Standards Update – Anthropometry and Biomechanics

By Bob Fox, Chair, U.S. TAG to ISO/TC 159/SC3

"If you don't want someone else making the rules for you, you'd better do your homework and come to the table with ISO." I overheard this statement, uttered by an experienced standards participant, while attending an American National Standards Institute (ANSI) committee meeting on mobile industrial equipment. Given the continued growing role of the International Organisation for Standards (ISO) in standards development, that statement rings true for nearly all fields in which standards are developed, and human factors/ergonomics is no exception. In this article, I describe recent activities within the U.S. Technical Advisory Group to ISO Technical Committee (TC) 159.

TC 159 is tasked with standardization in the field of ergonomics, including terminology, methodology, and human factors data as its overall scope. Subcommittee (SC) 3 addresses the fields of anthropometry and biomechanics. The U.S. TAG to ISO/TC 159/SC3 is tasked by ANSI, through HFES, to supply technical experts for the various work groups created by SC3 to address standards proposals and projects. These proposals generally reflect a market requirement and are requested by various national technical or standards-making bodies. The standards are based on consensus among the interested parties. The standards that result are voluntary but may be adopted by national standards-making bodies or regulatory authorities and may become part of international agreements. The members of the ANSI/HFES U.S. TAG to ISO/TC 159/SC3 are Michael Biferno, Bruce Bradtmiller, Marvin Dainoff, Scott Fleming, Claire Gordon, Wayne Maynard, Alan Poston, and Dan Roley.

The European community plays a major role in the direction of international standards. The European Committee for Standardization (CEN) has driven standards projects through the Vienna Agreement of 1999. The Vienna Agreement allows "technical cooperation" and sharing between ISO and CEN, with the result that CEN standards projects may be fast-tracked into ISO. As such, they may represent European viewpoints, sensibilities, and methods. Our European colleagues continue to bring excellent work into the standards arena; however, European standards that are fast-tracked into ISO may require modification to better apply to the larger audience of potential users that ISO represents.

Working Group Activities

Currently, the two most active ISO SC3 working groups are WG (Working Group) 1 (Anthropometry) and WG 4 (Human Physical Strength). Claire Gordon, Scott Fleming, and Bruce Bradtmiller of the U.S. TAG serve on WG 1, which continues to work on a number of projects involving standardized anthropometric data collection and the eventual compilation of a global anthropometric database. Claire convenes WG1, and Bruce and Scott provide significant technical leadership and input.

WG 1 is working toward the goal of a standardized global anthropometric database. The projects making up this effort include ISO NP 7250-1, body measurement definitions and landmarks; 7250-2, statistical summaries of body measurements from individual ISO populations; and 7250-3, worldwide and regional design values. ISO 7250-1 was originally a CEN lead and was voted for renewal. Work is proceeding on NP 7250-2, and the countries represented on WG 1 are reviewing data for submission, with data delivery later this year. A draft data compilation may be available in about a year. NP 7250-3 will have a kickoff meeting in summer 2007.

Looking ahead to additional new projects, Bruce Bradtmiller continues to investigate a new work item to certify measurers who collect data for ISO standards.

Wayne Maynard and I serve on WG4. I joined WG4 when several major standards projects were already well under way and major changes to scope and content were not possible. In January, the U.S. TAG voted unanimously to approve ISO 11228-2, "Ergonomics – Manual Handling, Part 2: Pushing and Pulling" and ISO 11228-3, "Ergonomics – Manual Handling, Part 3: Handling of Light Loads at High Frequency." Both of these standards projects have been under development in WG 4 for the past six years and have paralleled CEN projects in the CEN TC 122 WG4. This CEN working group meets concurrently with ISO TC 159/SC3 WG4, and its projects are introduced into ISO per the 1991 Vienna Agreement.

I encouraged and participated in major rewrites of the ISO 11228-2 and 11228-3 projects to give them a broader base of application and appeal. FDIS 11228-3 "Handling of Light Loads at High Frequency," in spite of its curious titling, addressed the assessment of upper-extremity repetitive motion activity. The "Occupational Repetitive Action" (or OCRA) technique, developed by Enrico Occipinti and Daniela Colombini of the University of Milan, was the assessment method that was incorporated into the CEN standard. As part of the ISO rewrite, the standard was rewritten to address in more detail what an assessment method should include and to allow for the incorporation of other assessment methods contingent on the needs, training, and resources of the ultimate user.

With the conclusion of the ISO 11228 series of standards, WG 4 is now developing an applications manual for potential users of those standards. I have also written a draft scope for a new project on the standardization of strength measurement terminology and methodology.

