



Designation: F3101 – 21a

## Standard Specification for Unsupervised Public Use Outdoor Fitness Equipment<sup>1</sup>

This standard is issued under the fixed designation F3101; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### INTRODUCTION

The goal of this specification is to promote proper design, manufacturing, installation, and operational practices for unsupervised outdoor fitness equipment for use in parks, schools, institutions, multiple-family dwellings, private resorts, recreation developments and other areas. These products are intended to be used by individuals age 13 and older and typically are used in an unsupervised setting. Through these specifications, this specification aims to assist designers, manufactures, and owner/operators in reducing the possibility of injury.

Adult anthropometrics are used in the design of this equipment. The equipment specifications set forth in this standard are for equipment intended for use by individuals 13 and older. Adults must take precautions and prevent children under their supervision from accessing and using this equipment. This standard specifies requirements that are generally applicable to all outdoor fitness equipment used in an unsupervised setting.

The equipment user must recognize, however, that a standard alone will not necessarily prevent injuries. Like other physical activities, exercise involving outdoor fitness equipment, involves the risk of injury, particularly if the equipment is used improperly, not properly installed or not properly maintained. In addition, users with physical limitations should be aware of their capabilities and limitations in the use of this type of equipment and seek appropriate advice prior to using it. Certain physical conditions or limitations may preclude some persons from using this equipment properly and without increasing the risk of serious injury. While the designer, manufacturer, and owner cannot control the public use of this unsupervised equipment they can address known causes of injuries to the most vulnerable users and unintended users-at-risk defined as those under the age of 13. Good design and best practice would dictate that these facilities are not in physical proximity or physically separated from playground for children because of hazardous conditions children cannot appreciate.

### 1. Scope

1.1 This specification establishes parameters for the design and manufacture of outdoor fitness equipment as defined in **3.1.30**.

1.2 It is intended that these fitness products will be used in an unsupervised outdoor setting or environment and will be permanently anchored.

1.2.1 It is the intent of this specification to only specify requirements for outdoor fitness equipment and its installation and not the design of the facility or grounds on which the products are to be installed.

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee **F08** on Sports Equipment, Playing Surfaces, and Facilities and is the direct responsibility of Subcommittee **F08.30** on Fitness Products.

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1.3 The specifications set forth in this standard are intended to minimize the likelihood of serious injuries.

1.3.1 The specifications set forth in this standard are for outdoor fitness equipment intended for use in an unsupervised setting by individuals age 13 and older.

1.4 The values stated in SI (metric) units are to be regarded as standard. The values in parentheses are for information only.

1.5 *General Measures, Tolerances, and Conversions:*

1.5.1 The general tolerances for this specification (unless otherwise specified) are as follows:

Dimension	Tolerance
X mm (X in.)	± 13.0 mm (0.5 in.)
X.X mm (X.X in.)	± 1.3 mm (0.05 in.)
X.XX mm (X.XX in.)	± 0.130 mm (0.005 in.)

1.5.2 These tolerances still apply to a dimension even when terms like greater than, less than, minimum, or maximum are used.

1.6 This standard is to be used in conjunction with Test Methods **F2571** and Specification **F2276**. If a design or

installation concern is not addressed in this specification then the applicable requirements of Specification **F2276** shall be used.

1.6.1 This standard takes precedence over Specification **F2276** and Test Methods **F2571** in areas that are addressed in this document.

1.7 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.8 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>2</sup>

**F1292** Specification for Impact Attenuation of Surfacing Materials Within the Use Zone of Playground Equipment

**F1749** Specification for Fitness Equipment and Fitness Facility Safety Signage and Labels

**F1951** Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment

**F2276** Specification for Fitness Equipment

**F2571** Test Methods for Evaluating Design and Performance Characteristics of Fitness Equipment

**F3021** Specification for Universal Design of Fitness Equipment for Inclusive Use by Persons with Functional Limitations and Impairments

**F3351** Test Method for Playground Surface Impact Testing in Laboratory at Specified Test Height

### 2.2 ANSI Standards:<sup>3</sup>

**ANSI Z535.1** Safety Color Code

**ANSI Z535.2** Environmental and Facility Safety Signs

**ANSI Z535.4** Products Safety—Signs and Labels

**ANSI Z535.6** Product Safety Information in Product Manuals, Instructions, and Other Collateral Materials

### 2.3 Federal Standards:<sup>4</sup>

NOTE 1—The following standard is a United States federal standard that may not be applicable in other countries.

**DOJ 2010 Standard for Accessible Design United States Department of Justice (DOJ) 2010 Standard for Accessible Design: Title II (28 CFR 35) and Title III (28 CFR 36)**<sup>5</sup>

<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>3</sup> Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

<sup>4</sup> Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401, <http://www.access.gpo.gov>.

<sup>5</sup> Available free at: <http://www.ada.gov/regs2010/ADAregs2010.htm>.

### 2.4 UL Standard:<sup>6</sup>

**UL 969** Standard for Safety: Marking and Labeling Systems

## 3. Terminology

### 3.1 Definitions of Terms Specific to This Standard:

3.1.1 *accessible area, n*—area accessible to the user or third party when the equipment is used as intended, grasped, or adjusted.

3.1.1.1 *Discussion*—This area encompasses a region from the floor to a height of 2134 mm (84 in.) above the underlying surface. This does not include areas that are accessible during the initial assembly.

3.1.2 *accessible, adj*—relating to a part or portion of the outdoor fitness equipment that (1) can be contacted by any body part or (2) is approachable or usable, or both, by persons of varying abilities.

3.1.3 *accessible route, n*—pathway specifically intended to provide access for individuals with disabilities.

3.1.4 *applied handgrips, n*—handgrips that are formed, molded, or attached to a support, component, or structure.

3.1.5 *clearance space, n*—area beneath and immediately adjacent to outdoor fitness equipment that is designated for unrestricted circulation around the equipment and on whose surface it is predicted that a user would land when falling from or exiting the equipment.

3.1.6 *completely bounded opening, n*—any opening in a piece of equipment that is totally enclosed by boundaries on all sides such that the perimeter of the opening is continuous.

3.1.7 *component, n*—any portion of a structure that generates specific activity and cannot stand alone.

3.1.8 *composite fitness structure, n*—two or more fitness structures attached or functionally linked, to create one integral unit that provides more than one fitness activity; an example is a combination horizontal ladder, chinning bar, vertical lunge, and balance beam.

3.1.9 *corner, n*—intersection of three planes or surfaces on a single component.

3.1.10 *crush point, n*—location between two moving components that when entered can cause a portion of the body to suffer a contusion, laceration, abrasion, amputation, or fracture.

3.1.11 *cycle, n*—movement of a point or load away from a starting position and back to the same starting position. The cycle being executed through the full range of intended motion.

3.1.12 *designated use surface, n*—any elevated surface intended for gripping/hanging, standing, walking, sitting, or climbing.

3.1.13 *edge, n*—intersection of two planes or surfaces on a single component.

3.1.14 *engagement means, n*—the portion of the outdoor fitness equipment that is moved by the user to perform the intended exercise as defined by the manufacturer.

<sup>6</sup> Available from Underwriters Laboratories (UL), 2600 N.W. Lake Rd., Camas, WA 98607-8542, <http://www.ul.com>.

3.1.15 *entanglement, n*—condition in which an article on the user such as clothing, hair or something around the user’s neck becomes caught or entwined on a component of outdoor fitness equipment.

3.1.16 *entrapment, n*—condition which impedes withdrawal of a body or body part that has penetrated an opening.

3.1.17 *extrinsic loads, n*—all loads applied to the machine or engagement means in addition to the users body weight.

3.1.18 *fall height, n*—vertical distance between a designated use surface and the protective surfacing beneath it.

3.1.19 *foot support, n*—portion of the outdoor fitness equipment intended to support all or a portion of the user’s body weight or exertion during the performance of the intended exercise as defined by the manufacturer. May be a “step”, “stair” or “rung” as defined in this section.

3.1.20 *functional training grip, n*—typically a free form shape designed to be gripped for climbing and hanging exercises. Also referred to as rock climbing grips typically found on climbing walls or structures.

