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Standard Guide for Establishing a Reporting Structure for Exoskeleton Analysis¹

This standard is issued under the fixed designation F3519; 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 (ε) indicates an editorial change since the last revision or reapproval.

^{ε1} NOTE—Editorially updated a referenced standard title in 1.1 and updated Section 2 in July 2026.

1. Scope

1.1 This guide provides a structure for exoskeleton manufacturers to document their analysis. Furthermore, this guide should be used in conjunction with Practice F3474, Guide F3518, Guide F3688, and other future documents.

1.2 *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.*

1.3 *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:²

F3200 Terminology for Robotics, Automation, and Autonomous Systems

F3474 Practice for Establishing Exoskeleton Functional Ergonomic Parameters and Test Metrics

F3518 Guide for Quantitative Measures for Establishing Exoskeleton Functional Ergonomic Parameters and Test Metrics

F3688 Guide for Evaluating Potential Ergonomic Risks From Exoskeleton Use

3. Significance and Use

3.1 This guide describes a template of written considerations that should be provided by the manufacturer to the

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at www.astm.org/contact. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

purchaser related to the documenting of exoskeleton analysis. Adherence to this guide allows analysis results of varied exoskeleton manufacturers to be compared by a purchaser with respect to their end user needs.

3.2 Not every element of this guide may be applicable to all exoskeleton components or configurations. It is the manufacturer's responsibility to determine which portions of this guide are applicable to their exoskeletons for analysis reporting.

4. Terminology

4.1 Definitions:

4.1.1 *analysis requestor* (sometimes called *analysis sponsor*), *n*—person or organization selecting the analysis and defining the conditions under which they are performed.

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4.1.2 *analysis supervisor*, *n*—person responsible for setting up the apparatus, instrumentation, directing, and reporting results of the analysis according to the analysis requestor or analysis sponsor.

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5. Report Structure

5.1 The main role of the report structure is to provide the reader with an outline of the report. The report structure should generally focus on the motivation and the reason for the report. A common structure of a report includes these subsections: scope, significance and use, procedure, interpretation of results, and conclusion.

5.1.1 *Scope*—This subsection highlights the motivation of the report.

5.1.2 *Significance and Use*—This subsection highlights details on why the report is being written.

5.1.3 *Procedure*—This subsection provides an overview of the tested conditions, test procedures, and equipment and statistical analysis tools used.

5.1.4 *Interpretation of Results*—The main findings of the report are reported in this subsection. In this subsection, results are interpreted and inferences are drawn.

5.1.5 *Conclusion*—This subsection provides the reader with the main conclusions drawn from the report according to the interpretation of the findings.