

## CHAPTER I

### INTRODUCTION

***“Physical fitness is not only one of the most important keys to a healthy body; it is the basis of dynamic and creative intellectual activity”***  
**- John F. Kennedy**

Adapted physical education is a unique system of physical education programme which provides scientifically researched and well designed exercise programme to provide a suitable sports programme of each disabled child same as for all children. This programme contributes a vital role in physical activity especially for the disabled children to improve their proper body mechanisms, make social adjustments, reduce the weakness or corrects the malalignments of their body and this programme is appropriately used in medical as well as therapeutic reasons.

Adapted physical activity is defined as “service delivery, pedagogy, coaching, rehabilitation, therapy, training, or empowerment conducted by qualified professionals to enhance physical activity, goal achievement of individuals of all ages with movement limitations and/or societal restrictions (i.e., attitudinal and environmental barriers)” (Sherrill, C 2004a).

Physical education objectives depend on inclusiveness in its behavioral objectives. Sports stimulate the disabled children's desire and enthusiasm to involve in various sports activities. Most of these activities can be performed on their levels of capability and physical ability as it is easy to modify health behaviors through these activities (Salama, B.I 1997).

Playing is an important aspect of modification and direction activities of the mentally retarded child because play is rich in psychological and social values like control and management, self-acceptance, confidence and emotional aspects of success

and social acceptance. This is what is sought in most provided programs for those children (Al-Kooly A.A and Rateb O.K 1998).

Mentally retarded children with mild levels of disability are falling too far behind the normal children in basic motor skills. Most mentally retarded children with mild levels of disability are able to do the minimum level of motor skills related to their daily life skills like walking, climbing, kinesthetic cognition and running (Soliman, M.F 2004).

### 1.1 INCLUSIVE GAMES

Many school children whose intellectual, physical, emotional, and behavioural characteristics differ markedly from those of their peers and require special assistance to realize their potential. Depending upon how drastically their capabilities differ, this assistance may or may not include physical education services.

There are many more children, however, whose movement differences are not severe enough to require specialized programs. Instead, they differ enough to warrant consideration within the regular physical education program. These youngsters may be obese, they may be less skilled or lack coordination, or they may simple be less experienced than the others in the group. Any physical education program should foster movement that respects the uniqueness of each individual. In essence, all physical education programs, whether serving regular or special education students, should be adapted physical education namely adapted to meet each child's needs, strengths and abilities.

Children with movement differences have the same desires, interests, and expectations to belong and achieve as their more skilled peers. These children must be given access to physical activities and games through the use of modified equipment,

adapted rules, and creative programming; they should receive the same benefits offered to other youngsters of their age (Kasser, S.L 1995).

### **1.1.1 HOW VALUABLE ARE GAMES?**

Kasser S.L (1995) pointed out the values of the games (i.e.) our remembrance at the earlier stage how exciting it was to chase a ball, roll down a hill, or run after a playmate in the schoolyard? With these vivid images in the mind, it may be agreed that movement offers much more to the life of a child. Physical activity and the experience of developing one's body and skills offer desirable outcomes physically, psychologically, socially, and emotionally for all those who participate.

### **1.1.2 MOVEMENT GAMES MEAN PHYSICAL IMPROVEMENT**

Children receive many physical benefits from participating in active games. They are motivated to move, and the increased activity level fosters improved cardiovascular endurance, muscular strength and endurance, flexibility, and body composition. Movement games complement specific and somewhat more stationary, skill practice. A child's physical maturation will, of course, have an important effect on the child's ability to develop new skills. Games, however, allow the child to improve motor coordination through continued practice in a variety of contexts and situations (Kasser, S.L 1995).

### **1.1.3 MOVEMENT GAMES MEAN INTERACTION**

Although the aforementioned physical benefits are important, they are not first in the hearts and minds of children. The interactive nature of games attracts them. Peer acceptance and a sense of belonging are priorities for these youngsters. Interestingly enough, children often form relationships and make decisions concerning whom will they accept into their circle of friends based on appearance and physical skills such as those demonstrated in games. Inclusive games, therefore, offer a supportive

environment that enhances each child's self-confidence, regardless of physical ability. Inclusive games can teach children how to succeed, how to accept the strengths and limitations of everyone involved, and how to strive for improvement (**Kasser, S.L 1995**).

