

# DRAFT INTERNATIONAL STANDARD

## ISO/DIS 20957-9

ISO/TC 83  
Voting begins on:  
2014-08-21

Secretariat: DIN  
Voting terminates on:  
2015-01-21

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### Stationary training equipment —

Part 9:

### Elliptical trainers, additional specific safety requirements and test methods

*Équipement d'entraînement fixe —*

*Partie 9: Appareils d'entraînement elliptiques — Exigences spécifiques de sécurité et méthodes d'essai supplémentaires*

ICS: 97.220.30

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#### ISO/CEN PARALLEL PROCESSING

This draft has been developed within the European Committee for Standardization (CEN), and processed under the **CEN lead** mode of collaboration as defined in the Vienna Agreement.

This draft is hereby submitted to the ISO member bodies and to the CEN member bodies for a parallel five month enquiry.

Should this draft be accepted, a final draft, established on the basis of comments received, will be submitted to a parallel two-month approval vote in ISO and formal vote in CEN.

To expedite distribution, this document is circulated as received from the committee secretariat. ISO Central Secretariat work of editing and text composition will be undertaken at publication stage.

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Reference number  
ISO/DIS 20957-9:2014(E)

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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.

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

EN ISO 20957-9 was prepared by Technical Committee CEN/TC 136 "Sports, playground and other recreational facilities and equipment" and by Technical Committee ISO/TC 83 "Sports and recreational equipment" in collaboration.

EN ISO 20957 consists of the following parts, under the general title *Stationary training equipment*:

- *Part 1: General safety requirements and test methods*
- *Part 2: Strength training equipment, additional specific safety requirements and test methods*
- *Part 4: Strength training benches, additional specific safety requirements and test methods*
- *Part 5: Pedal crank training equipment, additional specific safety requirements and test methods*
- *Part 6: Treadmills, additional specific safety requirements and test methods*
- *Part 7: Rowing machines, additional specific safety requirements and test methods*
- *Part 8: Steppers, stairclimbers and climbers - Additional specific safety requirements and test methods*
- *Part 9: Elliptical trainers, additional specific safety requirements and test methods*
- *Part 10: Exercise bicycles with a fixed wheel or without freewheel, additional specific safety requirements and test methods*

Part 3 has been amalgamated with part 2 after CEN Enquiry.

At the moment only Part 1 is an actual EN ISO 20957 standard. The other parts of the ISO 20957 series will soon be revised and adopted as EN ISO 20957 standards.

## Introduction

This Part of EN ISO 20957 amends and supplements EN ISO 20957-1. The requirements of this specific Standard take precedence over those in the general standard.

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# Stationary training equipment — Part 9: Elliptical trainers, additional specific safety requirements and test methods

## 1 Scope

This part of EN ISO 20957 specifies additional safety requirements for elliptical trainers in addition to the general safety requirements of EN ISO 20957-1.

This part of EN ISO 20957 specifies safety requirements for cardiovascular equipment with a closed pattern motion and/or a reciprocating motion where the user's feet are designed to be in contact with the footplatform (e.g. similar to walking or running), but not including steppers, performed from either a standing or seated position.

## 2 Normative references

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

EN 71-1, *Safety of toys — Part 1: Mechanical and physical properties*.

EN ISO 20957-1, *Stationary training equipment — Part 1: General safety requirements and test methods*.

ISO 5904, *Gymnastic equipment — Landing mats and surfaces for floor exercises — Determination of resistance to slipping*.

## 3 Terms and definitions

For the purposes of this document, the terms and definitions of EN ISO 20957-1 and the following apply.

