

Clutch Crutch

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- Biomedical Engineering
- Mechanical Engineering

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- Biomedical Engineering
- Crutches
- Durable Medical Equipment
- Gait
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- Medical Devices
- Mobility Impairments

According to the Center for Disease Control, assistive devices, such as canes, wheelchairs, walkers, and crutches, are used by an estimated 6.5 million people on a day-to-day basis in the United States. Crutches are currently the most common assistive device used for rehabilitation of injuries to the lower leg. The problem with the most common crutch, the axillary crutch, is that it rests in the user's armpit, which can cause pain and injury. In addition, users do not have use of their arms or hands, making it difficult to perform routine activities such as opening doors.

Given the problems with axillary crutches, there is continued R&D efforts for new crutch designs with hands-free options. Products, such as the iWalk*, Rollerfoot*, or Freedom Leg* target people with lower leg injuries. However, these designs each have their own shortfall such as increasing the amount of pressure applied to the knee, cannot be used on stairs, or does not allow for a smooth walking gait. Maintaining an active lifestyle with these designs often result in pain and discomfort over time.

Researchers at Purdue University have developed the Clutch Crutch, a hands-free mobility device for individuals with a lower leg injury or a permanent disability. This mobility device attaches to the user's upper thigh and straps around their foot and ankle. The design distributes weight away from the lower leg. The design is modular, which makes it available to people of varying heights, weights, shapes, and lifestyles, allowing for optimal fit. Users assume a normal gait with full use of their hands and the ability to navigate stairs, uneven terrain, etc. In addition, wireless sensors can be integrated into the design to allow for communicating to the user's physician.

To view a video related to this technology, click on this link: <https://www.youtube.com/watch?>

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Advantages:

- Normal gait
- Full use of hands
- Can navigate stairs and uneven terrain
- No force below knee
- Modifiable
- Absorbs shock
- More affordable
- Wireless communication

Potential Applications:

- Rehabilitation
- Medical/Health

*Trademark

People:

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Intellectual Property:

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