

# Pilot: Systematic Evaluation of Exoskeletons in Reducing Musculoskeletal Disorders in Manual Timber Felling

YEAR 1 of 2 (2019-2021)

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This small pilot project is assessing logging stakeholders' interests in the use of exoskeletons to reduce musculoskeletal injuries. Identifying potential barriers and risks for manual timber felling through personal interviews and questionnaires with workers, safety managers, and educators.



## YEAR 1 ACCOMPLISHMENTS

**Specific Aim. To evaluate stakeholders' awareness and acceptance of exoskeletons, and identify potential barriers/risks to implementation of exoskeletons in forestry** In the past year, a semi-structured interview form was developed to evaluate exoskeletons for use among agricultural and construction workers. The questionnaire integrated feedback from our forestry industry partners. Due to COVID-19, we were unable to conduct the in-person semi-structured interview and exoskeleton demonstration. However, the online survey was administered as an alternative tool. We conducted 19 surveys of professional logging workers including timber fellers, safety managers, logging company owners, forestry educators, and logging workers who are familiar with timber felling processes.

Our preliminary data analysis demonstrates that the NW forestry industry is generally very interested in exoskeleton technologies and is willing to adopt exoskeletons should it be proven to be effective and safe in various logging environments.

## RESOURCES

For listing of all resources, please see [OSU Forestry and Ergonomics website](#).

## WHAT IS NEXT?

The collected survey results will be summarized and shared back to our study partners, and with NW forestry stakeholders through PNASH's logging safety network, and the regional logging association safety meetings. Additional feedback will be sought at these meetings to understand the barriers and opportunities for the adoption of exoskeletons and injury reduction potential for timber fallers.

Based on the findings and instrument (i.e., survey) developed from this pilot study, we plan to conduct a laboratory pilot study to evaluate the biomechanical benefits and risks of exoskeleton use during simulated logging tasks (e.g., tree felling and choker setting, etc.). In addition, our research team will seek to expand this project to other agricultural industries including nursery and vineyard workers.

*“This must work in all weathers, snow, ice, rain, heat, etc. It must be balanced so as not to overstress any part of the body even on steep ground with poor footing in slick conditions. It also needs quick breakaway capability in case the worker needs to move quickly out of the way.”*

- Study participant, Oregon