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**Prostheses and orthoses — Factors to be  
considered when specifying a prosthesis  
for a person who has had a lower limb  
amputation**

*Prothèses et orthèses — Facteurs à prendre en considération lors de la  
spécification d'une prothèse pour une personne ayant subi une  
amputation d'un membre inférieur*

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## Foreword

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The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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ISO 29782 was prepared by Technical Committee ISO/TC 168, *Prosthetics and orthotics*.

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## Introduction

The selection of components to be used in a prosthesis for a person should take account of their amputation level, stump and general physical characteristics, general clinical condition, functional capabilities, motivation and needs, anticipated activities and social and economic circumstances. The environmental conditions to which the prosthesis will be exposed and the locally available supply and maintenance arrangements must also be considered. At one extreme the person is unable to use a functional prosthesis but desires a cosmetic replacement. At the other extreme they desire and are able to achieve high levels of activity and require an appropriate prosthesis. Some people wish to engage in specific activities that require particular components. The prosthetic team with their educational and clinical experience has to make a choice of components based on this information.

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# Prostheses and orthoses — Factors to be considered when specifying a prosthesis for a person who has had a lower limb amputation

## 1 Scope

This International Standard describes the factors to be considered when specifying a prosthesis for a person who has had a lower limb amputation.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 8548-2, *Prosthetics and orthotics — Limb deficiencies — Part 2: Method of describing lower limb amputation stumps*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 8548-2 and the following apply.

### 3.1

#### **balance**

ability to maintain the body's mass over its base of support

### 3.2

#### **coordination**

ability to execute smooth, accurate, controlled movements

### 3.3

#### **endurance**

ability to sustain repeated muscular effort

## 4 Stump characteristics

NOTE A method of describing a lower limb amputation stump is given in ISO 8548-2.

### 4.1 General

The characteristics listed in 4.2 to 4.7 require particular consideration.

## 4.2 Length and shape

- a) Too long or too short.

NOTE Where the stump length might preclude the use of particular prosthetic components.

- b) Bulbous or too conical.

NOTE Where the stump shape might require special socket fitting procedures.

- c) Bony prominences.
- d) Volume fluctuation.

## 4.3 Soft tissues

- a) Excessive or insufficient.
- b) Flabby or indurated.

## 4.4 Skin

- a) Breaks in continuity.
- b) Adherent to bone.
- c) Scarred.
- d) Grafts.
- e) Altered sensation.
- f) Dermatological conditions.

## 4.5 Circulation

- a) Impaired arterial/venous/lymphatic.

## 4.6 Pain

- a) Spontaneous.
- b) Upon loading.

## 4.7 Proximal joint(s)

- a) Range of motion abnormalities.
- b) Instability (of bony or ligamentous origin).
- c) Muscle weakness or hyperactivity.
- d) Pain.

## 5 General physical characteristics

NOTE A method of describing the clinical condition of the person who has had an amputation is given in ISO 8548-5.

The following characteristics require particular consideration.

- a) Body mass.
- b) Height.
- c) Upper limb impairments.
- d) Trunk mobility restrictions.
- e) Contralateral lower limb:
  - 1) circulatory impairments;
  - 2) neurological impairments;
    - i) muscle weakness or hyperactivity;
    - ii) abnormal proprioception;
    - iii) abnormal sensation;
  - 3) musculoskeletal impairments;
    - i) range of motion abnormalities;
    - ii) bony or ligamentous instability;
      - I) skin impairments;
      - II) pain;
      - III) amputation level.

## 6 General clinical conditions

Any significant disorder of any of the following (including the effects of medication) requires special consideration.

- a) The cardiovascular system.
- b) The respiratory system.
- c) The neurological system.
- d) The special senses.
- e) The nutritional status.
- f) The cognitive status.
- g) The mental and psychological status.
- h) Other systems.

## 7 Functional capabilities

These capabilities require consideration.

- a) **Balance** (3.1).
- b) **Coordination** (3.2).
- c) **Endurance** (3.3).

## 8 Motivation and perceived needs

NOTE The motivation and perceived needs of the person are influenced by a number of factors including their social and cultural environment.

The clinical impression of the person's motivation and perceived needs should be considered.

## 9 Anticipated activity

### 9.1 Mobility

The person's anticipated mobility level and walking speeds should be considered.

- a) Level:
  - 1) non-ambulant (sitting only);
  - 2) stand/transfer;
  - 3) walk indoors/level surface;
  - 4) stairs and slopes;
  - 5) independent outdoor walking;
  - 6) difficult terrain;
  - 7) running.
- b) Walking at different speeds.

### 9.2 Vocational activities

The person's anticipated vocational activities should be considered.

### 9.3 Sporting and recreational activities

The person's anticipated sporting and recreational activities should be considered.

### 9.4 Social and cultural activities

The person's anticipated social and cultural activities should be considered.

- a) Squatting.
- b) Cross-legged sitting.

- c) Kneeling.
- d) Bare-foot walking.
- e) Wearing shoes of different heel height.

## **10 Environmental conditions**

Anticipated exposure to any of the following adverse environmental conditions will require special consideration.

- a) Contaminants, e.g. sand, soil.
- b) Frequent immersion in water.
- c) Prolonged exposure to sunlight.
- d) Extreme heat/cold/humidity.

## **11 Locally available supply and maintenance**

The existence of a local supply and maintenance service is an important consideration.

## **12 Social and economic circumstances**

The person's living environment, family and social network and economic circumstances should be considered.

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