## **1.2 PHYSICAL ACTIVITY AND PHYSICAL FITNESS OF INDIVIDUALS WITH INTELLECTUAL DISABILITY**

Physical activity is defined as any bodily movement produced by skeletal muscles and resulting in a substantial increase over the resting energy expenditure. The energy expenditure can be measured in kilocalories. Physical activity in daily life can be categorized into occupational, sports, conditioning, household, or other activities (**Caspersen, C.J 1985**). There is a large number of techniques for the assessment of physical activity in children and adolescents which can be divided into 5 categories: direct observation, self-reports (diaries, recall questionnaires, interviews), physiological markers (heart rate), calorimetry and motion sensors (**WHO, 1995 & Montoye, H.J 1996**).

## **1.3 INTELLECTUAL DISABILITY AND PHYSICAL FITNESS**

Since the late 1960's perhaps no other disability group has received more attention by physical activity professionals than individuals with intellectual disability. Following the first Special Olympics in 1968, the public and those working directly with individuals with ID, including teachers and parents, have become more aware of the physical capabilities of people with intellectual disability, as well as the social and emotional benefits they derive from participating in sports and physical education programs (**Cratty, B.J et al., 1989**).

Physical fitness and regular physical activity are key factors in health and well being of all individuals. Physical fitness appraisal includes the following components:

body composition, cardio respiratory capacity, muscle strength and endurance, balance and flexibility. These components are essential for independent living and for developing functional skills (**Janicki et al., 1988**).

Strength is often assessed in standardized tests of fitness; however, the measures are controversial. For example, sit-ups are used as a measure of abdominal strength. However, if the subject's feet are held while doing sit-ups, weakness of the abdominal muscles may be masked since the hip flexors may be performing some of the work (**Safrit, M.J 1973**).

When an exercise is performed more than once, muscular endurance is involved. Muscular endurance is the ability of muscles to sustain repeated movements or a fixed position for a prolonged period (**Kusnitz I et al., 1983 and Wilmore, J.H 1982**).

Muscular endurance, like strength and flexibility, is specific to different parts of the body. One may have good endurance of the leg muscles but poor endurance of the abdominal muscles. The maximal number of sit-ups and push-ups are examples of measures of muscular endurance. Endurance measures interact with strength since, invariably, a person must lift some proportion of his or her body weight in endurance tests. Some authors maintain that while muscular endurance is dependent on a person's strength, strength is not dependent on muscular endurance (**Wilmore, J.H 1982**).

#### **1.4 BENEFITS OF PHYSICAL ACTIVITY**

Many national and international health organizations such as World Health Organization (WHO), United States Department of Health and Human Services (USDHHS) and American College of Sports Medicine (ACSM) have reported that children and adolescents with or without either intellectual disability or obesity can improve their health and quality of life by including moderate amount physical activity

most days of the week and that additional benefit could be attained with greater amounts of activity (**USDHHS (U.S. Department of Health and Human Services), 2001, 2005; Fernhall, B 2003; Spear, B.A 2007**). In addition, physical activity can help to improve bone health and can enhance physical, mental and social wellbeing, as well as quality of life (**Temple, V.A and Stanish, HI 2008**).

People have their own individual fitness needs and physical fitness is as important for the individuals with intellectual disability as it is for individuals without intellectual disability. However, for persons with mental retardation an appropriate level of physical fitness is critical, because their disabling condition itself may interfere with their activities like their ability to move efficiently (**Rimmer, J.H 1994; Horvat, et al., 2002; Warburton, DE 2006**).

Being physically active positively influences their mobility, and can therefore reduce the effects of the disability and improve their quality of life (**Durstine J.L et al., 2000**).

Delays in motor development, to varying degrees, negatively impact individuals' motor and physical capabilities. Motor delays are common among persons with intellectual disability and they may be less capable in motor tasks, which demands strength, flexibility, agility, coordination and balance. The greater the intellectual deficit is, the more pronounced the motor deficiency (**Auxter D et al., 2001, Rimmer, JH 1994, & Sherrill, C 1986**). One does not cause the other, but they are related. The motor tasks that correlate highest with intelligence are balance items and test of fine visual-motor coordination (**Sherrill, C 1986**). Furthermore, **Seung-Oh, et al., (2001)** reported that the low peak acceleration and slow movement time also suggest that individuals with ID are less capable of generating large neuromuscular impulses.

