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Permanently installed outdoor fitness equipment — Safety requirements and test methods (EN 16630:2015, MOD)

This national standard is the adoption of EN 16630:2015 with national modifications as set out in the Appendix ZZ to take account of Australian conditions with the permission of the European Committee for Standardization — CEN, Rue de la Science 23, B — 1040 Brussels, Belgium.

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Preface

This Standard was prepared by the Standards Australia Committee CS-101, Sports and Recreational Equipment.

The objective of this document is to specify general safety requirements for the manufacture, installation, inspection and maintenance of permanently installed, freely accessible outdoor fitness equipment.

This document does not cover electrically driven equipment, functional training facilities (typically with unrestrained weights) nor military style obstacle courses.

This document is an adoption with national modifications, and has been reproduced from, EN 16630:2015, *Permanently installed outdoor fitness equipment — Safety requirements and test methods*. The modifications are additional requirements and are set out in Appendix ZZ, which has been added at the end of the source text.

Appendix ZZ lists the variations to EN 16630:2015 for the application of this Standard in Australia.

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(a) In the source text "this European standard" should read "this document".

(b) A full point substitutes for a comma when referring to a decimal marker.

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Foreword

This document (EN 16630:2015) has been prepared by Technical Committee CEN/TC 136 “Sports, playground and other recreational facilities and equipment”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2015, and conflicting national standards shall be withdrawn at the latest by October 2015.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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Introduction

Outdoor fitness equipment is suitable for people who enjoy movement and want to actively engage themselves. The equipment should be designed to promote physical activity across a wide range of abilities. Such activities could include cardiovascular, strength, toning, balance, coordination and flexibility exercises.

When drafting this European Standard, the difficulties have been recognized to address safety issues by age criteria alone, because the ability to handle risks is based on the individual users' level of skill. Also, age groups other than the intended ones will almost certainly make use of the outdoor fitness equipment. Therefore, it was decided to recommend the use of the fitness equipment for youths and adults or users with an overall height greater than 1 400 mm and to specify safety requirements on this basis. This is necessary in order to produce a clear differentiation from playground equipment in accordance with the EN 1176 series. However, relevant requirements of this series have been taken into account wherever it was useful and possible.

The requirements in this European Standard assume that all users of the fitness equipment are aware of the limits of their physical capacity and are able to use the equipment unassisted. Provided that the equipment is used as intended, i.e. in accordance with the exercise instructions attached to each individual piece of equipment, it is assumed that single or multiple body parts are moved and are not incorrectly strained.

As long as there is human interaction with moving equipment there is a residual risk that cannot be further mitigated in order to maintain the function. However, a slightly incorrect execution is considered not to cause severe health consequences for the user. In the case of improper use, bruises, sprains and occasional bone fractures caused (e.g. by falls) might have to be accepted.

In correspondence with the available opportunities, it is advisable to offer introductory courses at regular intervals, in which trained experts explain the individual pieces of equipment, their handling and their possible effects on the body and mind.

The design of outdoor fitness equipment is subject to constant development. Therefore, the design of particular types of equipment might not be specified in this European Standard, however the general requirements of this European Standard apply to all equipment.

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1 Scope

This European standard specifies general safety requirements for the manufacture, installation, inspection and maintenance of permanently installed, freely accessible outdoor fitness equipment. This standard does not cover electrically driven equipment, functional training facilities (typically with unrestrained weights) nor military style obstacle courses.

The equipment is intended for youths and adults or users having an overall height greater than 1 400 mm to promote fitness by using the equipment to exercise. Equipment covered by this standard is not playground equipment for children (EN 1176 series), indoor stationary training equipment (EN 957 series) or free access multi-sports equipment (EN 15312) even if it meets the requirements of each of these standards.

NOTE In this standard “permanently installed outdoor fitness equipment” is simply called “fitness equipment”.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are 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.

EN 335-2:2006, *Durability of wood and wood-based products — Definition of use classes — Part 2: Application to solid wood*

EN 350-2:1994, *Durability of wood and wood-based products — Natural durability of solid wood — Part 2: Guide to natural durability and treatability of selected wood species of importance in Europe*

EN 351-1:2007, *Durability of wood and wood-based products — Preservative-treated solid wood — Part 1: Classification of preservative penetration and retention*

EN 636, *Plywood — Specifications*

EN 933-1, *Tests for geometrical properties of aggregates — Part 1: Determination of particle size distribution - Sieving method*

EN 1176-1:2008, *Playground equipment and surfacing — Part 1: General safety requirements and test methods*

EN 1177, *Impact attenuating playground surfacing — Determination of critical fall height*

ISO 1834, *Short link chain for lifting purposes — General conditions of acceptance*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
user station
location of a piece of fitness equipment which the user can occupy while standing, sitting, lying or hanging

Note 1 to entry: See Figure 1.

3.2
area of movement
base area of movement space

Note 1 to entry: See Figure 1.

