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## Standard Guide for Selection and Use for Pelvic Ring Circumferential Compression Stabilization Devices (PRCCSD)<sup>1</sup>

This standard is issued under the fixed designation F2428; 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.

### 1. Scope

1.1 This guide establishes minimum standards for devices designated here as pelvic ring circumferential compression stabilization devices(s) (PRCCSD), commonly known as pelvic slings, belts, or binders. The PRCCSD is used as the initial pelvic ring stabilization device on patients suspected of having sustained traumatic disruptions of the pelvic ring. It is used during patient transport by emergency personnel and before definitive treatment.

1.2 This guide addresses the recognized need to reduce and stabilize pelvic ring disruptions through the use of circumferential compression devices.

1.3 Peer-reviewed medical literature does describe specific testing methods used to determine the range of effective compression force, efficacy in reduction, stability, and safety for a particular (PRCCSD). This guide, however, does not identify specific testing methods as it is recognized such methods could vary according to device configuration and study design.

1.4 This guide does not address individual quantitative performance standards for any particular device, but does address general performance standards and good practice characteristics for all devices using circumferential compression to reduce and stabilize disruptions of the pelvic ring.

1.5 *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 and health practices and to determine the applicability of regulatory limitations prior to use.*

### 2. Terminology

#### 2.1 Definitions:

2.1.1 *circumferential compression force, n*—influence that deforms an object by shortening its circumference.

2.1.2 *compression force, n*—influence that deforms an object by making it smaller or shorter.

2.1.3 *controlled level of force, n*—force confined within certain defined limits.

2.1.4 *disruption of the pelvic ring, n*—any traumatic alteration of the normal anatomic relationships of the bony structures forming the pelvic ring. Included in these disruptions are fractures, dislocations, subluxation, and diastasis.

2.1.5 *effective level of force, n*—that range of quantified force required by the particular pelvic ring circumferential compression stabilization device (PRCCSD) to reduce and stabilize disruptions of the pelvic ring in the 95<sup>th</sup> percentile of adult American males.<sup>2</sup>

2.1.6 *immobilization, n*—limitation of motion.

2.1.7 *pelvic ring, n*—normal anatomic ring-shaped structure formed by three bones: two innominate bones (each made up of the ilium, ischium, and pubis) and the sacrum.

2.1.8 *reduction, n*—returning anatomic structures to their normal anatomic position.

2.1.9 *retention system, n*—an adjunct to or an integral part of the primary platform that allows the patient to be securely attached to that platform, used in whatever configuration and size necessary to accomplish the goal, while still allowing reasonable and necessary access to the patient.

2.1.10 *safe level of circumferential compression force, n*—that range of quantified force producing a resultant effect in which no undue alteration of the normal anatomic relationship of the pelvic ring occurs.

2.1.11 *stabilize, v*—maintaining in a firm, constant, or fixed state.

2.1.12 *spinal immobilization system, n*—device(s) that immobilize the spine and contiguous structures, the pelvis, and the skull.

<sup>1</sup> This guide is under the jurisdiction of ASTM Committee F30 on Emergency Medical Services and is the direct responsibility of Subcommittee F30.01 on EMS Equipment.

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<sup>2</sup> *The Handbook of Adult Anthropometric and Strength Measurements Data for Design Safety*, University of Nottingham, University Park, Nottingham NG7 2RD United Kingdom.