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A field study evaluating the use of a passive exoskeleton as potential intervention for mitigating low back pain risk factors in farmers

Back pain risk factors of bending and manual lifting are typical in agriculture. When it is not possible to modify tasks, wearable supportive exoskeletons may reduce back pain risk. This study evaluated exoskeleton for utility in reducing physical stress on farms.

We investigated the ergonomics and user experience of a passive mechanical exoskeleton on farms. During farm tasks, we used inertial sensors, electromyography, and a heart rate monitor to measure and characterize farmers' postural, muscular and metabolic loads, respectively. After the use of the exoskeleton, we interviewed farmers on their perception and opinions on the use and applicability of these devices. We have been recruiting farmers and collecting field data in Saskatchewan throughout the 2019 growing season.

The results of this study will enable stakeholders to better understand the benefits and challenges of exoskeleton use on farms. This study will inform intervention development to improve the health, quality of life, and productivity of farmers.