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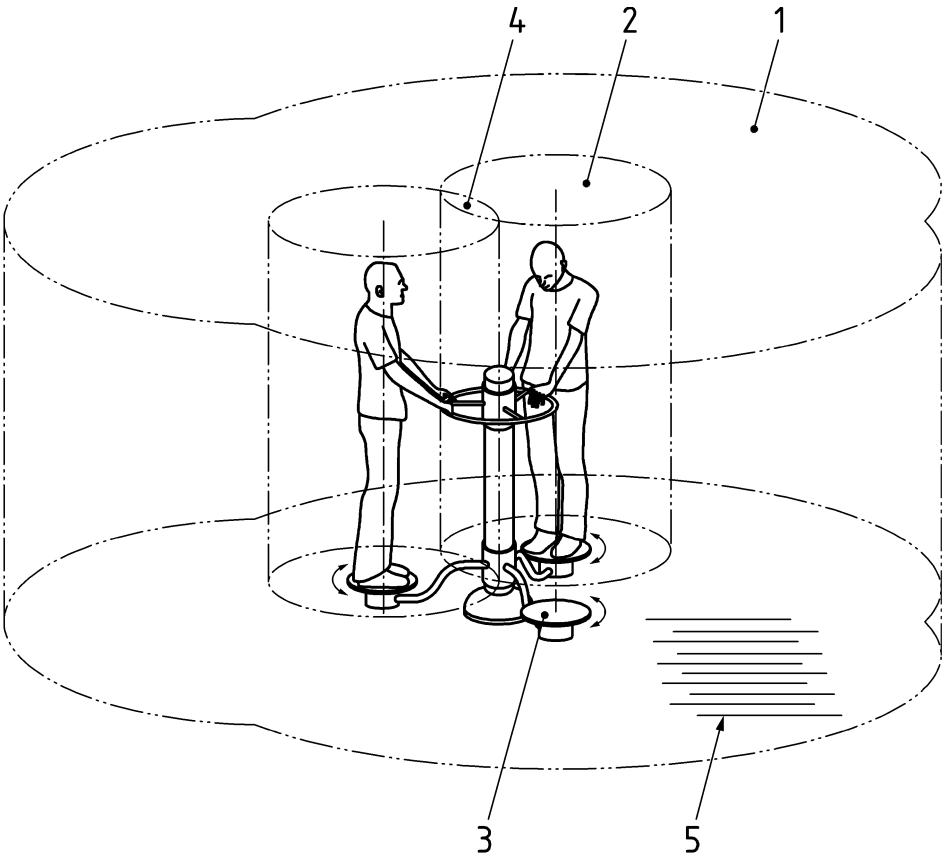
3.3
movement space
space around the fitness equipment necessary for safe use

Note 1 to entry: See Figure 1.

3.4
training space
space in, above or around the fitness equipment which the users of the equipment need to perform their exercises

Note 1 to entry: See Figure 1.



Key

1 movement space

2 training space

3 user station

4 overlapping training space (4.3.14.2)

5 area of movement

Figure 1 — Spaces and area

3.5
damping
combined effect of the supporting component(s) that moderates the speed at which the equipment can move and the reduction of shock effects at the outer positions of the equipment

[SOURCE: EN 1176-6:2008, 3.11]

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3.6
forced movement
movement which the user can no longer stop in a self-determined way, by using their own strength, after the start of the movement

3.7
free height of fall
greatest vertical distance between the user station and the horizontal surface lying directly underneath

3.8
grasp
holding of the hand round part of the circumference of a support

Note 1 to entry: See Figure 2.

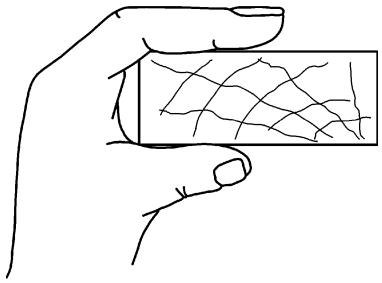

Figure 2 — Grasp

[SOURCE: EN 1176-1:2008, 3.16]

3.9
grip
holding of the hand round the entire circumference of a support

Note 1 to entry: See Figure 3.

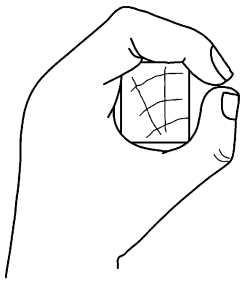

Figure 3 — Grip

[SOURCE: EN 1176-1:2008, 3.15]

3.10
body support
surface of the user station where the user stands, sits or lies

3.11
permanently installed outdoor fitness equipment
permanently installed, freely accessible equipment upon or with which the intended users, unsupervised and without outside help, can operate with the aim of maintaining or improving their physical and intellectual abilities

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3.12
tread surface
area accommodating one foot or both feet and moved by or with the user

3.13
constrained posture
physiologically unfavourable posture from which the user cannot free themselves without either outside help or without extreme difficultly or painful discomfort

4 Safety requirements

4.1 General

Fitness equipment is not intended for installation in the immediate vicinity of children's playgrounds in accordance with the EN 1176 series. If installed in connection with playground equipment, on playgrounds or similar installations, they shall be separated from general playing activities by an appropriate distance, fencing or other structural measures.