The development of static balance is a basic characteristic of normal motor development. Most of the developmental motor tests include a measure of static balance (**Geuze, R.H 2003**). Little research has been conducted on the reliability and validity of balance tests among people with ID. Generally, balance can be evaluated as the ability to balance on one leg eyes open or closed (**Oja, P and Tuxworth, B 1995**). The dynamic balance can be measured by heel-to-toe walking test or balance beam walking test. Both of these tests are noted to be reliable when testing dynamic balance of individuals with ID (**Lahtinen, U 1986**). In addition, some studies have used the Timed Up and Go Test (TUGT) to measure the dynamic balance and gait speed. It has also noted to be reliable test for individuals with ID (**Carmeli E et al., 2004**).

Students with intellectual disability suffer from different problems because of weak intelligence and cognition. These problems are observed in different motor, educational, behavioral, and moral levels. **Lean J.D, et al., (2010)** believe that intellectually disabled persons often don't use offered motor and sport programs although they need these skills to become motivated. On the other hand, sport programs for these persons have long-term corporal and psychological effects and play a positive role in the improvement of their motor skills like object control and movement skills (**Ninot, G & Mayano, 2007; Goodway J.D & Branta, C.F 2003**). These programs can be executed into an integral and separate form. **Ninot, G & Mayano, C (2007)** believe that if sport programs are executed integrally with normal children; they find a realistic perception of motor and physical skills. Physical education programs for mentally retarded persons include three categories: 1) activities related to physical readiness and body fitness, 2) fundamental motor skills, 3) sport skills, etc. (**Eichstaedt, C.B 1992**).

Although studies on physical education programme for children with intellectual disabilities are very few, but there are many other efforts in educational

areas some of them are referred here. There are various patterns to evaluate a program. **Worthern B.R & Saunders J.R (1987)** categorize evaluation pattern in six groups of objective oriented approach, management oriented approach, consumer oriented approach, expertise oriented approach, adversary oriented approach, naturalistic oriented approach, and participants oriented approach. Objective oriented evaluation is a basic concentration on goals and educational purposes and how these goals are met (**Ruhe, V & Zumbo, B.D 2009**).

**Hossein Khanzadeh Firuzjah A.A (2009)** executed a study with goal of recognition of social skills for with intellectual disability students of primary and guidance schools and validation of curriculum pattern of social skills. After analysis of data from parents questionnaire, teachers, and specialists, students skills was identified in nine components and validity of the proposed pattern was confirmed by specialists.

**Hosseini M.H (2007)** executed a study with goal of recognition of problems of math curricula of normal guidance school students from the view of teachers and students in Qom, Iran. The results showed that there were deficiencies in all parts of goal, content, learning and teaching methods, and evaluation methods, and these deficiencies had negative effects on educational progress of math students. Physical education programs that have important motor and recreational components and can be used according to requirements of students with intellectual disability, prepare individual and occupational independence for them. Thus, these programs must be evaluated periodically and their access trends become facilitated well.

General areas of school motor activities that must be evaluated periodically upon objective oriented approach are: role of teacher in execution of program, facilities and equipments, and program content. This evaluation can be fulfilled by a review team including physical education specialists, engaged teachers and school manager.

Periodical sessions must be held to examine results of these evaluation and special designs be proposed to remove current weaknesses and proposing better offer (Vannier, M 1990).

Sport for persons with disabilities is not a new concept, but its full potential as a powerful, low-cost means to foster greater inclusion and well-being for persons with disabilities is only beginning to be realized. Sport, gymnastics specifically, was first used in Sweden in the late 1800s as a means of therapy for persons with disabilities (Sherrill, C 2004b). Since then, sport for persons with disabilities has blossomed to include more than 17 international games, including three Olympic-level competitive games targeting athletes with disabilities — the Deaflympics (for those with hearing impairments), the Paralympics (for those with all other forms of physical disabilities such as limb loss and blindness), and the Special Olympics (for those with intellectual disabilities). The growth of sport for persons with disabilities is reflected in the 47 academic periodicals and journals that focus on adaptive physical education and recreation and the newsletters published by disability sports organizations worldwide (DePauw, K. & Gavron, S 2005).

