

## Arthritis Simulation Gloves

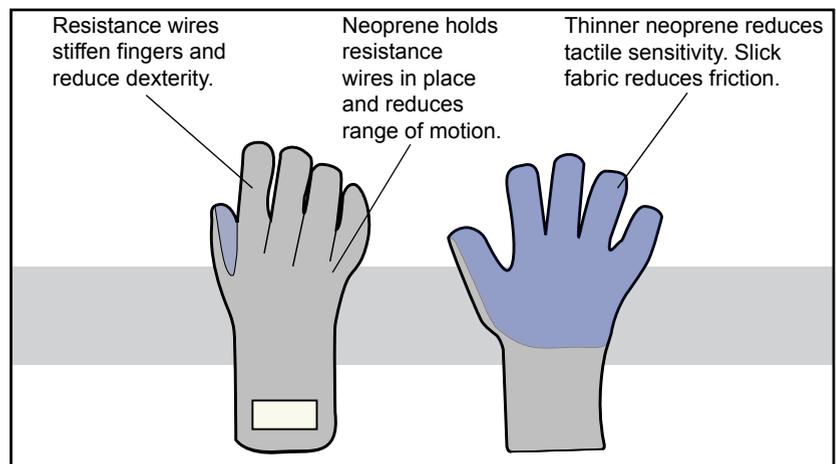
The Arthritis Simulation Gloves, developed by researchers at Georgia Tech Research Institute (GTRI), were designed to simulate the reduction in functional capabilities experienced by individuals with moderate to severe arthritis. Specifically, the gloves simulate common symptoms of Rheumatoid Arthritis (RA), including stiffness and reductions in grip strength, dexterity, range of motion, and tactile sensation.

Resistance wires are placed along the fingers to cause stiffness and to reduce dexterity. Slick fabric covering the palm and fingers reduces friction, thereby reducing the user's effective grip strength. The neoprene construction of the gloves reduces range of motion and tactile sensation. Previous research has indicated that individuals with RA have an average grip strength reduction of 60%. Accordingly, in calibration testing, wearing the Arthritis Simulation Gloves resulted in an average grip strength reduction of 40% to 60%.

### How to Use the Arthritis Simulation Gloves

To use the Arthritis Simulation Gloves, simply wear them and perform common tasks, such as interacting with consumer products and devices.

The gloves are best suited for tasks that require gripping, such as lifting containers, removing caps, and using spray bottles. The gloves are not designed for tasks requiring fine manipulation, such as typing, using a pen, or picking up small objects.



In order to experience how the symptoms of arthritis can affect product use, first obtain an assortment of products, some with features that are good and some with features that are bad for ease of use by people with arthritis.

#### Good features:

- Caps with ridges
- Elastomeric coated caps
- Elliptical-shaped bottles

#### Bad features:

- Metal caps
- Caps with no texture
- Large diameter bottles

Interact with the products without the gloves, then try to accomplish the same tasks while wearing the gloves. What differences do you notice? What new challenges do you encounter when using the gloves?

Understanding the challenges faced by people with arthritis can help you design products that are easier for all individuals to use.

To learn more about the Arthritis Simulation Gloves and GTRI's consumer product usability research, please contact Brad Fain ([brad.fain@gtri.gatech.edu](mailto:brad.fain@gtri.gatech.edu)).