

# QUALITY NORMS FOR THE AIDS FOR DISABLED OR HANDICAPPED PERSONS

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To rehabilitate disabled is the most august duty of any society. Disability is the result of war, accidents, disease or ageing. Besides, there are deformities by birth. Simple devices like splints and braces were used to relieve the suffering and pain resulting from such disability. However, now it is well appreciated that for each type of disability, a device has to be developed which could enable the disabled person to function in a normal way. The device should take care of his personal and occupational needs. The device should be of proper quality and fulfill the desired function. The components of the device should be interchangeable for easy repair and replacement. This can be possible only if there are standards for such devices which are based on our Indian experience and conditions.

## STANDARDS FOR INSTRUMENTS AND EQUIPMENT FOR DISABLED

Sufferings of the disabled can be minimised if they are provided with right type of device of proper quality which will help him in performing his normal physical and occupational functions. To help in this effort, BIS took up the work of formulation of Indian Standards in the area way back in 60's by setting up Artificial limbs, Rehabilitation Appliances and Equipment for the Disabled Sectional Committee. The committee comprises of eminent rehabilitation experts, manufacturers, technical, scientific and voluntary organizations. The committee has developed over 90 standards for aids for the

disabled or handicapped persons. (Details can be taken from author).

## INSTRUMENTS AND EQUIPMENT FOR OVERCOMING PHYSICAL DISABILITY

A person becomes physically disabled when any limb of his body does not function in a normal way. In such case he is fitted with orthotic or prosthetic components or treated with the help of occupational therapy and rehabilitation aids.

**Orthotic Components** — Orthotic components are those which supplement functions impaired by disease, injury or deficiency. Over 22 Indian Standards are available for orthotic components in which the detailed requirements for various types of calipers, braces and splints are specified. Important among these relate to knee joints with lock for steel orthopaedic calipers and braces, pelvic band for steel orthopaedic calipers and braces, tuber band for orthopaedic caliper and braces, basic hand splint component, staple ankle joints, modular lower limbs orthotic components and thoraco-lumbo-sacral, flexion-extension and lateral-flexion control brace.

**Prosthetic Components** — Prosthetic components are those which are put inside the body for replacement of musculo-skeleton system of the bones temporarily or permanently. For prosthetic components some 33 Indian Standards are available. Important among these relate to adopter for terminal devices, artificial limbs,

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typing finger, typing fingers terminal device, steering appliances for artificial limbs, knife terminal device for artificial limbs, cruciform below knee joints, hip dis-articulation joint for lower limb prosthetic fitments, table spoon terminal device for artificial limb, tweezer device for artificial limbs and sach foot for lower extremity prostheses.

In all prosthetic and orthotic components mobility strength, shape and dimensions are main consideration. The upper, the lower or the both limbs of the joints should have sufficient mobility and locking arrangement to save handicapped persons from accidental jerks. The limbs should be made in a colour matching with the colour of the body.

**Rehabilitation Aids**— The most common equipment for physical rehabilitation are — crutches and wheel chairs for which Indian Standards have been published. Standards for metal forearm crutches has also been published. The standard for wheel chair is in three parts covering institutional model, folding type with removal armrests and swinging footrests and the junior size. All these standards specify requirements for material, important dimensions, construction, workmanship and finish, load test, tests for wheeling and hazard running and test for folding in case of folding chairs.

Other important standards for rehabilitation relate to shoulder wheels, paraffin wax bath, stationary cycle exerciser for adults, cycle fret saw and table tilting (manual). In all these standards, the main emphasis are on functional aspects.

**Instruments and Equipment for Visually Handicapped**— Blind or partially sighted persons form a substantial number of the handicapped persons. They have to be rehabilitated in the society so that they become independent as far as possible in carrying out their personal and occupational functions. For partially sighted persons standards like— spectacle frame and spectacle lenses and visual acuity test charts have been formulated. For the benefit of totally blind persons, a number of standards have been

formulated which relate to braille slate, braille paper, cane for visually handicapped and signature guide for visually handicapped.

**Equipment for Deaf and Mutes**— The equipment which helps a deaf person to hear and communicate is hearing aid for which Indian Standards have already been published for general and performance requirements.

**Buildings and Facilities for Disabled**— To create facilities and conditions of work suitable for the disabled, certain basic requirements are necessary from the planning stage in the building. An Indian Standard, IS 4963 had been published for recommendations for buildings and facilities for the physically handicapped. This standard contains recommendations for doors, windows, staircase, ramps, hand-rails, signs, controls, space within building, parking lots, toilets, etc., based on anthropometric dimensions for adults and sizes of wheel chairs and other similar equipment.

**Equipment for Other Type of Disability**— Work relating to formulation of standards for aids used by other type of handicapped persons such as speech impaired, mentally handicapped, mentally ill and those suffering from epilepsy, psoriasis and the disability linked to ageing is yet to be initiated.

## WORK AT INTERNATIONAL LEVEL

Work relating to standardization of equipment used by the disabled is receiving attention of the International Organization for Standardization (ISO). Technical Systems and Aids for Disabled or Handicapped Persons Technical Committee (ISO/TC 173) has been set up to undertake this work. The Committee is responsible for the formulation of International Standards on items, such as walking aids, wheel-chairs, personal hoists, aids for stoma and urinary incontinence, aids for personal hygiene, aids for adaptation to standard products to be used by handicapped persons, aids for training, aids for communication and aids for re-orientation. A few standards have been



published on wheel chairs and others are in the process. Another ISO Technical Committee is on prosthetics and orthotics (ISO/TC 168) covering such aspects as performance, safety and interchangeability. The work of this committee is in progress and standards have been published on vocabulary of prosthetic and orthotics and method of describing limb deficiency present at birth. Standards published at international level on aids for disabled and handicapped persons are available.

#### **IMPLEMENTATION OF INDIAN STANDARDS**

Standards are basically voluntary in nature. To promote the availability of quality instruments in accordance with the requirements stipulated in the relevant Indian Standards, users have to create a demand for safe and quality equipment. If the users insist on purchasing equipment manufactured in conformity with the relevant Indian Standards, sub-standard equipment being manufactured would automatically get eliminated.

#### **BIS CERTIFICATION**

The ultimate solution for quality certified

medical devices is the BIS Certification Mark. The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act 1986 and rules and regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard Marked products are also continuously checked by BIS for conformity to the relevant standard as a further safeguard.

#### **CONCLUSION**

The Indian Standards for rehabilitation, prosthetic and orthotic aids have been prepared on the basis of experience of the practitioners and limb fitting and rehabilitation departments. It is hoped that if these devices and equipment are manufactured as per the relevant standards, these will meet the desired functional and comfort requirements. It is for the user organizations to implement these standards so that aids of proper quality are made available to the disabled or handicapped persons.