Chapter 1

INTRODUCTION

Humanity is the foundation of human civilization and mankind stands as an anchor of it. Each and every individual of our society should be accomplished with the highest degree of opportunities and desired to expose a new horizon for the growing generation. But there are so many barriers and tribulations in front of us which are participating in the present world such as physical, mental, social, and economical and so on. We should have to triumph over these tribulations to make our life smooth and meaningful. Like other problems of the universe, physical disability also plunks the human society into challenges. A good percentage of human beings are suffering from the victims of different physical disabilities.

Jarigira\(^1\) emphasized that the disabled children need to be educated and prepared for life with a reasonable level of economic independences, self help skills and social normalization in the context of modernizing society.

When a child has any type of disabilities, he / she becomes dependable on the others in dealing with the social living skills. It serves notice to the parents and educators that the child may face some problems to make him / her independent. The physical educator can contribute a major role to reduce these risks and facilitate him / her in independent living through involving them in physical activities. The attention should be focused on the recreational needs

of the individuals to accept their misfortune and overcome the challenges they have. The physical education programme is a vital programme which is designed to optimize their potency for self-dependent living in the community. It will help the disable children to find out their hidden potentialities and also in uplifting their physical validity, love towards the land out-of-doors which will tend to keep their bodies well throughout their life. It may also provide the opportunities for good fellowship, social adjustment and also develop physical, psychological and emotional skills which will make them proud and give eternal courage.

Disabled do not need pity but they need encouragement in their efforts to overcome their handicaps so that they become assets to the society instead of liabilities. They also have the right to grow-up in the world which sets them apart and looks at them not with a scorn of pity or ridicule. It welcomes them exactly as it welcomes everyone, which offers them identical privilege and identical responsibilities.

An All India Seminar on Development of Games and Sports for Handicapped was held at Gwalior in 1981. The paper read by Dr. A.K. Uppal (1981) specifically touched Physical Education for the handicapped at elementary school level. The following points made in the paper deserve mention - the handicapped children have special needs, interests and

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problems. Special programmes of Physical Education need to be provided to meet their special requirements.

Oliver found that the disable children, for various reasons are deprived of physical activities. Some are unable to withstand the vigorous and strenuous play activities of normal children, some find the activities too dangerous, some are rejected by the other participants and some tend to withdraw from play situations. Because of this, the physical characteristics of the children tend to deteriorate instead of improving. He also found that it appears to be an urgent need for systematic physical activity, either in the form of carefully structured programmes of Physical Education or in the form of spontaneous play and recreation for all handicapped children.

According to Josephine, "the handicapped children need joy - joy from inward health, joy from a kindly environment, joy from achievement, joy from watching their improved condition joy from association with other people." It is certainly agreed that every handicapped children should have the opportunity to develop physically, mentally and socially to the highest degree of possibility, with their limitations through the most important media of movement activity and sports. Participation in physical activities may be excellent means of integrating handicapped children within the society where they may achieve some success and group approval, where ability is the prime consideration.

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M. Bhargava\textsuperscript{6} stated that a physical handicap is that state of body which obstructs the child from making normal progress in his activities as average children do. They require special attention and equipment to control or overcome special disabilities. They are obviously one of the essential part of our society. They should be looked upon with sympathy and pity. They should be considered as equal to the normal people.

In recent years, attention is devoted to the handicapped with realization that physical education can acknowledge a major contribution to this important segment of the population. Kane\textsuperscript{7} emphasized, "physical activity has its unique contribution to make to the all round development of the children." If this contribution is more important for children, it is even more important for the handicapped. Since learning is acquired through senses; it is told that if one sense is lacking, it becomes imperative for the remainder to be used effectively. Often the very nature of handicap prevents children from taking part in play and activities that contributes to less physical development, and low level of fitness that are found amongst them. It prevents many of them from taking part in the physical situations from which so many of the desirable goals of an educational nature stem. Systematic physical activity, therefore, is essential for the handicapped.

All the people including disable persons learn everything with the help of sensory organs. The sensory organs are correlated with the other organs and forms an organ-system-organization in the entire body part. It coordinates to form different organs, each of which is specialized to perform specific functions. These organs do not show independent existence and also co-ordinate to form different systems, each of which is specialized to perform specific functions. These systems also display the interactions and interdependency of the organs so that the normal functioning of a system depends upon the normal functioning of the other systems. So, there is need of co-ordination (interaction and complementation of the functions of different organs) and integration (synchronous and harmonious functioning of different organs) for the normal functioning of the systems.