3.1.21 *general warning label, n*—label designed within the scope of this specification and Specification **F1749** which is affixed to a portion of the fitness equipment and draws attention to potential hazards associated with the use of that equipment.

3.1.22 *grasp, v*—to hold by hand, may be done to support one’s self for balance or guidance; hands fit around only a portion of the circumference of the object.

3.1.23 *grip, v*—to hold by hand tightly so one does not slip or fall or so that one can execute force to initiate or control movement of the apparatus; hands fit around a majority of the circumference of the object.

3.1.24 *guard, n*—cover or enclosure that limits access to an otherwise accessible area.

3.1.25 *integral handgrips, n*—handgrips that are created by, coating, texturing or otherwise modifying the material of a component or support structure.

3.1.26 *intended use, n*—the use of the outdoor fitness equipment as described in the manual or on the signage provided with it and/or as is readily apparent from its use as fitness equipment.

3.1.27 *intrinsic loads, n*—the loads applied to fitness equipment due only to the user’s body weight.

3.1.28 *maximum specified load, n*—maximum working load for the machine as set by the manufacturer.

3.1.29 *maximum tension developed, n*—maximum static tensile load experienced by a connector, fitting, rope, belt, chain, or other component during use of the machine at the maximum specified load for the machine including all extrinsic loads.

3.1.30 *outdoor fitness equipment, n*—an anchored structure or mechanical apparatus intended for unsupervised outdoor public use on which the user trains or exercises specific or multiple muscles of the body.

3.1.30.1 *Discussion*—Not to include toys used for recreation, jump ropes, outdoor playground equipment or

facilities, military facilities or equipment designed for military training, bicycles or other fitness soft goods such as gloves, belts, apparel, balls, and so forth. Independent loose items intended to be manipulated by the intended users are not covered in this standard.

3.1.31 *owner’s manual, n*—documentation supplied and intended by the manufacturer to convey information, including safety features and warnings, to the owner about the equipment, its installation, inspection, maintenance, and repair.

3.1.32 *partially bounded opening, n*—any opening in a piece of equipment that is not totally enclosed by boundaries on all sides so that the perimeter of the opening is discontinuous.

3.1.33 *platform, n*—flat surface, intended for the user(s) to stand, and upon which the user(s) can move freely.

3.1.34 *professional judgment, n*—ability of an individual with current knowledge, skill or experience, or both, in the field of outdoor fitness equipment design, use, or operations, which enables that person to form an opinion or make a decision, or both, concerning a matter within that field of expertise.

3.1.35 *projection, n*—condition which, due to its physical nature, must be tested to the requirements of this standard to determine whether it is a protrusion and/or entanglement hazard.

3.1.36 *protective surfacing, n*—material(s), if required, to be used within the clearance space of the outdoor fitness equipment in accordance with Specifications **F1292** and **F1951** where applicable.

3.1.37 *protrusion, n*—projection which, when tested in accordance with the requirements of this standard is found to be a hazard having the potential to cause bodily injury to a user who impacts it.

3.1.38 *range of movement, operator, n*—space in which the user or part of the user is moving when using the machine as recommended by the manufacturer.

3.1.39 *range of movement, equipment, n*—space in which the equipment component(s) can move or be moved during the operation of the equipment.

3.1.40 *resistance means, n*—the device or system that provides a resistive force to the user during exercise. This system may or may not be adjustable where the user can vary the device or system to increase or decrease the force encountered.

3.1.41 *rung, n*—cross piece in a ladder or other climbing equipment used for supporting the user’s feet or for grasping by the user’s hands and/or both.

3.1.42 *serious injury, n*—an acute physical injury requiring medical treatment in a hospital or clinic under the supervision of a qualified doctor or nurse; examples of such injuries includes burns, fractures, lacerations, internal injury, injury to organs, concussion, internal bleeding, etc.

3.1.43 *sharp edge, n*—edge that can cut a user’s skin.

3.1.44 *sharp point/corner, n*—point or corner that can puncture or lacerate a user’s skin.