### 1.5 EXERCISE AND MENTALLY RETARDED CHILDREN

Many programs for the mentally retarded are best planned at the community level. Communities that take on this responsibility have the added opportunity to provide activities that enable retarded and nonretarded children to participate together and thus decrease some of the problems created by isolation of the mentally retarded. The general population, especially children, lack of knowledge about mental retardation and usually do not have the opportunity to develop the appropriate understanding of its mentally retarded peers. Children who are mentally retarded are sometimes rejected because they lack personal and social skills, partly as a result of their relative isolation from other children. Interacting with children of normal intelligence through sports

activities helps mentally retarded children to develop the personal and social skills as well as improving their physical well-being. Pediatricians should encourage participation in exercise and athletic programs for mentally retarded children.

The awareness and confidence that persons with disabilities gain through sport are often the impetus for engaging in advocacy work, as the communication, leadership and teamwork skills they develop are easily transferred into this new arena. For example, Manuel Gaiato contracted polio as a young child in Angola. He became interested in playing sports after seeing photos of wheelchair basketball. Through involvement in a local sports project, *Sports for Life*, he was given an opportunity to play. Through practice and perseverance he was elected captain of his basketball team and began speaking about his experiences at schools and sports events. At the age of thirty, Manuel Gaiato has become the key spokesperson for disability rights in eastern Angola and is well known throughout the country for his advocacy work. His recognition in the sports world has earned him regular meetings with government officials and policy-makers for the purpose of improving conditions for persons with disabilities. As a direct result of his lobbying, and that of other Sports for Life staff and participants, wheelchair basketball and amputee football have both been adopted at the national level by Angola's National Paralympic Committee (Gustavsson A, et al., 2007).

## **1.6 USING SPORT TO REDUCE STIGMA**

In some places, persons with disabilities have succeeded in being seen for their abilities, rather than their disabilities. Elsewhere, people suffer from social stigma associated with their disability. Stigma consists of unfounded stereotypes, inaccurate assumptions, negative perceptions and prejudice. In many communities, stigma is deeply rooted. Many of the discriminatory practices and policies that are barriers to persons with disabilities arise from stigma. Stigma is what causes some children to

refuse to play with children with disabilities, teachers to avoid asking what a student with a disability can do and employers refusing to hire a person with a disability because they believe they are inferior to persons without disabilities.

The more that disability issues are addressed in mainstream society, the more persons with disabilities will be accepted. Sport can help combat stigma because it places persons with disabilities in a position where their skills are highlighted. The focus is not on their disability but their ability to score a goal or make the game-winning assist. This point is underscored by the Office of the High Commissioner for Human Rights:

“For the community, participation by persons with disabilities in sport provides a means of deconstructing disabling images that portray persons with disabilities as passive, inactive and lacking capacities to participate in the wider life of the community. In breaking down stereotypes of disabilities, participation in sport helps build more inclusive communities and therefore greater social cooperation and cohesion (Walker, S 2007).”

For more than 30 years researchers have conducted experimental studies to examine the effect of exercise training on fitness outcomes in children and adults with ID. As a result of this work, there is considerable evidence that training induces positive changes in aerobic fitness, muscular strength and endurance, and flexibility. It is important to note that individuals with Down syndrome may respond differently to exercise training. However, since studies have also shown fitness gains in this group, the same general principles of physical activity promotion apply to individuals with Down syndrome.

While researchers have continued to examine the effects of exercise on the outcome of the health-related fitness, it is clear that individuals with ID adapt to increased levels of physical activity in much the same way as individuals without

disabilities. Although a direct relationship exists between fitness levels and engagement in physical activity, health agencies worldwide continue to promote the accumulation of activity over attaining a state of fitness for the general public. The World Health Organization promotes 30 minutes of moderate intensity physical activity on all, or most, days of the week. Therefore, the greater need is for researchers to develop and test interventions that encourage individuals with ID to initiate and maintain physical activity. Once effective behavior change strategies are established for this segment of the population then positive health outcomes will result (**Stanish et. al., 2008**).

