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Prosthetics and orthotics — Vocabulary —

Part 3: Pathological gait (excluding prosthetic gait)

Prothèses et orthèses — Vocabulaire —

Partie 3: Marche pathologique

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. www.iso.org/directives

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The committee responsible for this document is ISO/168 "Prostheses and orthoses".

ISO 29783 consists of the following parts, under the general title *Prosthetics and orthotics — Vocabulary*:

- *Part 1: Normal gait*
- *Part 2: Prosthetic gait*
- *Part 3: Pathological gait (excluding prosthetic gait)*

Introduction

No internationally accepted vocabulary of terms is available to describe pathological gait.

As a consequence, the members of the different professions and the clinic teams in different countries have developed and adopted their own terminology.

It will enable practitioners to systematically describe the gait of the persons for whom they are providing treatment and facilitate comparisons with the experience of other practitioners.

The following definitions apply in understanding how to implement an ISO International Standard and other normative ISO deliverables (TS, PAS, IWA).

- “shall” indicates a requirement
- “should” indicates a recommendation
- “may” is used to indicate that something is permitted
- “can” is used to indicate that something is possible, for example, that an organization or individual is able to do something

In 3.3.1 of the ISO/IEC Directives, Part 2 (sixth edition, 2011) defines a requirement as an “expression in the content of a document conveying criteria to be fulfilled if compliance with the document is to be claimed and from which no deviation is permitted.”

In 3.3.2 of the ISO/IEC Directives, Part 2 (sixth edition, 2011) defines a recommendation as an “expression in the content of a document conveying that among several possibilities one is recommended as particularly suitable, without mentioning or excluding others, or that a certain course of action is preferred but not necessarily required, or that (in the negative form) a certain possibility or course of action is deprecated but not prohibited.”

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Prosthetics and orthotics — Vocabulary — Part 3: Pathological gait (excluding prosthetic gait)

1 Scope

This part of ISO 29783 specifies a method of describing abnormal gait patterns resulting from pathology (excluding prosthetic gait) by identifying the deviations from the normal pattern of gait during each sub-phase of the gait cycle. The description of the deviations includes references to abnormal foot contact and abnormalities of joint motion.

2 Normative references

The following document, in whole or in part, is normatively referenced in this document and is indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 29783-1, *Prosthetics and orthotics — Vocabulary — Part 1: Normal gait*

3 Terms and definitions

For the purposes of this document the terms and definitions given in ISO 29783-1 apply.

4 Pathological gait

4.1 General

Structural damage to the musculoskeletal system, and/or muscle weakness, and/or abnormal neuromuscular control can lead to an abnormal gait pattern. The abnormal motions of the lumbar spine, pelvis and lower limb segments can be a result of the pathology and/ or be compensatory.

NOTE Abnormal motions of the remainder of the trunk, head, neck and upper limbs during gait are not described in this standard.

4.2 Method of description

4.2.1 Gait deviations

Abnormal gait shall be described by stating the deviations from the normal gait pattern, for each of the undernoted sub-phases of the gait cycle.

- Initial contact,
- loading response,
- mid-stance,
- terminal stance,
- pre-swing,

- initial swing,
- mid-swing,
- terminal swing.

The normal gait pattern specified in ISO 29783-1 is the widely accepted pattern for the adult population. Persons applying this standard shall decide what magnitude of deviation from the normal is significant, and therefore requiring to be specified.

4.2.2 Abnormal foot contact

The area of contact of the foot can be abnormal for parts or all of the stance phase of the gait cycle.

Abnormal areas of foot contact can be:

- lateral side ;
- medial side ;
- forefoot;
- midfoot;
- hindfoot;
- total plantar surface;
- dorsum;
- combinations of these.

Specify the abnormal area of foot contact for each affected sub-phase of the stance phase.

4.2.3 Abnormalities of joint motion

4.2.3.1 Abnormal angular motion

Pathological conditions can result in abnormal angular motions of the joints. Abnormal angular motion of a joint can be described by specifying the joint angle at the end of each sub-phase of the gait cycle.

- An abnormal joint angle, which is in a normal plane and normal direction of motion, can be either increased or decreased.
- An abnormal joint angle, which is in a normal plane of motion, can be in the opposite direction to normal.
- An abnormal joint angle can be in an abnormal plane of motion.

Specify for each sub-phase of the gait cycle any abnormal joint angles in the relevant planes of motion.

If the angle of any joint is fixed, this shall be specified at initial contact only.

EXAMPLE 1 At initial contact in the sagittal plane, the normal knee joint angle is between 0° and 5° of flexion.

Possible abnormal joint angles are: