MEETING LOG
Directorate for Engineering Sciences

PRODUCT: Treadmills

SUBJECT: *ASTM F08.30 Fitness Products* Subcommittee Task Group (TG) Meeting on Treadmill Standards

LOCATION: Teleconference via WebEx

DATE: Tuesday November 30, 2021, 2-4pm ET

ENTRY DATE: Monday January 24, 2022

LOG ENTRY SOURCE: Susan M. Bowley, Ph.D. Mechanical and Biomedical Engineer, ASTM F08.30 CPSC Technical Representative

COMMISSION ATTENDEES (4): Susan M. Bowley, Ph.D. ESMC; Jacqueline Campbell, CPSC Voluntary Standards Coordinator; Caroleene Paul DD ESMC; Tim Smith, ESHF

NON-COMMISSION ATTENDEES: Contact ASTM for a complete list of attendees

MEETING SUMMARY:

The ASTM F08.30 Fitness Products Subcommittee Task Group (TG) on Treadmill Standards met to continue discussions on safety enhancements to the relevant standards. The meeting focused primarily on reviewing incident data, discussing hazards and how best to address them, and next steps.

Incident Data

The TG discussed the CPSC-provided incident data spreadsheet covering 2010-2021 treadmill incidents. The data included approximately 280 incidents. The TG chair summarized that incidents for adults comprise three primary hazards: trips, falls, and sudden accelerations. He proposed that the TG address the adult incident hazards in a future TG meeting.

The TG chair shared a spreadsheet (created by the TG Chair from the CPSC incident spreadsheet) that comprised approximately 43 children's incidents, with the primary hazards of entrapment, pull-in, and pull-under. The TG Chair opined that the incidents with children are linked/tied to a lack of adult supervision or involve the child approaching from behind when the adult is using the treadmill. A TG member stated that based on the CPSC non-fatal incident data for children, the mean age is 5.1 years +/- 3.3 years old.

TG members discussed incidents from the spreadsheet related to acceleration or electrical hazards with the treadmills. CPSC staff highlighted that a child fatality involved a continuous belt treadmill that also included a horizontal rear guard.

Hazards and How to Address

A TG member discussed the spreadsheet incident data, which indicates that ~76% of non-fatal incidents involved "friction pull-in" for children. The conclusion from this TG member was that if we can solve the friction pull-in hazard, we could potentially solve 76% of the injuries to children.

TG members discussed F2115, Section 4.2 *Exterior Design*, suggesting that the "whole body," not just fingers, be included. Members expressed concern that the drawings shown in the standard only address the sides of the rear-roller, that balls and other objects can become caught in this area and flip over the entire treadmill, and that if a force is pushing on a ball, it can exacerbate the hazard by being pulled into the underside of the treadmill surface. The TG group identified other entrapment issues, such as clothing caught in the rear-roller area, that indicate a need for setting a distance between a guard and the moving surface of the treadmill. Follow-on discussion suggested that slatted tread surface treadmills may be more difficult to guard than traditional continuous belt tread surface treadmills. A TG member discussed that the slats in a slatted treadmill design are only grabbing when the tread is moving.

For measuring finger entrapment hazards, the TG chair discussed the EN 71 finger probe and the 1-pound force pull-out requirement. CPSC staff suggested changes to the Figure 2 caption to indicate "Endcap finger entrapment guarding examples." A TG member indicated that he has seen a horizontal bar used to protect the endcap pinch point. TG members discussed possible probes that could be used for testing of the treadmill entrapment/pull-under hazard. CPSC staff suggested that the TG could move forward without indicating any specific probes, and instead indicate a maximum ground clearance gap be maintained during treadmill use. Additionally, design options are available to maintain a maximum ground clearance gap without using any guard.

A TG member discussed adding "cross bar" language into Sections 4.2.1 and 4.2.2. A TG member proposed new language for the updated standard to include: "reduce the risk of injury between a moving surface and a fixed surface," with a focus on reducing the risks of injuries.

Implementing a PIN or Similar Control Feature

The TG chair proposed that firms could implement a PIN, which the adult user would need to enter into the treadmill before it will start. TG members discussed the PIN proposal, and one TG member suggested adding a finger-scan device for non-commercial treadmills. TG members discussed that not all treadmills currently have the functionality to implement a PIN for the user, and implementing this functionality would "price out of the market" some treadmill manufactures if it were required. TG members also discussed that there are other products, such as table saws or the like, that do not have this feature.

Warnings

The TG chair discussed that treadmills currently have warnings indicating that children should be kept away from the treadmill and that the treadmill should be turned off when not in use, yet these warnings are not effective. Some TG members identified a need to focus on "mechanically protecting" against the hazard, and the TG chair asked CPSC if a warning would be sufficient. CPSC staff indicated that the best approach is to design out the hazard, guard the consumer from the hazard, and then warn the consumer. CPSC staff indicated that warnings should be considered only as a last resort for protecting consumers from harm, and that warnings are typically not effective. CPSC staff indicated that the TG should focus on designing and guarding against the hazards first, to reduce the severity of the hazards, and then worry about warnings later in the process of updating the treadmill standards with a focus on performance-based testing. A TG member agreed, emphasizing that warnings cannot be substituted for design and guarding.

TG Objective

Some TG members identified that the group's objective is to make treadmills safer, not to overburden the manufacturers, claiming that the hazard cannot be eliminated completely, and that "it is extremely difficult to design this out" of a treadmill. Some TG members stated that the TG should focus on how the benefits outweigh the hazards, and that some of the incidents in the spreadsheet, such as people hanging themselves on treadmills, cannot be reasonably addressed. These members suggest that as long as risks are addressed, the effort would be successful. In a home setting, consumers could choose to add some of these proposed safety features to help reduce risks for their children.

Next Steps

The TG chair asked for more input from TG members for proposed changes to current standards. He asked that TG members submit any proposals via email directly to him (noting that to date he had only received three emails with proposed changes) with the goal of balloting changes prior to the end of this year. TG members discussed proposed updates to F2276 and F2115 standards and definitions and wording for proposed updates. The TG chair indicated that he would like to submit a ballot by the end of 2021 to include updates to definitions for "entrapment" and "pull-in point."

Meeting was adjourned at 4:18pm ET