

# **An Instrumented Toilet Seat for Remote Monitoring of Patient Physical Health**

Stanford inventors have designed an instrumented toilet seat that measures the biomechanics of sitting and standing in order to monitor the physical health of patients with or at risk of mobility issues.

The kinematics of sitting and standing is a useful indicator of physical health and is commonly used to track patients who are recovering from surgery, injury, neuromuscular diseases such as stroke, musculoskeletal diseases such as osteoarthritis, or other health risks such as likelihood of a fall. Currently, only the time to go from sitting to standing can be measured in a clinical setting with a stopwatch. High fidelity biomechanical measurement of the process of sitting and standing must be done with the aid of a trained engineer in a laboratory equipped with motion capture cameras, force plates, and other advanced technologies.

This invention brings some of these monitoring capabilities into patients' homes by incorporating sensors into the seat of a toilet. The device can distinguish between different movement patterns by measuring force and time and remotely communicates information indicative of broader physical health and independence to clinicians or assisted living staff.

## **Stage of Development**

Prototype

## **Applications**

- Remote biomechanics monitoring of individuals with or at risk of mobility issues due to aging, stroke, injury, or recent surgery

## **Advantages**

- Generates rich kinematic insights indicative of broader physical health, not just fall detection
- Can be implemented as an add-on to existing toilet or toilet seat products
- Allows for convenient, in-home health monitoring
- Will connect to a mobile app for data collection and sharing with clinicians

## **Innovators**

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