Thanks to the efforts of Claire Gordon, the U.S. TAG hosted the ISO/TC 159/SC3 17th Plenary Meeting in San Francisco on October 15–16, 2006. Bruce Bradtmiller and I attended the meeting. A Chairman's Advisory Committee (CAG) met briefly prior to the plenary meeting and offered advice on several of the issues to be presented. Several decisions were made by the TC158/SC3 secretariat in the course of the meeting, including the disbanding of two dormant working groups and name changes to the ISO NP 7250 project series to better reflect the eventual deliverables.

The ANSI/HFES TAG to ISO/TC 159/SC3 will hold its

annual meeting at Anthrotech in Yellow Springs, Ohio, on July 26–27. Tentative items on the agenda include a review of TAG voting requirements, review of the status of current projects, and new work items and status of the new HFES working group on standardization and best practices.

U.S. TAG member Alan Poston is chairing a working group under the HFES Institute. The goal of the working group is to support the efforts of the Institute, and its charter is specified as part of the new Institute operating rules approved by the HFES Executive Council at its midyear meeting in April. The scope of activities, working structure, and plans for future activities is in process and will include serving as a liaison to the TGs, promoting standards awareness and activity, and helping to identify and address the needs for standards and best practices. Eventually a Standards Technical Group may be formed as interest continues to grow.

For more information about the work of the TC 159/SC3 U.S. TAG to ISO, please contact me at General Motors, Global Ergonomics Support Activity, MC 480-109-103, 30300 Mound Rd., Warren, MI 48090-9040, 586/947-2983, robert.r.fox@gm.com.

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NEM Wants You!

By Haydee M. Cuevas, NEM Committee Chair

National Ergonomics Month (NEM) in October is targeted at promoting human factors/ergonomics (HF/E) to the general public through outreach and community service. As part of our continuing celebration of the HFES 50th Anniversary, the NEM Committee invites all HFES members, local chapters, and student chapters to create a plan of action that actively promotes NEM in your communities. No idea is too great or too small! Speak about HF/E at your local schools. Volunteer to serve as a judge at a local science fair. Organize a group volunteer day for a Habitat for Humanity building project. Hold a "design challenge" competition at work or at your university. The possibilities are endless! For more great ideas, visit *http://hfesnem.org/*.

To enter the 2007 NEM Best Action Plan Contest, please include the following information in a Microsoft Word file and send it to me as an e-mail attachment at haydee.cuevas@satechnologies.com. The submission deadline is *September 10, 2007.*

- Proposer's name(s), address, e-mail, and daytime phone number.
- If entry is on behalf of an official local or student chapter, please specify the chapter's name.
- Names of other professionals and/or students participating in organizing or implementing your action plan.
- Title of your action plan.
- Brief description of your action plan. What activities are envisioned?
- Timeline for your action plan. When will you implement it?
- Goal(s) of your action plan. What do you seek to accomplish? What audience(s) are you targeting (e.g., community, students, corporations, government)?

Awards will be presented to the best individual, local chapter, and student chapter action plans at the HFES 51st Annual Meeting in October. The NEM Committee also seeks volunteers to serve on the Selection Committee for the NEM Best Action Plan Contest. If you are interested, please contact me at 407/737-8909 or via the e-mail address above. Together, we can make NEM 2007 an integral part of our Society's 50th Anniversary celebration!

HFES Welcomes New University of Utah Student Chapter

By Joel Cooper, Chapter President

At its midyear meeting in April, the HFES Executive Council approved a new student chapter at the University of Utah. The chapter consists of undergraduate and graduate students from the Psychology, Civil Engineering, and Industrial Engineering Departments and the School of Nursing. Frank Drews is the faculty adviser, with the assistance of chapter director David Strayer. The president-elect is David Fawcett.

Chapter members are involved in a wide array of human factors research, including work on distracted driving, medical decision making, industrial ergonomics, and roadway design. The growing student group has already held field trips to the Utah Department of Transportation Traffic Operations Center and Hill Air Force Base, and many other exciting trips are in the queue.

Thanks to efforts by Strayer and Drews, students at the University of Utah have had many opportunities to get involved in human factors–related research. Undergraduate students may opt to receive a human factors certificate through completion of coursework with a final research project.

"The new chapter is an exciting opportunity for the students, which complements the certificate program and provides an increasingly immersive educational experience," said Drews.

"We are really excited about the new student chapter," said Strayer. "We see that there is a huge potential to become active members in the community and promote the discipline."

For more information on the University of Utah Chapter, contact Joel Cooper at joel.cooper@psych.utah.edu.