Title: Slip Inducing Device

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KEYWORDS: Slip, Simulation, Electromyography, Rehabilitation
DOMAIN: Biomedical Device

SUMMARY:

The device can simulate slippage occurring between an object and a surface. It closely mimics horizontal and vertical object slippage. It analyzes slips by examining how different slip characteristics change with varying forces exerted by the user on the surface. It can also simulate slips by altering surface properties, considering that sensory response and muscle movement significantly influence slip behavior.
The slip-inducing device provides closed-loop control for automatic compensation of drift during slip simulation.

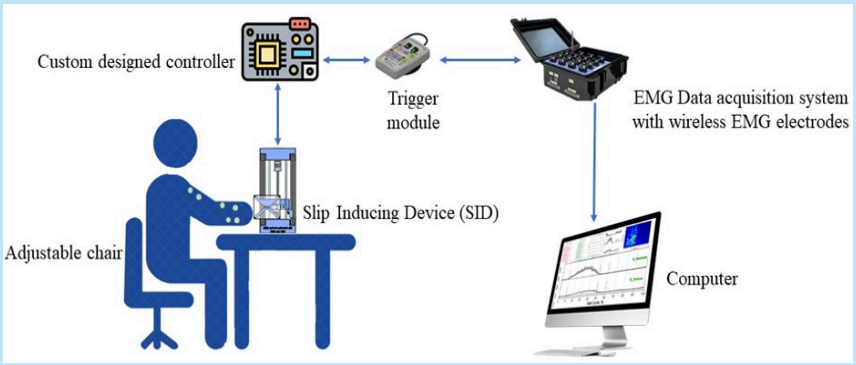

Figure: A display of a person using a Slip-inducing device is displayed, and data is collected to analyze the slip.

ADVANTAGES:

1. Simulates horizontal as well as vertical artificial slippage.
2. The device is portable and easily mountable on the armrest of a chair.
3. Capable of integrating with other devices such as EMG data acquisition systems, high-resolution and high-speed cameras, etc.
4. Modulate the surface friction of the contact plates automatically using ultrasonic or electrostatic surface haptic devices.

APPLICATION:

1. Technological advancements in biomechatronic devices.
2. Rehabilitation technologies for individuals with neurological disorders.
3. Assessment of prosthetic devices and robotic grippers.

SCALE OF DEVELOPMENT: A functional prototype device is available at the lab scale, and experiments were conducted on 10 subjects.

TECHNOLOGY READINESS LEVEL: TRL 4

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