## **1.7 CLASSIFICATIONS OF MENTAL RETARDATION**

The latest classifications subdivide mental retardation in 4 levels: Mild, Moderate, Severe and Profound. Moreover, there is other level of mental retardation: no specific severity.

### **1.7.1 MILD LEVEL**

The aetiology of Mild mental retardation is often a combination of unfavourable environmental conditions together with genetic, neurological, and metabolic factors. This level affects 60% of total mental retardation population. People with Mild mental retardation have to ability to listen and speak effectively and they can carry on an involved conversation. However they may have difficulty understanding some concepts and vocabulary. They haven't great problems in physical dimensions (**Eichstaedt, C.B. 1992**). These have good social skills and they can become independent to live alone in community or supported setting (**Bogetto, F. and Maina, G. 2001**).

### **1.7.2 MODERATE LEVEL**

People classified with Moderate mental retardation comprise up to 32% of all individuals labelled as mentally retarded. They have lower intellectual, physical and social functioning and have the tendency to be more dependent. Their limitations are more pronounced in adulthood than those of higher functioning individuals with Mild

mental retardation and society seems accustomed to providing them with appropriate care, including living and vocational opportunities. People in this group are much less physically fit than people without mental retardation (**Eichstaedt, C.B 1992 & DSMIV, 1995**).

### **1.7.3 SEVERE LEVEL**

People classified with Severe mental retardation comprise up to 3-4% of all individuals labelled as mentally retarded (**Bogetto, F 2001**). They can understand very simple communication. They have a limited verbal skill; in fact they may use nonverbal techniques (e.g., gestures, sign language). People in this group have typically significant motor and health problems. Their social interaction can be limited. They need certain amount of assistance with daily activities but can acquire requisite self-help skills (**Eichstaedt, C.B 1992 & DSM-IV, 1995**). They can make social and economic adaptation in sheltered workshop or in a routine job under supervision (**Eichstaedt, C.B 1992 & Bogetto, F 2001**).

### **1.7.4 PROFOUND LEVEL**

People with Profound mental retardation comprise up 1- 2% of total population with mental retardation. This group often presents a neurological diagnosis which explains this condition (**Bogetto, F 2001**). Communication skills are very limited, in fact often it is throughout nonverbal sounds. They have few useful motor skills and may be medically fragile. Their social adjustment may be nonexistent. They are totally dependent and they need training in self-care skills (feeding, dressing and toileting) (**Eichstaedt, C.B 1992**).

### **1.7.5 NO SPECIFIC SEVERITY OF MENTAL RETARDATION**

The diagnosis of No Specific Severity of mental retardation can be used when psychiatrists can suppose a mental retardation but the subjects can't be evaluated by standardized IQ tests (**Horvitz, S.M et al., 2000 & Di Nuovo, S, et al., 2002**).

## **1.8 STATEMENT OF THE PROBLEM**

The present study is to find out the effect of inclusive games and physical exercises on the selected physical, physiological and psychomotor variables among intellectually challenged children.

## **1.9 HYPOTHESIS**

The hypothesis framed for the present investigation is as follows:

1. It is hypothesized that there would be significant differences due to inclusive games and physical exercises on the selected physical variables.
2. It is hypothesized that there would be significant differences due to inclusive games and physical exercises on the selected physiological variables.
3. It is hypothesized that there would be significant differences due to inclusive games and physical exercises on the selected psychomotor variables.
4. It is hypothesized that physical exercises would be better than inclusive games in improving the selected physical, physiological and psychomotor variables among intellectually challenged children.

## **1.10 SIGNIFICANCE OF THE STUDY**

This study would enable the intellectually challenged children to get into the mainstream of the society.

1. This study would further enable the intellectually challenged children to get wholesome development in the physical, mental, social, and emotional aspects.
2. If the study shows an improvement in the quality of the intellectually challenged children, then this package can be adopted in all the special schools.
3. The results of the study would be helpful to the parents to understand the effect of inclusive games and physical exercises on the selected physical, physiological and psychomotor variables among the intellectually challenged children.