### 3.1

#### **elliptical trainer**

stationary training equipment which can produce a continuous closed loop similar to an elliptical type of foot action used from a seated or standing position and can include upper body training devices

### 3.2

#### **footplatform**

surface designed to support the foot whilst performing the exercise determined by the manufacturer or for user mounting and dismounting

### 3.3

#### **footplatform guard**

rigid part of the structure designed to help prevent the foot from moving off the footplatform to the inside or front

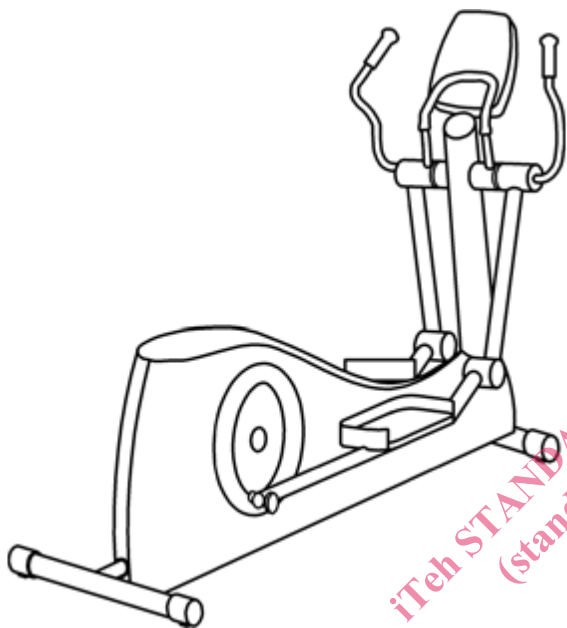
**3.4  
moving handlebar**

handlebar that is linked to the pedals and moving during the exercise

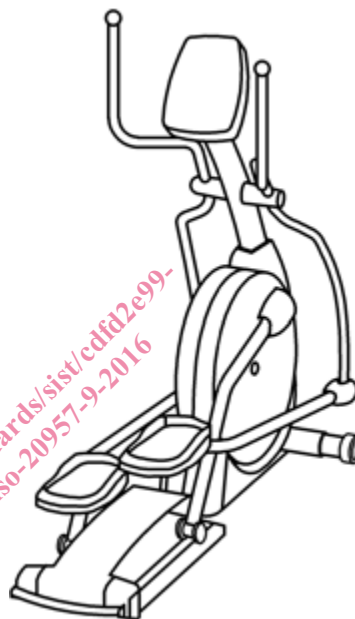
EXAMPLE    Levers used for upper body training.

**4 Classification**

The classification as defined in clause 4 of EN ISO 20957-1 applies. Examples for different types of elliptical trainers are given in figure 1.



