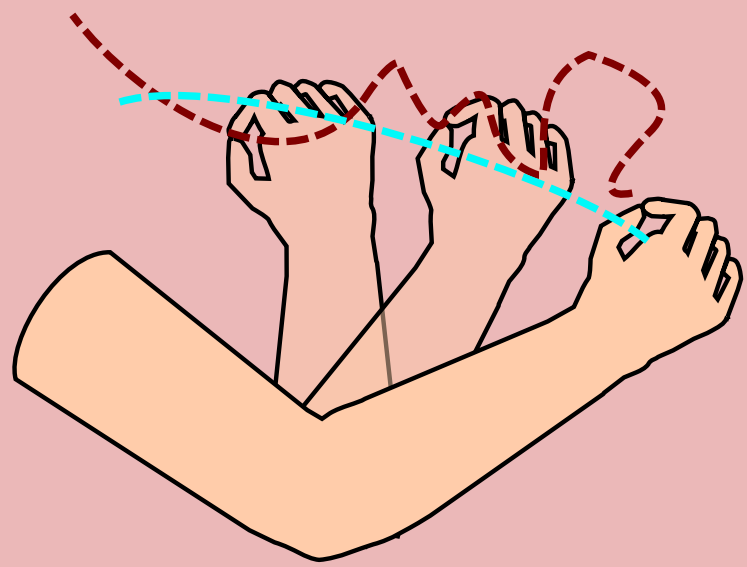


C.A.R.E. for Huntington's

Chorea Attenuation and Relief Exoskeleton

Huntington's Disease and Chorea

- ▶ Hereditary neuro-degenerative disease,
- ▶ Physical and cognitive degradation,
- ▶ Unpredictable involuntary muscle cascades called chorea [1];



--- Normal Motion
 --- Choreatic Motion

Communication Barrier

Chorea:

- ▶ distracts the person during conversations and social interactions;

Negative effects include:

- ▶ not being able to type on computers;
- ▶ inability to hold the phone while on a phone call;
- ▶ difficulty when stabilizing reading materials;
- ▶ inability to write fluently.

A combination of linear and rotary sensors measures the movement (acceleration and jerk) at each joint. These data are sent to the controller.

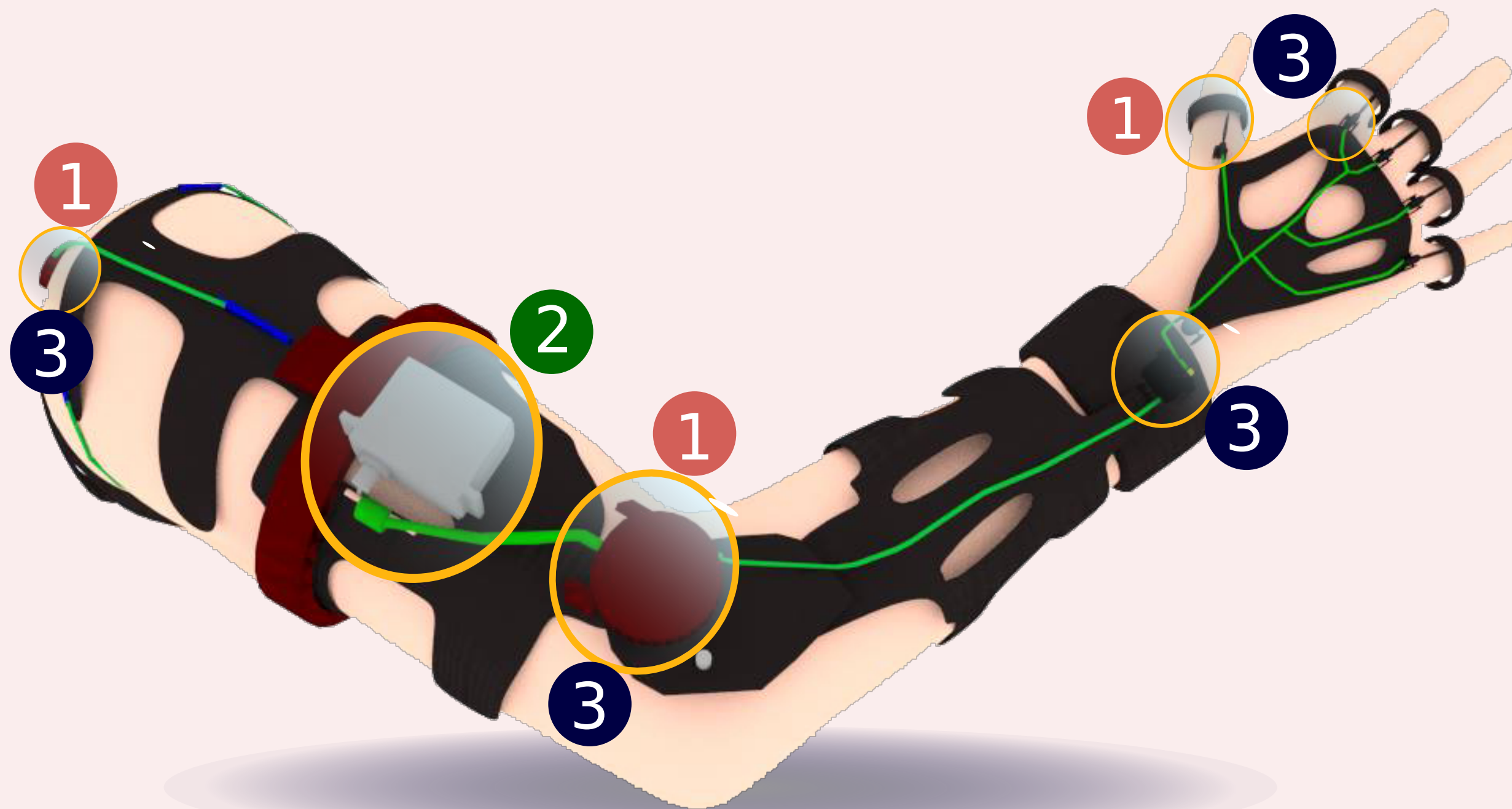
Sensors 1

Based on the data received from the sensors, the controller identifies whether the movement is chorea or not. The controller then signals the actuator.

Controllers 2

The actuator applies friction to the joint, by moving a brake pad on the localized disk brake of the exoskeleton, hence damping the choreatic motion.

Actuators 3



Our device senses choreatic movement through a pre-programmed micro controller and reacts to dampen the movement using various braking mechanisms.

What does CARE bring ?

CARE employs an exoskeleton to provide support for the user's arm while identifying and resisting choreatic motion.

Thus with CARE, the user can focus on his or her work at hand or on a conversation, thereby breaking the communication barrier.

Features

- ▶ Damps 28 modes of movement;
- ▶ Customizable damping settings;
- ▶ Adjustable arm size;
- ▶ Emergency disengage button;
- ▶ Waterproof;
- ▶ Adaptation to user specific symptoms;
- ▶ Low materials cost (\$25).