is distinguished by a pattern of symptoms rather than one single symptom. The main characteristics are impairments in social interaction, impairments in communication, restricted interests and repetitive behavior. Other aspects, such as atypical eating, are also common but are not essential for diagnosis. Individual symptoms of autism occur in the general population and appear not to associate highly, without a sharp line separating pathological severity from common traits (Stock, 2004). Autistic infants show less attention to social stimuli, smile and look at others less often, and respond less to their own name. Autistic toddlers have more striking social deviance; for example, they have less eye contact and anticipatory postures and are less likely to use another person's hand or body as a tool. They display moderately less attachment security than usual, although this feature disappears in children with higher mental development or less severe ASD. Older children and adults with ASD perform worse on tests of face and emotion recognition (Stock, 2004). Contrary to common belief, autistic children do not prefer to be alone. Making and maintaining friendships often proves to be difficult for those with autism. For them, the quality of friendships, not the number of friends, predicts how lonely they are.

Autistic individuals may have symptoms that are independent of the diagnosis, but that can affect the individual or the family. A small fraction of individuals with ASD show unusual abilities, ranging from splinter skills such as the memorization of trivia to the extraordinarily rare talents of prodigious autistic savants. Unusual responses to sensory stimuli are more common and prominent in autistic children, although there is no good evidence that sensory symptoms differentiate autism from other developmental disorders. Gillberg (1990) found that about two-thirds of children with ASD had a history of sleep problems. Parents of children with ASD have higher levels of stress. Siblings of children with ASD report greater admiration of and less conflict with the affected sibling; siblings of individuals with ASD have greater risk of negative well being and poorer sibling relationships.

### **Definition of Cerebral Palsy**

Cerebral palsy refers to a disorder of movement and posture that is due to a non-progressive abnormality of the immature brain. Event of conditions that disturb the usual unfolding of this process can result in cerebral palsy and may also produce several other associated disabilities including intellectual challenge, seizures, visual and auditory impairments, learning difficulties, and behavior problems (Batshaw, 2000). Cerebral palsy may result from numerous conditions. The damage or dysfunction generally occurs during an early period of the brain's development and is not progressive. This distinguishes cerebral palsy from other ongoing disorders of movement and posture, such as a brain tumor or a progressive neurological disorder. The brain near the lateral ventricles is

especially vulnerable to injury at 26 – 32 weeks gestation (Volpe, 1990). These abnormalities that destruct regulation and maintenance of the later stages of pregnancy may set into motion a series of parallel or synergistic pathological events that result in both preterm birth and periventricular white matter injury and subsequent cerebral palsy (Adinolfi, 1993; Levinton, 1993). A number of brain imaging techniques are available to help define the anatomical correlates of cerebral palsy (Barnes, 1992).

### **Characteristics and Types of Cerebral Palsy**

Cerebral palsy is often classified according to the type of motor impairment that predominates (Blair & Stanley, 1999). In dystonic cerebral palsy, rigid posturing centered in the trunk and neck is characterized. Ataxic cerebral palsy is characterized by abnormalities of voluntary movement involving balance and position of the trunk and limbs in space. For children who can walk, this is noted most especially as a wide-based, unsteady gait. Ataxic cerebral palsy may be associated with increased or the decreased muscle tone.

### **Early Diagnosis of Cerebral Palsy**

Certain groups of newborns at high risk, especially infants who weigh less than 1,500 grams twins and small for gestational age infants, merit close neurodevelopment monitoring to detect cerebral palsy early (Cummins, Grether & Nelson, 1993). Tests, such as the Denver Development Screening Test (Frankenburg, Dodds, & Archer, 1992), which have traditionally been used by pediatricians to screen infants in developmental follow-up programs, often fail to detect cerebral palsy during the first 12 months of life (Nickel, Renker & Gallenstan, 1989). For this reason, a number of neuromotor tests have been developed to evaluate the quality of movement skills in young infants (Paban & Piper, 1987). They assess both the presence of normal movement patterns and the absence of primitive reflex and abnormal tone. In addition to these tests, a group of behavioural symptoms may suggest cerebral palsy. As the child grows, this may become more obvious because the spastic limbs atrophy, becoming smaller both in circumference and in length. Not all of these signs are found in every infant with cerebral palsy, and not all infants who have these signs develop cerebral palsy (Allen & Capute, 1989).

