

# Exoskeleton Advisory Committee

April 23, 2018 phone meeting minutes

## **In attendance:**

Sarah Martin, Occupational Therapy Supervisor, Insurance Services, Washington State Labor & Industries

Rick Goggins, Ergonomist, DOSH, Washington State Labor & Industries

Matt Marino, Physical Therapist, Ergonomist, Briotix

Chris Reid, Human Factors and Ergonomics Engineer, Boeing

Catherine Trask, Associate Professor, Canadian Centre for Health and Safety in Agriculture, University of Saskatchewan

Ornwipa (Fah) Thamsuwan, Postdoctoral Fellow, Ergonomics Lab Manager, University of Saskatchewan

Delia Treaster, Ergonomist, Ohio Bureau of Workers Compensation

## **Absent:**

Pete Johnson, Professor, Env. and Occ. Health Sciences, University of Washington

Rich Gardner, Lead Ergonomist, Boeing

Jim Lin, Ergonomist, SHARP, Washington State Labor & Industries

Stephen Bao, Senior Epidemiologist, SHARP, Washington State Labor & Industries

June Spector, Associate Professor, Env. and Occ. Health Sciences, University of Washington

Keith Osborne, Ergonomist, Seattle City Light

## Agenda

- Review Position Statement
- Review Exoskeleton List
- Plan next steps

## Discussion

### Position Statement:

- Important to explain the possibility for unintended consequences of exoskeleton use, such as deskilling or loss of coordination. Include the concept of 'do no harm.' The goal is to avoid aggravating the original injury, and not cause secondary injuries. Perhaps something at the very beginning of the document.
- Exoskeletons may assist in the rehab process, help an injured worker function in a safe capacity during RTW, and return to a quality of life at work.
- Possibility of inadvertent overexertion when using an exoskeleton
- When discussing potential benefits of exoskeletons, need to explain that not all benefits are found for all devices, and that some may have the opposite effect, e.g., increased spinal loading.
- Benefits more likely when the exoskeleton is matched to the worker and the task demands.
- Change "extend working time" to "increase endurance."
- Include "reduce energy expenditure" as a potential benefit.
- State that 'all' of the research to date has been with healthy subjects, since those with a prior injury were intentionally excluded from studies.
- Take out phrase "exhaust all other traditional return to work possibilities." Perhaps exoskeletons can supplement traditional return to work methods.
- Right now, we're working with best available evidence. It's difficult to make specific recommendations without further research.
- What are the contraindications for exoskeletons? What is the 'sweet spot' for their use, and what is the 'danger zone'?
- Could exoskeletons cause changes to motor control?
- Can exoskeletons aid in rehabilitation, or will they just protect against re-injury, like a splint? Can they be an aid to recovery, by reducing fatigue and stress, allowing the body to devote more resources to healing?

### List of Exoskeletons

- This is a good start, will need to be updated frequently as new technology becomes available. Should have a date on it to know what is the current version.
- Should include a note that inclusion on this list is not an endorsement.
- Are their exoskeletons from Asia that should be included on this list?
- Is the German Bionic CRAY X going to be available in the US?
- Should the list become more like a catalog, including more detail on the specifications, price, benefits found from studies, etc.?
- Is some of the information available from manufacturers, such as recommended range of motion for a shoulder exoskeleton?
- At present, can't create a catalog that a physician could use to prescribe an exoskeleton. There haven't been any RCTs to support this for industrial exoskeletons.
- Need to create standard assessment methods for exoskeletons to be able to have an apples-to-apples comparison of different devices.

Next steps:

<b>Action item</b>	<b>Who?</b>
Revise Position Statement based on comments and send to committee for review prior to next meeting	Rick
Revise Exoskeleton List and send to committee for review	Matt
Review the Process document and send comments to Matt	All
Create poll to set next meeting date, likely in June	Rick
Look into having next meeting online, e.g., Skype	Rick
Look into online collaboration platform, e.g., Sharepoint or Google Docs	Rick