4.2 Materials

4.2.1 General

Materials shall be selected and treated in such a way that the stability of the equipment manufactured from them is not affected before the next relevant maintenance inspection.

Materials should be manufactured in a professional manner.

NOTE The conditions relating to certain materials in this standard do not imply that other equivalent materials are unsuitable in the manufacture of fitness equipment.

The selection of materials and their use shall be in accordance with the appropriate European Standards.

Special attention shall be given to surface coatings to avoid the risk of toxicity.

In the choice of a material or substance for fitness equipment, consideration shall be given to the eventual disposal of the material or substance in regard to any possible environmental toxic risks.

4.2.2 Flammability

To prevent fire and similar dangers, materials known to produce surface flash shall not be used.

4.2.3 Timber and associated products

Components from timber or timber products shall be designed in such a way that precipitation can drain or drip off freely and water accumulation is avoided.

In cases of ground contact, one or more of the following methods shall be used:

a) use of timber species with sufficient natural resistance in accordance with classes 1 and 2 of the natural durability classification given in EN 350-2:1994, 4.2.2;

b) construction methods, e.g. post shoe;

c) use of timber treated with wood preservatives in accordance with EN 351-1:2007, Figure A.1 and in accordance with Class 4 given in EN 335-2:2006, 4.4.

All components made of timber and associated products, other than those conforming to a), that affect the stability of the structure and are in constant contact with the ground shall be treated in accordance with c).

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When using metal fastenings, consideration should be given to the fact that if certain species of timber and wood preservatives are in contact with each other, they will accelerate corrosion of the metal parts.

Plywood shall be suitable for outdoor use in accordance with EN 636.

4.2.4 Metals

Metal parts shall be protected against atmospheric conditions and cathodic corrosion.

Metals that produce toxic oxide coatings that scale or flake shall be protected by a non-toxic coating.

4.2.5 Rubbers and synthetics

If, by maintenance, it is difficult to determine at what point a material becomes brittle, an indication of the time period after which the part or the equipment should be replaced shall be provided (see 9.4.3).

All structural synthetic components shall be suitably protected to reduce influences of ultraviolet radiation and oxygen.

If rubber is used in structural components, deterioration due to ozone should be taken into consideration

— either by using considerable material thicknesses,

— or by leaving rubber parts visible for inspection.

Consideration should be given to weathering of structural components through ultraviolet influences.

4.2.6 Dangerous substances

Dangerous substances shall not be used in the manufacture of fitness equipment in such a way that they can cause adverse health effects to the user of the equipment.

NOTE Attention is drawn to the provisions of Regulation (EC) No. 1907/2006 and its subsequent modifications. Prohibited materials include, but are not limited to, asbestos, lead, formaldehyde, mercury compounds, coal tar oils.

4.3 Design and manufacture

4.3.1 General

Fitness equipment shall be designed or set-up/assembled so that the intended use is/are easily identified by the user.

It shall be considered during the planning and design of fitness equipment that such equipment should also be accessible for people with limited capabilities and should be useable in accordance with these capabilities.

Fitness equipment shall be designed so that marginally incorrect executions of exercises do not lead to serious damage for the user.

When at rest the fitness equipment shall automatically adjust so that the equipment is ready for the following user.

The equipment should be designed so that the user cannot attain a constrained posture.

Fitness equipment shall not permit the functions neck pressing (see Figure 4) and deadlifting (see Figure 5).

NOTE The aim of this requirement is to avoid excessive compression of the spinal column.

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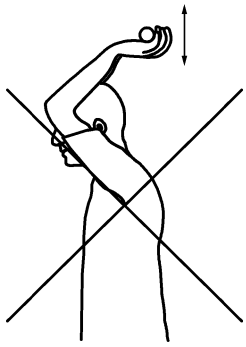

Figure 4 — Neck press

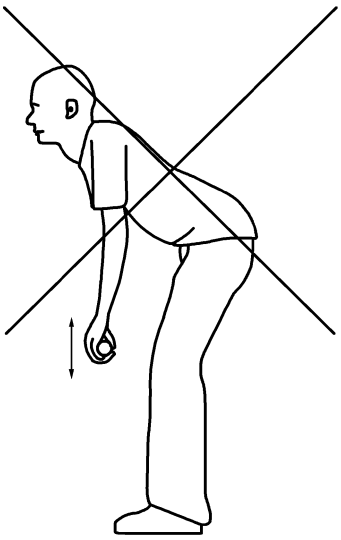

Figure 5 — Deadlift

4.3.2 Structural integrity

Fitness equipment shall be permanently connected to the substrate on which it stands.

For fitness equipment, the structural integrity shall be proved for the worst case of the intended combinations.

Structural integrity, including stability, of the equipment shall be evaluated by one of the following methods:

a) calculation on the basis of the applicable specifications in EN 1176-1:2008, Annex A and Annex B, except for Table A.1; Table 1 of this standard should be used instead;

b) physical testing, in accordance with EN 1176-1:2008, Annex C (using weights in accordance with Table 1);

c) combination of a) and b).

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