### **Agility and Intellectual Disability**

Jenson & Fisher (1984) opined that agility is often represented by the “maneuverability, mobility and swiftness”. It is the ability to change direction of the body and its parts rapidly. Agility is the combination of several athletic traits, including reaction time, speed of movement, co-ordination, power and strength. Hoeger and Hoeger (2002) supported this view and summarized their definition as the ability to quickly and efficiently change body position and direction. Agility is both general and specific. Examples of general agility (or total body agility) are as follows: a footballer running back or who eludes would-be tacklers by shifting and dogging while he runs; a soccer player who cleverly maneuvers the ball past his opponent, then stops quickly to leap in the air for a shot. Hoeger and Hoeger (2002) opined that agility is important in all activities involving quick changes in positions of the body and its parts. Fast starts and stops and quick changes in direction are fundamental to good performance in practically all court games, such as basketball, tennis, badminton, and volley ball and in many field games requiring running agility. Gymnastics and diving also depends largely upon rapid body movements and quick changes in body position. Because of the existing characteristics of the intellectually challenged children, it is difficult for them to maneuver their body. Hence, they need this skill, as it will assist them in their day-to-day activities.

### **Power and Intellectual Disability**

Power is defined as the amount of work (W) done in a given time (Morrow et al, 2000). According to Jenson and Fisher (1984), power is the rate of accomplishing work; it therefore, includes the time element. According to Hoeger and Hoeger (2002) power is the ability to produce maximum force in the shortest time. They described power to have two components, which involve speed and force (strength). Power produces momentum, and momentum becomes the striking force when contact is made. Thus, power has many applications in a variety of intellectually disabled children’s day-to-day activities.

### **Body Composition and Intellectual Disability**

Body composition, according to Prentice (1999), refers to both the fat and non-fat components of the body. The percentage of the total body weight that is composed of fat tissues is known as percent body fat, while the non-fat or lean tissue including muscles, tendons, bones and connective tissues are referred to as either “fat-free mass” or lean body mass (weight). The fitness file in 2002 as quoted by Igbafe, (2002) continuing, said that body composition describes the percentages of fat, bone and muscle in the body. de-Ridder (2003) stated that “since the early times, the body composition of the athletic population has always greatly interested exercise scientists, dieticians, clinicians, coaches, etc”. In support, Monyeki (2003) said “The principle of classifying human physique has enjoyed a high status in the history of man from as early as the 5<sup>th</sup> century BC”. While Fox &

Mathew (1981) were saying that body composition is significantly related to physical activity, de-Ridder (2003) was emphatic that the purpose of determining body composition is to estimate the athlete's optimal body weight; formulate dietary recommendation and exercise prescription; estimate the athlete's competitive weight class in combat sports; monitor training at altitude and monitor changes in body composition. Prentice (1999) insisted that an ideal body composition consists of low fat and high muscle mass. de-Ridder (2003) cautioned that "Extremely low level of body fat can result in health problems like amenorrhea in women (less than 3 periods per year)". Amenorrhea has been linked to increased risk of stress features (bone mineral loss) and premature osteoporosis over extended periods of time. Studies have reported risk associated with excess accumulation of fat and an increase in body fat has been reported among intellectually disability children (SOI, 2001; Simila & Niskanen, 1991; Bell & Bhate, 1992; Rubin *et al.*, 1998).

## CONCLUSION

The perception that people with intellectual disabilities needed to be kept separate from the general population was pervasive. Today, communities are beginning to understand that having an intellectual disability is merely based on not achieving certain developmental milestone of functioning by a specific age and that it does not warrant any form of segregation. Individuals with intellectual disability often exhibit challenges in life areas such as self-care, expressive/receptive language skills, learning, mobility and economic self-sufficiency. Intellectual disability is associated with the label and this group condition covers Cerebral palsy, Autism, Down syndrome and other neurological disorders. The disability label does not mean that the person is incapable of living, working and participating in life given the proper support system. Surprisingly, the bane to achieving optimal health for individual with intellectual disability is often the lack of knowledge held by a person's support system. People with intellectual disability are not generally encouraged by those around them to exercise, join health clubs, or participate in sporting events. This paper reviewed some selected physical fitness parameters of intellectually disables individuals.

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