
**Protective equipment for martial
arts —**

**Part 2:
Additional requirements and test
methods for instep protectors, shin
protectors and forearm protectors**

Équipement de protection pour les arts martiaux —

*Partie 2: Exigences et méthodes d'essai complémentaires relatives aux
protège-cous-de-pied, aux protège-tibias et aux protège-avant-bras*



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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 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 83, *Sports and other recreational facilities and equipment*, Subcommittee SC 6, *Martial arts*.

A list of all parts in the ISO 21924 series can be found on the ISO website.

Protective equipment for martial arts —

Part 2:

Additional requirements and test methods for instep protectors, shin protectors and forearm protectors

1 Scope

This document specifies additional requirements and test methods for instep protectors, shin protectors and forearm protectors used in unarmed martial arts such as taekwondo, karate, kick-boxing and similar disciplines.

For general requirements and test methods for protective equipment for martial arts, see ISO 21924-1.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 21924-1:2017, *Protective equipment for martial arts — Part 1: General requirements and test methods*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 21924-1 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <http://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

4 Requirements

4.1 Sizing

The manufacturer shall indicate in centimetres the range of the wearer's height for which this protector is designed.

4.2 Combinations

Instep protectors, shin protectors and forearm protectors can be used in combination or together with other protectors for martial arts.

In the case of combined use, the requirements specified for the individual protectors are also to apply.

Possible combinations shall be indicated in the information supplied by the manufacturer.

If combined use is not permitted by the manufacturer, this restriction shall be indicated in the information supplied by the manufacturer.

4.3 Restraint

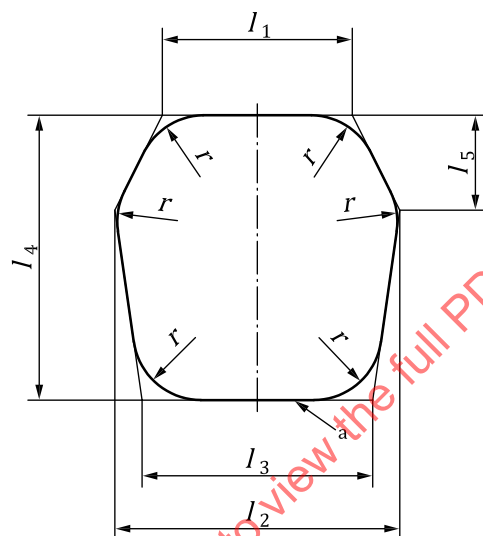
A restraint system shall be supplied by the manufacturer which enables the user to attach instep protectors, shin protectors and forearm protectors without any assistance.

If an instep protector is inseparately connected to a shin protector, secure attachment of the instep protector shall be provided by attaching the instep protector and the shin protectors.

4.4 Zone of protection

4.4.1 Instep protectors

For the dimensions of the zone of protection, see [Figure 1](#) and [Table 1](#).



a Edge of the instep protector which is turned to the toes.

Figure 1 — Location of the zone of protection of instep protectors

Table 1 — Zone of protection of instep protectors

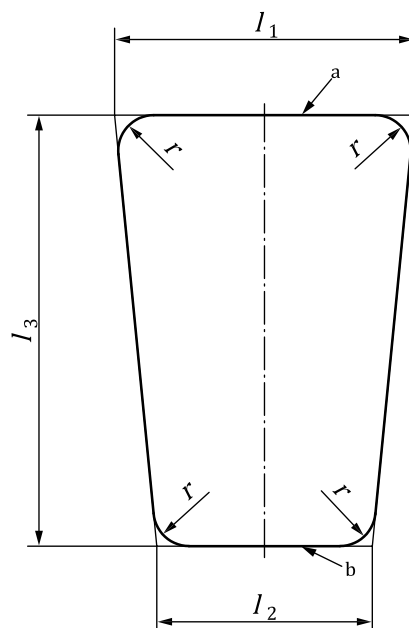
Dimensions in millimetres

Wearer's height	l_1 min.	l_2 min.	l_3 min.	l_4 min.	l_5	r max.
<1 340	60	80	70	80	l_5 is corresponding with a third of l_4	25
from 1 340 to 1 520	65	90	75	90		
from 1 520 to 1 700	70	105	85	105		
from 1 700 to 1 880	80	120	100	120		
>1 880	90	130	110	130		

4.4.2 Shin protectors

For zone of protection, see [Figure 2](#).

The dimensions of the zone of protection are specified in [Table 2](#).



- a Top.
b Bottom.