According to Arora and Sabharwal, there is a common feature of the ‘organ-system organization’ which acts as a topographical projection from the sensory surface to the various levels of central nervous system. Thus the somatotopic maps are the internal representation of the body surface. The coordinated functional response of an individual relies upon a continuous input of information from the internal and external environments. This information leads to a change in activity or behaviour, hence termed as ‘Sense’. Sense gives the individual an awareness of the position of body points of the body as it moves through space. It is generally referred to the processing of information in the convert of physio-psychological systems of an individual. It involves all the

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processes by which introductory information gained by the help of sense organ is transformed, reduced elaborated, stored, recovered and used. It includes complex mental activity as using language, thinking, remembering conceptual, imagining etc.

From the above discussion, we may divide the total process into two stages - sensation and perception. Sensation is an elementary mental process which is initiated by the direct influence of sense organs. Again sensation depends upon individual's own interest or requirements. Sense organs receive information regarding materials, then sort it out, accumulate and transmit those to the brain which continually provides adequate reflexion of that material and organism itself. Sensation represents in fact, the connection between consciousness and environment through visual, auditory, kinesthetic stimuli etc.⁹

Visual sense is related with the eyes which play a vital role in daily living as well as in sports performance. There are various aspects of visual sense which are essential not only to see something but also to observe the brightness of the object. Peripheral vision from visual organ plays an important role for self-defense as well as to attack successfully and also in sports situation. It helps to defeat the opponents cleverly.

A new comer can not contact the ball with a bat easily due to lacking sense of peripheral vision. But through practice, the habit of this vision into

existence and held in enriching the perceptive ability. One thing should be remembered that one who is lacking sense in vision, generally strong in other sense organ like ear.

Visual sense helps in space perception, time perception, distance perception etc. Vision has a great importance in physical, mental and sense development. For blind people, the world is nothing but what they hear. A visual impairment is defined as visual acuity of 20/40 or worse, and blindness is defined as visual acuity of 20/200 or worse.

Vision impairment exerts a more wide ranging impact on functional status. Visual impairment results with the increased physical disability, increased social isolation, low employment rates, reduced self-image, and depression. Physical disabilities include a decreased ability to perform ADLs and IADLs, decreased physical endurance and mobility, and a lack of participation in activities.

Auditory sense is related with the hearing organs (ears). In learning motor skills, a learner has to observe demonstration and explanation given by the teacher. Auditory organs (ears), along with the visual sense develop the ability to get clear image of the skill which makes learning process more easier.

Hearing disorders interfere with verbal expression. They also affect various aspect of mental maturity, and educational and social attainments. It is

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referred as one of the most common chronic health disorders affecting all
groups, ethnicities, and genders.

According to Wang, Reynolds and Wal barg\textsuperscript{12}, there are three types of
hearing loss or auditory system impairment which are conductive,
sensorineural, and central auditory processing disorders. When a conductive
hearing loss occurs, sound waves are not effectively transmitted through the
outer and middle ear to the inner ear.

The most common causes of conductive hearing loss are partial or total
occlusion of the ear canal within the ear; fluid within the middle ear as a result
of colds, allergies, and ear infections (otitis media); and eustachian tube
abnormalities. Sensory-neural hearing loss occurs predominantly as a result of
damage to hair cells in the cochlea, although it also may occur as a result of
nerve damage within the nerve pathways between the inner ear and central
auditory. Exposure of unprotected ears to excessive levels of noise is a primary
cause sensory-neural hearing loss. Other known risk factors include aging, a
number of disease processes and illnesses, certain chemical agents, congenital
disorders and injuries, genetic syndromes, hereditary susceptibility, therapeutic
treatment with medications, tumors, and viruses.

Central auditory processing disorders occur when auditory centers
pathways in the central auditory cortex are damaged. Common causes of

\textsuperscript{12} M. C. Wang, M. C.Reynolds and H.J. Wal barg, "Hand Book of Special Education", New
central auditory processing disorders include disease, traumatic brain injury, tumors, heredity, and yet unknown causes.

Common age-related changes that lead to hearing loss include thickening of the eardrum, hardening of other auditory structures, loss of sensory and decreased nerve function. Changes in memory and overall slowing of mental processes may also affect hearing and our ability to understand speech. It also be caused by disease processes involving the outer ear canal, the middle the inner ear, the auditory nerve, the brain, or a combination of these. Disease processes involving the ear can result in conductive hearing loss. Those involving nerves or brain can result in sensori-neural hearing loss, and those involving brain can result in central hearing loss. Damage affecting more than one area is termed "mixed" hearing loss.\(^\text{13}\)

People depend largely on their sense of hearing to provide essential cues for carrying out fundamental activities of daily living. When hearing impaired to the extent that it affects speech intelligibility, it can restrict normal activities, recreational and social activities also. It can also result in withdrawal of self - concept, depression, frustration, irritability, cognitive impairment, isolation, loneliness, and compromised physical mobility.