4. The results of the study would help the school administrators to understand the importance of inclusive games and physical exercises to promote fitness among the intellectually challenged students.
5. The results of the study would help to create a healthy society among the disabled.

### 1.11 DELIMITATIONS

The study was delimited to the following factors.

1. To achieve the purpose of the study, 45 mentally retarded mild level male children were selected on the basis of their mental intelligent quotient (IQ) scores ranged from 55 to 69 from St.Anne's Rehabilitation Centre for the Mentally Handicapped Children of Vidivelli Special School, Tiruchirappalli, Tamil Nadu, India. The age of the subjects ranged between 7-15 years. The selected subjects were divided into three experimental groups with fifteen subjects in each (n=15).
2. The study was delimited to the following variables:
  - I. Physical Variables
    - i. Muscular Endurance
    - ii. Muscular Strength and Co-ordination
  - II. Physiological Variables
    - i. Resting pulse rate
    - ii. Respiratory rate
  - III. Psychomotor variables
    - i. Static balance
    - ii. Dynamic balance
3. The duration of the training period was restricted to twelve weeks and the number of sessions per week was confined to three.

4. The level of significance is fixed at 0.05 level, which is considered to be appropriate.
5. The data was collected prior to and immediately after the training period.

### **1.12 LIMITATIONS**

1. The regular activities of the children could not be controlled.
2. The good habits, other regular habits and the life style could not be controlled. Since the children were from different socio-economic status, different dietary habits, different mode of living and their differences in terms of interaction with peers could not be controlled by the researcher, which might have had some effect on the improvement of selected motor performance and fitness factors.

### **1.13 DEFINITION AND EXPLANATION OF TERMS**

#### **1.13.1 PHYSICAL VARIABLES**

Physical Variable may be defined as those variables which are essential for efficient functioning in the psychomotor domain. These variables are performance oriented and are dependent upon functioning of different system of the body in an integrated manner (**Rattan Singh Rawat, 1988**).

##### **1.13.1.1 MUSCULAR ENDURANCE**

Muscular endurance is the time limit of a person's ability to maintain an isometric force or a power level of dynamic exercise (**Komi, P.V 1992**). In the domain of strength training the concept of muscular endurance is commonly associated with the use of lighter resistance and higher repetitions, usually in excess of twelve. This form of training produces lower gains in overall strength but allows the muscles involved to adapt to repetitive type movements without becoming overly fatigued (**Horvat, M.A & Kalakian, L.H 1995**).

### **1.13.1.2 MUSCULAR STRENGTH**

Muscular strength is commonly defined as the ability to exert maximal force by the muscles of the body that control movement. But this definition has been criticized for its simplicity because muscles may exert force through isometric, concentric, and eccentric actions. In addition, concentric and eccentric actions may be performed at a wide range of velocities. Therefore strength is not a result of an assessment performed under a single set of conditions, but rather strength of a muscle or muscle group must be defined as the maximal force generated at a determined velocity (**Knuttgen, H.G & Kraemer, W.J 1987**).

Muscular strength as a basic component is the ability of the muscle or muscle group to apply force and refers the maximal one-effort force or strength endurance, where muscles apply force repeatedly for certain period of time. The muscle strength and endurance appear to have little relationship to the management of specific disease. However, good muscular performance is fundamental for producing efficient movement for individuals with and without disabilities (**ACSM, 2000 & Horvat et al. 2002**).

### **1.13.1.3 CO-ORDINATION**

Co-ordination is the ability of the individual to integrate movement of different kinds in to one single pattern (**Johnson, B.L and Nelson, J.K 1988**).

It may be defined as the ability of the performer to integrate type of movement into specific patterns (**Barrow, H.M and McGee, R 1971**).

### **1.13.2 PHYSIOLOGICAL VARIABLES**

Physiological variables may be defined as those variables which are directly linked with the various physiological systems and which may be voluntary or involuntary, such as pulse rate, blood pressure etc., (**Amita Dhaka, 1986**).

### **1.13.2.1 RESTING PULSE RATE**

The time from the end of one heart contraction to the end of the next contraction is a complete heart beat or pulse or cardiac cycle. The complete cardiac cycle takes less than one second (about 0.8 seconds) in a normal adult at rest and is shortened by exercise (Eva Lurie Weinreb, 1984).

