



Standard Terminology Relating to Impact Testing of Sports Surfaces and Equipment¹

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1. Scope

1.1 This terminology covers terms related to impact test methods and impact attenuation specifications of sports equipment and surfaces.

1.2 This terminology is appropriate for use in the development of standards that describe gravity-driven impact test methods or specify impact attenuation performance criteria and which fall under the jurisdiction of ASTM Committee F08 on Sports Equipment and Facilities.

1.3 This terminology defines common terms that are applicable to many sports-related impact tests including those used in the context of sports surfaces, athletic footwear, protective equipment and padding. The use of a common terminology will promote greater consistency among standards and reduce the risk of misinterpretation.

1.4 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

2. Terminology

2.1 Definitions:

acceleration, n —rate of change of velocity with time.

¹ This terminology is under the jurisdiction of ASTM Committee F08 on Sports Equipment—Equipment, Playing Surfaces, and Facilities and is the direct responsibility of Subcommittee F08.80 on Common Terminology, Methods and Laboratory Practices.

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DISCUSSION—

Acceleration is a vector quantity, having both magnitude and direction. Acceleration magnitude is expressed in units of m/s^{-2} (ft/s^{-2}) and direction is defined relative to a Cartesian coordinate system or other spatial reference frame.

assisted impact test, n —an impact test in which the missile is accelerated by means other than gravity alone, for example, by an actuator.

drop height (h), n —height from which a missile is dropped during a gravity-driven impact test, measured as the vertical distance between the lowest point of the elevated missile and its first point of contact with the impacted surface or anvil.

theoretical drop height, n —drop height (h) that, under standard conditions, would result in an impact velocity equal to a missile's measured impact velocity (V_0).

DISCUSSION—

The “standard conditions” assume standard gravity and that friction and air resistance do not affect the fall of the missile. In a free-fall impact test the actual drop height will approximate the theoretical drop height. In a guided impact test, the theoretical drop height will be less than the actual drop height, due to the effects of friction in the guidance mechanism.

g , n —(pronounced “gee”) a unit of acceleration equal to standard gravity. Missile accelerations expressed in ‘ g ’ units are the ratio of the missile acceleration to standard gravity and are hence dimensionless.

DISCUSSION—