Under proper guidance, the disable children may perform the different fundamental motor skills like running, jumping, throwing etc. These motor activities are either acquired or innate ability of the individuals or learned from

their teachers(s). They may also participate in the variety of sports activities, even in specialized sports event\textsuperscript{14}.

There is no common agreement about the components and the quality regarded as general motor ability. Many sports scientists, researchers believe that the specificity of the task and past experience contribute to motor task. In this mean time, well validated test of motor ability has been devised and still in used. They are strength, endurance, power, agility, balance, reaction time, coordination etc. For a successful performance, these traits should function in well coordinated manner in proper sequential order which will result in efficient movement either in individual event or in team event where situation changes for all the time.

According to Kerper and Martinet\textsuperscript{15}, it is very interesting to note that children, being handicapped, significantly related with the motor performances invariably and improves their functional responses. It is observed that the handicapped individuals deserve the same quality test, testing protocols and norms as non-handicapped individuals. Even a severely disable individual may enjoy functional improvement.

Perception is the ability to process stimuli in a meaningful manner to organize and interpret sensory stimuli, ability to make judgment about and attach meaning to incoming stimuli and ability to ascribe meaning to sensory

information of all kinds (auditory, visual, kinesthetic stimuli etc.). It is the process by which the sensory stimulation is organized into usable experience. Despite the fundamental role that perception plays in the lives of human beings and all but the simplest animals, its processes remain largely obscure, for two main reasons: researchers have had only limited success in breaking down perception into analyzable units and scientifically verifiable findings are difficult to obtain or repeat, since the study of perception depends mostly on subjective and introspective reports\textsuperscript{16}.

Kinesthetic perception, the ability to perceive the position, effort and movement of the parts of the body or the entire body during muscular is sometimes refers to as the 'Sixth Sense'. In reality, we have more than just sixth sense- in fact, kinesthetic sense could be considered as several senses within itself. The term proprioceptive sense is also used to refer to this sense. The sources of proprioceptives or kinesthetic perceptions are presumably located in the joints, muscles and tendons\textsuperscript{17}.

This sense brings body awareness for different movements. With the help of this sense, we get information to change the body position as well as relationships of parts in space. E.g. - movements in swimming. In the beginning the swimmers do not know how to float in the water but kinesthetic sense through training help them to analyze the movements and to perform the stroke accurately.


Physical Educators have long recognized the importance of kinesthetic. They declared that our muscles see more than our eyes. Individuals who can observe a demonstration and perceive the significance of the sequence of movements are able to develop a physical empathy which enables them to learn a movement much faster than others whose kinesthetic ability is not as highly developed.

According to Clark and Clark\textsuperscript{18}, Kinesthetic perception can be improved through practice. Physical educators and coaches constantly urge performers to be aware of the 'feel' of the correct movement, the amount effort or force involved and the position of the body part, racket, club etc., at various points in the movement. In some ways, physical educators might utilize tests of kinesthetic perception, as a form of practice in establishing the feel of certain movements, as a means for diagnostic and interpretive purposes, as a method of providing students with experience in utilizing this sense modality by itself and in combination with other sensory modalities and as variables in demonstrating or exploring the specificity and / or generally of kinesthetic in research projects.

Kinetic synaesthesia focuses the synaesthesia already present in kinesthesis, which is a complex sensory system that involves many receptors whose cross modal connections vary subjectively. Not all individuals, for example, experience visual impressions from tactile stimulation. Kinesthetic sensibility and synaesthesia both refer to sensory impressions of an eminently

subjective nature. Describing artistic forms that give rise to their effects is
difficult, since they are in a constant state of flux, temporal and spatial.

According to Bain, Gill, Brar and Rathee19, we have seen that some
people in our community have some difficulties in seeing abilities but other
people do not have. For example, some people have difficulty in seeing; some
people have difficulty in hearing, speaking, learning or moving around in the
same ways as others. Some people show different strange behaviours, some
people have no feeling in their hands and feet.

These are happened due to the sensory deficiency on functional
response which results the sensory impairment as well as disabilities among
the individuals19.

