

Exoskeleton Advisory Committee

December 11, 2018 online meeting minutes

In attendance:

Matt Marino, Briotix

Ornwipa (Fah) Thamsuwan, University of Saskatchewan

Jim Lin, Washington State Labor & Industries

Delia Treaster, Ohio Bureau of Workers Compensation

Chris Reid, Boeing

Kendra Betz, VA

Bill Billotte, National Institute of Standards and Technology

Rick Goggins, Washington State Labor & Industries

Absent:

Pete Johnson, University of Washington

Rich Gardner, Boeing

Stephen Bao, Washington State Labor & Industries

June Spector, University of Washington

Keith Osborne, Seattle City Light

Sarah Martin, Washington State Labor & Industries

Catherine Trask, University of Saskatchewan

Don Peterson, Northern Illinois University

Finalizing Committee Products

So far, the committee has produced four documents:

1. A position statement on exoskeletons and return to work (RTW)
2. A process for implementing exoskeletons for RTW
3. A list of exoskeletons that might be suitable for RTW
4. A list of research questions related to exoskeletons and RTW

The first three documents are ready for a final review by the committee. Matt will add a disclaimer to the process and exoskeleton list, and send them to Rick to forward on to the rest of the committee. Rick will add the same disclaimer to the position statement, and send it to the committee with the other documents. Delia has volunteered to format the list of research questions and send them along to the committee for final review. All of these documents will likely need to be revisited and updated on a regular basis.

Sharing the committee's products with the public

Washington State Labor & Industries (L&I) web site is one possible location for the documents. L&I has a number of other advisory committees, each with a dedicated web page for sharing meeting minutes and committee products.

NIOSH is another possible host for the materials. Chris shared the following link:

NIOSH Robotics Center under Dr. Hongwei Hsiao -
<https://www.cdc.gov/niosh/topics/robotics/aboutthecenter.html>

Matt has a phone conference with NIOSH scheduled, and he will talk to them about this possibility.

How should we classify exoskeletons as hazard controls?

There is still uncertainty as to where exoskeletons fall on the hierarchy of controls. Are they PPE, engineering controls, or something else entirely? Several of the committee members mentioned that they had discussed this issue within their organizations and were unable to come to a consensus. The lack of data on the effectiveness of exoskeletons in preventing injury is one reason that it's difficult to classify them at this time.

The committee discussed a number of analogies to exoskeletons as a way to explore possible classifications:

- PPE that's required when a threshold is met, like fall protection, or respiratory protection
- PPE intended to help prevent cumulative conditions, like hearing protection
- PPE that's required whenever a hazard is present, regardless of thresholds, like eye protection
- Voluntary PPE, like a dust mask when respiratory protection isn't required
- A wearable tool, like a power tool or a forklift, but worn on the body
- Similar to a prosthetic or an orthotic if used for RTW
- As a type of medical device if used for RTW

There are considerations which each of these options. If considered PPE, it would become mandatory if a JHA/JSA found hazards that an exoskeleton would address, although we don't know enough yet to prescribe an exoskeleton to address a specific hazard. If exoskeletons were used in this situation, they would likely trigger a second assessment to make sure they don't introduce new hazards.

If an exoskeleton is considered a tool, there are certain highly-regulated industries where they would need to be written into the manufacturing procedures, and would then become non-optional. This would not be the case in industries like construction.

Current industrial exoskeletons are not being marketed as medical devices or for the purpose of RTW. Physicians don't want to prescribe them because there aren't clinical trials showing their effectiveness.

The bottom line seems to be that we don't know enough about exoskeletons yet to locate their position on the hierarchy of controls.

Coordinating with ASTM

The ASTM committee members in attendance felt that the ASTM should be working on RTW as in issue when discussing guidelines for industrial exoskeletons. Having members on both committees provides us with the opportunity to coordinate our efforts.

Continuing with the Exoskeleton Advisory Committee

The consensus seemed to be that this committee should continue to meet periodically. We'll likely want to review and update the committee products periodically as we get answers to some of the questions we've raised.