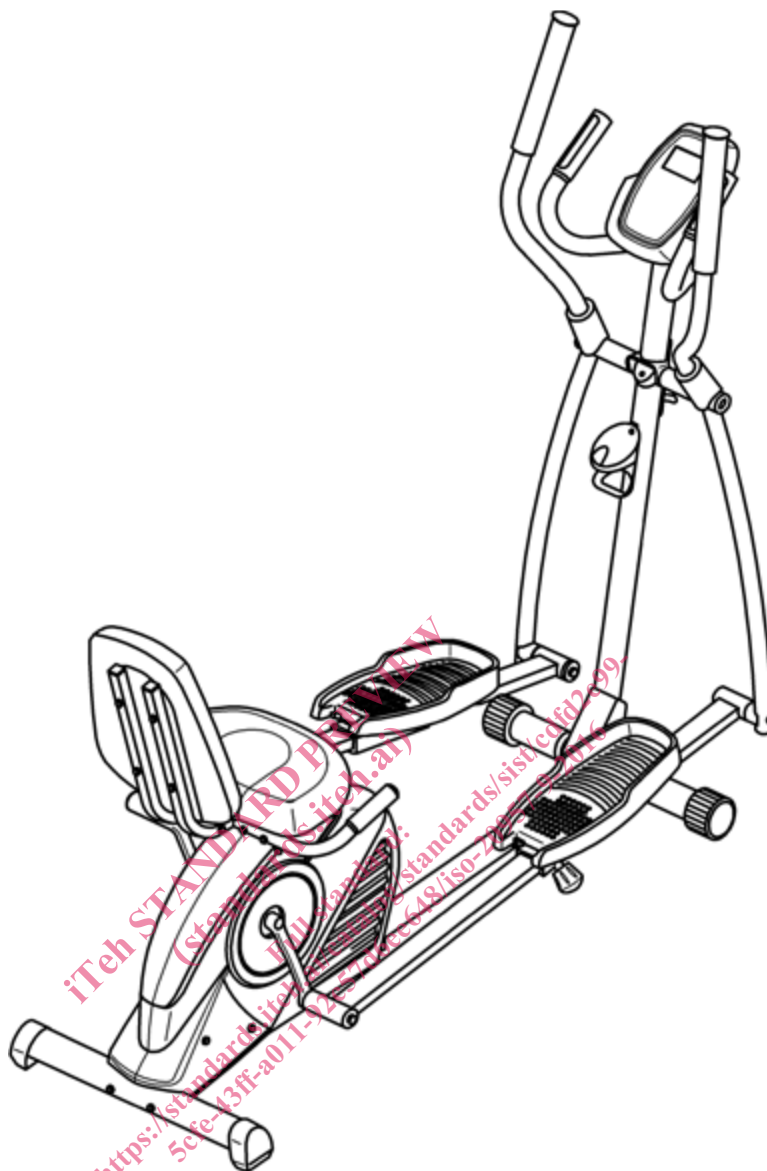
a) Rear driven elliptical trainer



b) Front driven elliptical trainer

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c) seated elliptical trainer

Figure 1 — Examples of elliptical trainers

## 5 Safety requirements

### 5.1 General

Depending on the design of the piece of equipment the following additional requirements to EN ISO 20957-1 shall apply as appropriate.

### 5.2 External construction

#### 5.2.1 Squeeze and shear points within the accessible area

Elliptical trainers shall be free of squeeze and shear points.

Test in accordance with 6.2.



### 5.2.2 Temperature rise

When tested in accordance with 6.3, accessible parts of the elliptical trainer shall not have a temperature greater than 65 °C.

## 5.3 Handlebars

### 5.3.1 Moving handlebars

The moving handlebars shall show no permanent deformation of more than 3 % when tested in accordance with 6.5.1. The ends of movable handlebars shall be designed to reduce the risk of eye socket penetration to the facial area during the intended use for the user and third party. The design may include, but is not limited to:

- a) the tip of the handlebar having a minimum diameter of 50 mm and a minimum edge radius of 5 mm; or
- b) the handlebar being bent into an inverted U-shape of at least 180° so as to reduce risk of contact between the facial area and the tip of the handlebar.

Test in accordance with 6.1.1 and 6.1.2.

### 5.3.2 Non-moving handlebars

The non-moving handlebars shall show no permanent deformation of more than 3 % of the distance from the floor to the tip of the handlebar when tested in accordance with 6.5.2.

### 5.3.3 Seat handlebars

Test each seat handlebar with a total vertical load equal to the maximum body mass specified by the manufacturer or at least 1 000 N, whichever is greater. Seat handlebars shall not exhibit permanent deformation (as measured from the ground) of more than 2 % for non-adjustable and 5 % for adjustable versions. Test each seat handlebars with a vertical load of 2 times the maximum body specified by the manufacturer or at least 2 000 N, whichever is greater. Seat handlebars shall not break.

Test in accordance with 6.5.3.

## 5.4 Footplatforms

The footplatforms shall have a non-slip surface of at least 300 mm (length) × 100 mm (width) or 90 % of the total usable surface. The non-slip surface is defined as any surface with a coefficient of friction if more than 0,5 when tested in accordance with ISO 5904.

The footplatform shall have a guard with at least 30 mm height along the complete front of the footplatform and along at least 80 % of the length of the inside edge of the footplatform. If there are potential squeeze and/or shear points in the area of the footplatform an additional guard on the outside of the footplatform shall be added to the same requirement as the inside guard.

Test in accordance with 6.1.1.

## 5.5 Stability

When tested in accordance with 6.6, the training equipment shall not fall over.