Figure 2 — Location of the zone of protection of shin protectors and forearm protectors

Table 2 — Zone of protection of shin protectors

Dimensions in millimetres

Wearer's height	l_1 min.	l_2 min.	l_3 min.	r max.
<1 340	120	85	180	15
from 1 340 to 1 520	140	100	200	17
from 1 520 to 1 700	160	115	230	19
from 1 700 to 1 880	180	130	270	21
>1 880	200	150	300	23

4.4.3 Forearm protectors

For zone of protection, see [Figure 2](#).

The dimensions of the zone of protection are specified in [Table 3](#).

Table 3 — Dimensions of the zone of protection of forearm protectors

Dimensions in millimetres

Wearer's height	l_1 min.	l_2 min.	l_3 min.	r max.
<1 340	90	60	140	11
from 1 340 to 1 520	105	70	160	13
from 1 520 to 1 700	120	85	180	15
from 1 700 to 1 880	140	100	200	17
>1 880	160	115	230	19

4.5 Impact performance

Instep protectors, shin protectors and forearm protectors comply with this document if the worst result after testing in accordance with 5.5 meets the requirements of Table 4.

Table 4 defines the kinetic energy of a striker (see ISO 21924-1:2017, 5.6) and the maximum peak force measured in accordance with 5.5 shall be less than that shown in Table 4.

Table 4 also lists the minimum number of different positions within the zone of protection to be tested. Before testing, those positions shall preferably be selected, where the worst test results are assumed to be likely.

Table 4 — Impact performance requirements

Protector	Minimum number of positions to be tested	Impact energy of the striker J	Peak force kN max.
Instep protectors	2	3	2
Shin protectors	3	3	2
Forearm protectors	3	3	2

5 Testing

5.1 Sampling

See ISO 21924-1:2017, 5.1.

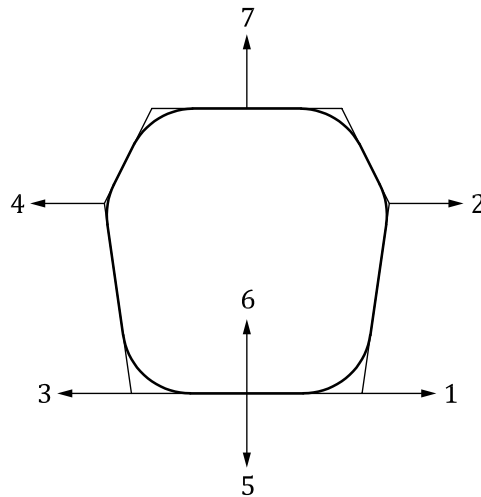
5.2 Conditioning

See ISO 21924-1:2017, 5.2.

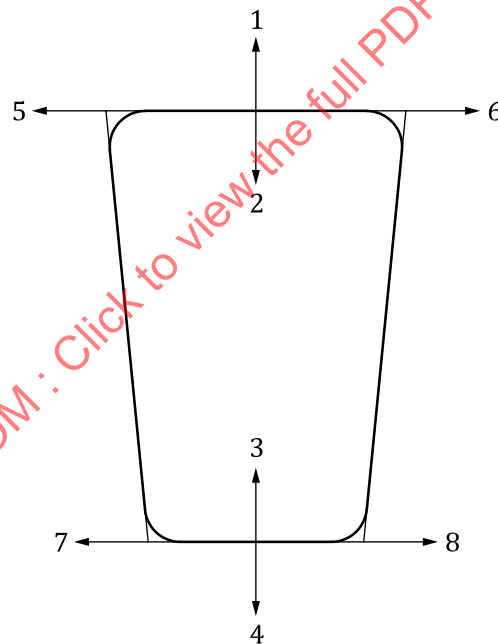
5.3 Restraint

Restraint testing shall be carried out as defined in ISO 21924-1:2017, 5.4. When testing the restraint, the protector(s) shall be attached to the appropriate part of the body of a test person of an appropriate height.

A test force of 20 N shall be applied at the edge of the zone of protection, in the directions and in the order shown in Figures 3 and 4, tangential to the surface of the body of the test person.

**Key**

1 to 7 directions and order of the tests

Figure 3 — Restraint test of instep protectors**Key**

1 to 8 directions and order of the tests

Figure 4 — Restraint test of shin protectors and forearm protectors

The instep protector or the shin protector shall be attached to the foot or lower leg of a test person in accordance with the information supplied by the manufacturer.

The forearm protector shall be attached to the forearm of a test person in accordance with the information supplied by the manufacturer.

If a shin protector and an instep protector are inseparably connected, both shall be attached in accordance with the information supplied by the manufacturer.