### **1.13.2.2 RESPIRATORY RATE**

It is a number of breaths taken in a minute or the number of inspirations / expirations in a minute. (Edward L. Fox and Donald K. Mathews, 1981).

### **1.13.3 PSYCHOMOTOR VARIABLES**

The term “Psychomotor” is concerned with voluntary human movement, which is observable. Psychomotor variables are the variables bearing direct association with muscular action or motor skill, some manipulation of materials and objects and some act requiring neuromuscular coordination (Johnson, B.L. and Nelson, J.K. 1982).

#### **1.13.3.1 STATIC BALANCE**

Static balance may be defined as that physical ability that enables an individual to hold a stationary position (Johnson, B.L and Nelson, J.K 1982).

#### **1.13.3.2 DYNAMIC BALANCE**

Dynamic balance may be defined as that physical ability to maintain balance during vigorous movement as in walking a fence or leaping from stone to stone while crossing a brook (Johnson, B.L and Nelson, J.K 1982).

#### **1.13.4 INTELLECTUALLY CHALLENGED**

Children who are intellectually challenged have a cognitive disability that manifests in a person through a reduced cognitive (intellectual) ability, limited adaptive behaviour and the need for support to participate fully in the community (**Grossman, 1983**).

#### **1.13.5 MENTAL RETARDATION**

"Mental retardation" means significantly sub-average general intellectual functioning, existing concurrently with deficits in adaptive behavior and manifested during the developmental period that adversely affects a child's educational performance (**Grossman, 1977**).

Mental retardation as defined by the American Association on Mental Retardation (AAMR) refers to substantial limitations in certain personal capabilities. It is manifested as significantly sub-average intellectual functioning, existing concurrently with related disabilities in two or more of the following applicable adaptive skill areas: communication, self care, home living, social skills, community use, self-direction, health and safety, functional academics, leisure, and work. Mental retardation begins before the age of 18 (**Luckasson, R, et al., 1992**).

#### **1.13.6 MILDLY RETARDED CHILDREN**

According to **Kaufman A.S (2009)**, table 1 shows the different levels of retardation determined by IQ range in which the mildly retarded have been measured IQ range from 55 to 69.

**Table I****STANFORD-BINET FIFTH EDITION (SB5) CLASSIFICATION (KAUFMAN, 2009)**

<b>IQ Range ("deviation IQ")</b>	<b>IQ Classification</b>
145–160	Very gifted or highly advanced
130–144	Gifted or very advanced
120–129	Superior
110–119	High average
90–109	Average
80–89	Low average
70–79	Borderline impaired or delayed
55–69	Mildly impaired or delayed
40–54	Moderately impaired or delayed

**1.13.7 INTELLIGENCE**

Intelligence refers to a general mental capability. It involves the ability to reason, plan, solve problems, think abstractly, comprehend complex ideas, learn quickly, and learn from experience. Although not perfect, intelligence is represented by Intelligent Quotient (IQ) scores obtained from standardized tests given by a trained professional (Gottfredson, L.S 1997).

With regard to the intellectual criterion for the diagnosis of mental retardation, mental retardation is generally thought to be present if an individual has an IQ test score of approximately 70 or below. An obtained IQ score must always be considered in light of its standard error of measurement, appropriateness, and consistency with administration guidelines. Since the standard error of measurement for most IQ tests is approximately 5, the ceiling may go up to 75. 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 aspect in determining

if a person has mental retardation. Significant limitations in adaptive behavior skills and evidence that the disability was present before age 18 are two additional elements that are critical in determining if a person has mental retardation.

#### **1.13.8 OPERATIONAL TERMS**

An operational definition is a result of the process of operationalisation and is used to define something (e.g. a variable, term, or object) in terms of a process (or set of validation tests) needed to determine its existence, duration, and quantity (**Adanza, E.G 1995**).

<b>MR/ID</b>	–	Mental Retardation / Intellectual Disability
<b>IGG</b>	–	Inclusive Games Group – (Experimental Group I)
<b>PEG</b>	–	Physical Exercises Group – (Experimental Group II)
<b>CG</b>	–	Control Group - Group III