Impairment is any loss or abnormality of physical or anatomical structure
or function such as loss of foot, defective vision or mental retardation." Impairment may he visible or invisible, temporary or permanent, progressive or
regressive. Further more, primary impairment may lead to the development of
secondary impairment such as in the case of Retinitis Pigmentosa where the
rod cells are damaged (primary impairment) may lead to the loss of vision
(secondary impairment). It is further referred to those with "identical organic or
functional disorder" as disabled referring to those "who because of impairments
are limited or restricted in executing some skills, performing tasks, or
participating in certain activities."

19 A. Singh, J. Bain, J.S. Gill, R.S. Brar, N. Rathee, Essential of Physical Education, Delhi:
According to James\textsuperscript{20}, impairment includes different types like sensory impaired, perceptual impaired etc. Sensory impaired is related with a specific impairment or disfunction of the nervous system which adversely affects the education of the pupil. Visual impairment, hearing impairment etc. are included under this type.

Sensory impairment describes a condition in which one or more of the senses are diminished in their effectiveness to respond to stimuli. Such a condition may be present from their birth or may develop at any time during life as the result of injury or disease. The lack of sensory response to stimulation may be total or partial. Difficulties for the person involved are created by any sensory impairment regardless of the time of incurrence or the degree of severity. However, the educational problems arising from loss of sight or hearing are incomparably more difficult than those brought about by deficiencies in taste, smell and touch. It may be evaluated by a physician trained in neurodevelopment assessment. Perceptually impaired a specific learning disability manifested in a disorder of understanding and learning which affect the ability to listen, think, speak, read, write, spell and/or compute to the extent that special education is necessary.

Because of impairment, the affected individual may unable to carry out certain activities. This inability to carry out certain activities is termed as 'disability'. Disability may be referred as "any restriction or lack of ability to
perform an activity in the manner or with in the range, considered as normal for a human being."

A preliminary common-sense definition of disability might be that it is a lack or limitation of competence. We usually think of disability in contrast to an ideal of normal capacity to perform particular activities and to play one role in social life. Sickness also inhibits ability, but we distinguish between sickness which is temporary (whether ended by healing or death), and disability, which is chronic. In principle, disabled people cannot be cured; they may be rehabilitated. Disability is used to refer to limitations resulting from dysfunction in individual body and mind. But the core meaning of disability for most of us is a bio psychological one. Blindness, lameness, mental deficiency, chronic incapacitating illness - these are prototypical disabilities.\(^{21}\)

As a result of disability, a person may face certain disadvantages in his life and cannot discharge the obligations required of him and plays an unexpected role in society. This is termed as 'handicapped. In the past, many handicapped persons have been considered as social deviants. The attitude of the modern society towards the handicapped population has changed and they are receiving fair treatment to some extent in educational, vocational and social realms. The handicapped individuals have been identified as being mentally retarded, emotionally disturbed, and deaf or hearing impaired, orthopedically impaired, visually impaired, learning disabled, multi-handicapped, or otherwise health impaired.

According to Bal Govind Tewari\textsuperscript{22}, "Being handicapped in such situation, in which a person’s normal behaviour, movement and routine work are affected and create physical, mental, and emotional disorders in their behaviour which make them different from a normal man." While impairment relates to constituents of the body, disability has to do with "compound or integrated activities expected of the person or of the body as a whole, such as are represented by tasks, skills and behaviour." It is defined as "any restriction or lack (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being". Handicap relates to the social consequences of deficiencies in organs and activity performance. It is defined as "a disadvantage for a given individual, resulting from impairment or disability, that limits or prevents the fulfillment of a role that is normal (depending on age, sex, and social and cultural factors) for that individual.

Handicap depends on valuations and expectations that put the disabled person at a disadvantage. The WHO manual states explicitly that valuation depends on cultural norms.

According to Whyte, Braun and Ingstad\textsuperscript{23}, it is noticed that a normal human life, Adopted Physical Education has been introduced. The emphasis on Physical Education for handicapped persons has resulted in the development of many new programmes which serve better to the individual needs of the children and youth of our country. Different games and sports have been


introduced for them. Not only that, different competitions like Special Olympic etc. also have been started.

Generally, it is found that if one sensory organ becomes impaired, the working capacity of other sensory organs is increased. For example, a blind person can detect any thing by touch, can easily walk on road by using stick. A deaf person can understand about the matter by leap-leading of the others. The persons who have one impaired sensory organ try to attend, grasp and correlate themselves with the normal people as well as with the society depending upon the other sensory organs. It helps them to adopt or to adjust with the varied challenged situation in their daily life and also help in developing their specific sensory response up to the optimum level automatically. The scholar wants to search either this is obtained through more concentration on the functional responses or more use of those sensory organs or their power is increased and also what are the effect of sensory deficiencies on their functional responses.

