Clinical Evidence for Carbonhand

Carbonhand is an assistive device that supports individuals during activities of daily living. To date, 367 participants have taken part in clinical trials evaluating Carbonhand.

Findings demonstrate that Carbonhand enhances grip strength, hand function, activity performance, and overall quality of life, with evidence of sustained therapeutic benefits over time.

Below are short summaries of key publications.

Improved physical function using a power enhancing glove in persons with IBM. The glove significantly improves hand function and perceived independence in individuals with IBM, particularly those with mild to moderate weakness. It is broadly usable for daily tasks, though less effective in cases of severe impairment. Further studies are planned to confirm its potential as an assistive device.	Published: 2024 Participants: 40 Indications: Inclusion Body Myositis (IBM). Aim: Carbonhand is used for the purpose to investigate feasability with IBM.
Therapy effect on hand function after home use of a wearable assistive robotic glove supporting grip strength. After six weeks use of Carbonhand during daily activities at home, participants with chronic hand function limitations showed significant and lasting improvements in grip strength and overall hand function. The glove benefited a wide range of diagnoses and was shown to be safe and effective, even with unsupervised daily use. This large study demonstrated true therapeutic effects from a wearable robotic glove integrated into daily life.	Published: 2024 Participants: 63 Indications: Acquired brain injury, osteoarthritis, rheumatoid arthritis, spinal cord injury, orthopedic conditions, and other neurological disorders. Aim: Carbonhand is used for the purpose to evaluate the therapeutic effect.
Usability and Satisfaction of a Next Generation Robotic Glove for Grip Support Among Patients with Hand Function Limitations. The next generation Carbonhand was tested in a usability study where patients with persistent hand limitations due to trauma or arthritis participated. Despite some usability issues, it scored positively on usability and satisfaction. The study highlights the importance of usability testing to improve assistive technology and support the adoption.	Published: 2025 Participants: 5 Indications: Trauma and arthritis. Aim: Carbonhand is used for the purpose to explore usability and satisfaction.
The impact of a robotic glove on activity performance and body function for brachial plexus birth injury patients–A longitudinal case series. Most BPBI patients who used the Carbonhand glove at home for three months reported improvements in activity performance, satisfaction, and strength. The glove enabled new activities, reduced pain in some cases, and was shown to be safe and usable as both an assistive and training tool. Longer daily was associated with greater improvements.	Published: 2024 Participants: 8 Indications: Brachial plexus birth injury. Aim: Carbonhand is used for the purpose to investigate improved activity performance and body function for patients with BPBI.
Home-based rehabilitation using a robotic hand glove device leads to improvement in hand function in people with chronic spinal cord injury: a pilot study. Twelve weeks of home use with the Carbonhand resulted in significant and lasting improvements in hand function, strength, and independence among individuals with chronic spinal cord injury. Gains were maintained after discontinuation, and most participants reported that the glove was useful and easy to use for daily activities.	Published: 2020 Participants: 15 Indications: Chronic spinal cord injury. Aim: Carbonhand is used for the purpose to investigate therapeutic effect of a self-administered home-based hand rehabilitation program for people with cervical SCI.

Factors affecting the usability of an assistive robotic glove after stroke or multiple sclerosis. The glove was particularly helpful for users with moderate hand limitations, particularly for tasks requiring a strong grip, but it was less effective for fine motor tasks. Some drawbacks were identified, highlighting the need for further development is needed to enhance usability across a wide range of users.	Published: 2020 Participants: 20 Indications: Stroke and multiple sclerosis. Aim: Carbonhand is used to explore the usability and effects in individuals daily activities.
Home rehabilitation supported by a wearable robotic device for improving hand function in older adults: A pilot randomized controlled trial. A 4-week study in 91 older adults found that the glove was highly usable and improved handgrip and pinch strength, particularly in the therapeutic group. However, functional task performance improved similarly across all groups. These findings suggest that the glove may help counter age related decline in hand function.	Published: 2019 Participants: 91 Indications: Self-perceived decline of hand function Aim: Assistive robotic glove is used to explore the effect of prolonged use of during daily activities at home.
The effect of a wearable robotic glove on motor function and functional performance of older adults. Older adults with reduced hand function used a robotic glove for 4 weeks. Pinch Strength: Improved significantly. Daily Tasks: Mixed results. Usability: Rated highly. Tolerance: No major issues. Conclusion: The glove is safe, well accepted, and boosts grip strength. Longer or targeted use may be needed to improve daily task performance.	Published: 2018 Participants: 65 Indications: Older adults. Aim: Robotic glove used for the purpose to evaluate the direct, assistive effect of the grip.
Pilot Study on the Effects of Motor-Assisted Gloves (SEM™ Glove) on Functional Disorders of the hand. The Glove significantly improved pinch strength and daily activity performance in patients with upper limb disorders, particularly those with moderate to good arm strength. It was also shown to be safe and comfortable to use.	Published: 2018 Participants: 30 Indications: Upper limb functional disorder. Aim: To evaluate the effectiveness of the grip and pinch strength of patients with functional disorders of the fingers.

For more information, scan the QR code to go to the web page with references to the published articles.