

## Overview

It is well documented that heat exposure can lead to heat-related illness in outdoor workers. Some studies suggest a link between heat exposure and injury risk.

Agricultural orchard workers often perform physically intense harvest tasks in summer months when the weather is very warm. The purpose of this research was to investigate whether outdoor agricultural workers face an increased risk of traumatic injury on the job in hotter weather.

Using a case-crossover study design, worker exposure to heat and humidity (Humidex) on days when an injury occurred was compared to days without injury, based on work location. This study is based on 12,213 Washington State Workers' Compensation traumatic injury claims from outdoor agricultural workers between 2000 and 2012.

## Heat Exposure and Injury Risk

*A Case-Crossover Study of Heat Exposure and Injury Risk in Outdoor Agricultural Workers*

*PLoS ONE, 2016*

June T. Spector<sup>1,2</sup>, DK Bonauto<sup>3</sup>, L Sheppard<sup>1,4</sup>, T Busch-Isaksen<sup>1</sup>, M Calkins<sup>1</sup>, D Adams<sup>3</sup>, M Lieblich<sup>5</sup>, RA Fenske<sup>1</sup>

## Key Findings

- The risk of traumatic injury in outdoor agricultural workers increased with increasing heat exposure.
- A higher risk of injury associated with heat exposure was found for workers performing June – July cherry harvest duties than for the apple harvest from August – October.
- Cherry harvest injuries were largely due to falls, and more likely to involve multiple body parts and occur in workers with a shorter duration on the job, compared to all injuries.
- The increased injury risk dropped slightly for the highest Humidex category, and injuries occurring after 12:30 p.m. were less common on the hottest days, possibly indicating changes in work practices in extreme heat.

## Impact

Agricultural workers face an increased risk of traumatic injury as their heat exposure increases. Heat exposure prevention efforts directed at workers doing physically intense jobs in warm weather should include training and information about injury prevention, in addition to heat-related illness. The expected increase in extreme heat events due to climate change, coupled with the relationship between traumatic injury and heat exposure, underlines the importance of continued efforts to control worker heat exposure.

## Find the free article here:

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0164498>

Funding provided in part by the National Institute for Occupational Safety and Health (NIOSH), Grant # 5K01OH010672-02.

<sup>1</sup> Department of Environmental and Occupational Health Sciences, University of Washington, Seattle, WA

<sup>2</sup> Department of Medicine, University of Washington, Seattle, WA

<sup>3</sup> SHARP, WA State Department of Labor & Industries, Olympia, WA

<sup>4</sup> Department of Biostatistics, University of Washington, Seattle, WA

<sup>5</sup> Department of Mathematics, University of Washington, Seattle, WA

## Contact the author:

[spectj@u.washington.edu](mailto:spectj@u.washington.edu)

Department of Environmental & Occupational Health Sciences, University of Washington:  
[deohs.washington.edu](http://deohs.washington.edu)

## Research for Safe Work

The SHARP Program at the Washington State Department of Labor & Industries partners with business and labor to develop sensible, effective solutions to identify and eliminate industry-wide hazards. Learn more at [www.lni.wa.gov/Safety/Research/](http://www.lni.wa.gov/Safety/Research/)

