



## The Montana State University **movement analysis** study of the effects of physical activity and biomechanics on osteoarthritis

Principal Investigator: Dr. Scott Monfort, PhD

Co-Investigator: Dr. Erik Adams, MD, PhD

MSU researchers and MSU Extension are partnering on finding ways to reduce the risk of osteoarthritis in Montana farmers and ranchers. Our current research project, funded by the Center for American and Rural Health Equity (CAIRHE), will compare physical activity patterns between Montana farmers and ranchers and characterize movement patterns during common farming and ranching tasks.

As you know, farming and ranching are labor-intensive occupations. Previous research suggests that rural agricultural workers are at an increased risk of osteoarthritis. In our focus group meetings with ranchers in Custer and Valley Counties, a vast majority of workers reported experiencing joint pain. Positive findings from this study will guide future research aimed at reducing the burden of osteoarthritis on Montana farmers and ranchers.

### FAQs

#### **Where will the study take place?**

*At your farm or ranch.* Activity monitoring will be recorded remotely as you go about your day at your farm/ranch. For a subset of willing participants, we will come to your farm/ranch and observe the movements that you perform over a day during harvest or calving season.

#### **When will it occur?**

*There will be two periods of data collection – one during planting/calving and one during a lower demand season.*

#### **How long will each visit last?**

*This is a one-year study, but your participation would only involve two 3-day periods.* Activities associated with this study are designed to characterize the movements you perform during a typical day on the job. Therefore, there is minimal additional time commitment to perform the study activities. Remote physical activity monitoring will occur over 3-day periods during two seasons. In-person observations will occur during one day in harvest/calving season for a subset of willing participants.

#### **Is there financial compensation?**

Yes – completing each 3-day physical activity monitoring is compensated by \$50. A total of \$100 can be earned for completing this study.

## **What will happen if you decide to participate?**

### **A. Activity Monitoring – All Participants**

1. For each season we will be collecting data (total of two seasons), you will be mailed a package with a sensor, instructions for how to use the sensor, and a journal to record general activities you performed during the day. The sensors just monitor the intensity of your movements (accelerations), and do not track your location or contain a GPS.
2. To monitor physical activity, you'll be asked to wear a sensor that will be worn like a belt using a waist strap that we will provide. You'll be asked to wear the sensor throughout the entire day except for when showering and sleeping. The study is designed to characterize activities that you normally perform during a day, so participating in the study should minimally interfere with your normal schedule.
3. We will ask you to complete a daily journal of the types of activities you performed. During the first 3-day period, we will also ask you to complete brief surveys to provide general background regarding your health, physical activity, and farming/ranching history.

### **B. In-Person Observation – Subset of willing participants**

If you decide to participate in this study, you will also be asked whether you would be willing to also have researchers do an in-person observation of your activities throughout a single workday during harvest/calving season. Only a subset of individuals who opt into this testing will be selected to participate in this portion of the study. Participants selected for this part of the study will be asked to:

1. Wear additional sensors on your shins and thighs to help us characterize the shock and angles on your legs during your movements throughout the day. We expect the sensor setup to take ~15 minutes.
2. Allow a researcher to observe you as you go about your workday.

## **Are my results confidential? Will I be told my results?**

*Your participation in the study and the results are both confidential.* The study was approved by the Montana State Institutional Review Board, and part of this approval scrutinized the confidential treatment of data. Samples will be run in batches, and we will be able to tell you your results after the completion of the study, if you desire.

## **Who can participate?**

You can participate if:

1. You own, manage and/or work on a farm or ranch year-round with at least 50% of your work-related activities being affiliated with a farm/ranch.
2. You are between 18 and 70 years old.
3. You can participate whether or not you have osteoarthritis.

## **How do I sign up for the movement analysis study?**

*Complete the accompanying sign-up sheet.* This has a checklist to make sure you are eligible to participate. Please mail the sign-up sheet to Montana State University in the envelope provided, and we will contact you by your preferred method. You can indicate your preferred method on the sign-up sheet. You will then receive more details by mail, and we will work with you to arrange the visits to your ranch and provide you with a consent form for participation to sign.

## **Who should I contact if I have questions about this study?**

*You can contact the Principal Investigator (Dr. Scott Monfort) with any questions about the study or your potential interest in the study:*

**Dr. Scott Monfort**

Phone: 406-994-6294

Email: [scott.monfort@montana.edu](mailto:scott.monfort@montana.edu)

**Sign-up Sheet**  
**MSU Movement Analysis Study for Farmers and Ranchers**

Name: \_\_\_\_\_

**I prefer to be contacted by (circle one):**

mail     email     phone

Address: \_\_\_\_\_

\_\_\_\_\_

Phone #: \_\_\_\_\_

Email address: \_\_\_\_\_

**Please complete this checklist and information:**

- I will be between 18 and 70 years old at the end of March 2020
- I own, manage and/or work on a farm or ranch year-round with at least 50% of my work-related activities being affiliated with a farm/ranch

My work-related activities can be mostly characterized as (circle one below):

**manual labor**     **administrative**     **other** (please specify): \_\_\_\_\_

The primary source of revenue for my agricultural operation is (circle one below):

**livestock**     **crops**     **other/both** (please specify): \_\_\_\_\_

Approximately how many hours do you spend working with/tending to animals: \_\_\_\_\_

If applicable, what is your primary crop(s): \_\_\_\_\_

What month(s) do you typically plant this crop(s): \_\_\_\_\_

What month(s) do you typically harvest this crop(s): \_\_\_\_\_

What time of year (month) is typically the least physically demanding for you: \_\_\_\_\_

Other information, not related to whether you can participate, but helpful for our data:

- I am interested in also being considered for the in-person observation part of this study (circle one): **yes**    **no**
- I have medically diagnosed osteoarthritis in the following joints (circle all that apply):
  - knee     hip     feet or ankles     spine
  - shoulder     elbow     hands or wrists
- I have joint pain but have never been diagnosed with arthritis or osteoarthritis (circle one): **yes**    **no**

All aspects of your participation in the study, including your name, address and contact information, your health information, and the results we obtain, are confidential.

Please use the enclosed envelope to mail this sheet (please detach sheet from packet) to:

**Dr. Scott Monfort**  
**Montana State University**  
**P.O. Box 173800**  
**Bozeman, MT 59717-3800**