**Statement of the Problem**

The purpose of the study was to find out the comparative effect of sensory deficiency on functional response in relation to sensory ability, motor ability and kinesthetic perception.
Delimitations

The study was delimited to the normal, visually impaired and hearing impaired students.

2. It was further delimited to the boys and girls of 13 to 17 years old.

3. The subjects were selected randomly from the different schools (normal and general schools, visually impaired and hearing impaired schools of West Bengal.

4. The study was further delimited to the Snell’s chart (for vision test), Pure Tone Audiometric Test (for auditory test), Barrow Motor Ability Test (for motor ability test), Distance Perception Jump Test (for kinesthetic perception test).

Limitation

1. The subjects were of special population. So, there may be any snag during communication with the subjects. It was beyond of the investigator’s control.

2. The subjects were from different socio-economic status, different mode of living - as well as in different personality characters, hence uniform response might not be occurred which were another limitation of the study.

3. The tests were conducted for three consecutive days. On first day, sensory response test was conducted. On second day, motor response
test was conducted and kinaesthetic perception was measured on third day. Hence same response was not obtained from the subjects. It was also the limitation of this study.

No special motivational technique was used while collecting the data which may effect on performances of the subjects.

**Hypothesis**

It was hypothesized that deficiency of one sensory organ will effect significantly on functional response of the other sensory organ and the motor ability and kinesthetic perception will also be increase, significantly with the sensory impairment than other groups and there may be inter-relationship within the variables.

**Definition and Explanation of terms**

**Sensory ability**

Sensory ability may be defined as the response ability of the individuals for the awareness of the body position or bodily activity with the help of sensory nerves. It includes the visual, auditory etc. sensation of the individuals\(^\text{24}\).

**Motor ability**

Motor ability is the combination of different components of individual traits which contribute to perform the skill successfully. It is the present ability of

an individual to perform a variety of sports activity; the ability to successfully perform in most big muscular activities, requiring neuromuscular co-ordination such as walking, running, jumping and playing games involving these and other fundamental skills\textsuperscript{25}.

**Kinesthetic Perception**

Kinesthetic perception is defined as the ability to perceive the position, effort and movement of the parts of the body or the entire body during muscular action. It is presumably located in the joints, muscles and tendons and hence referred as sixth sense organ. It is a process by which sensory stimulation is organized into usable experiences\textsuperscript{26}.

**Visually Impaired**

The term ‘visually impaired’ is related with the loss of vision. It refers to the persons who cannot see nor have such severe visual loss. In medical science, blindness is a state of not perceiving anything with the eyes. Educationally, blindness is a visual abnormality due to which object perception cannot be possible through partly training also\textsuperscript{27}.


Hearing impaired

The term ‘hearing impaired’ is related with the loss of hearing. It refers to the persons who can’t hear any sound or speech. Hearing impaired is the loss of auditory sense for verbal communication and language development\(^\text{28}\).

**Significance of the Study**

In our society, each and every person has the right to animate in the midst of keeping pace by means of equal opportunities for instance. More over, the optimum development of a nation depends upon the nature and kind of its human resources. An individual, regardless of their assets and liabilities of inherent responses and potentialities, contribute towards national development. The physically challenged persons can not be excluded from this.

Moreover, the time has come that we do not tolerate the negligence of handicapped persons. These people have the right to work to the best of the ability to know the dignity which every human being is entitled to. These people must be assisted which is their constitutional right, clearly affirmed in number of recent court decisions.

Therefore, an objective should be given to develop the potentialities of each physically challenged person physically, mentally, socially as well as wholesome development for successful and skillful living.

1. This study will provide descriptive information about the sensory ability, motor ability and kinesthetic perception among the physically challenged persons.

2. The result of this study will also have great significance in identifying the areas which can be easily developed.

3. It might be also helpful in finding out whether age and sex have any influence on sensory ability, motor ability and kinesthetic perception.

4. This study will serve as a guideline to the physical education teacher.

5. The findings of this study might give some clues to the concerned authorities in better understanding of the physically challenged students which may lead to the proper placement to those students in school situations where by successful educational achievement might be possible through an effective instructional programme and better social adjustability.

6. This study may also help in framing the physical education programme as an integral part of the curriculum for the physically challenged persons.