Improved physical function using a power enhancing glove in persons with Inclusion Body Myositis

Objective: To investigate if a power enhancing glove is feasible to use in persons with IBM.

Method: Data were collected during The Myositis Association's (TMA) patient conference in 2023. The study included 40 individuals with IBM self-reported hand weakness.

The participants rated their ability to perform self-selected tasks that were difficult for them to perform with and without Carbonhand. Participants selected three activities experienced as difficult and important from the modified Patient Reported Outcome-Upper Extremity Function Scale for IBM (PRO-UEFS). They performed the selected activities rating their perceived limitation on a 5-point scale (0 = "unable to do", 4= "without any difficulty") first without the Carbonhand glove and then upon using the glove (see table 1).

Results: The three most selected activities were lifting free weights, open previously opened jars, lift a heavy bag from the floor, holding av frying pan and picking a coin from a table. In the open-ended questions, participants documented that the glove would be beneficial for use in everyday tasks, lifting objects, grocery shopping, stabilizing the hand and would increase independence.

All activities were perceived easier to perform with the glove with ratings on perceived limitation reflecting "with little difficulty" (3) to "without difficulty" (4).

Chosen activity	Without the glove	With the glove
Lift a heavy bag from the floor n=15	2 (2-2)	4 (4-4)
Open previously open jars, n=16	1 (1-2)	4 (3-4)
Lifting free weights, n=16	2 (1-2)	4 (3.25-4)
Lifting and holding a frying pan, n=11	1 (1-2)	3 (3-4)
Picking a coin from a table, n=8	2 (1.3-3)	3.5 (2.3-4.0)

Table 1: Percieved limitation

Conclusion: Based on preliminary analysis the glove appears to increase hand function and might improve physical function in persons with IBM who experience impaired hand function. However, persons with severe limitation in combination with reduced function in the arm might not benefit of the glove in daily activites. A prospective intervention study is planned to further investigate the usefulness of the glove.

Malin Regardt, Helene Alexanderson, Stephanie Hunn, Lindsay N Alfano, Roland Mischke, Ingrid de Groot, Anneli Dihkan, Therésia Danielsson, Annika Rydgård, Humza A Chaudhry, Lesley-Ann Saketkoo. A poster was presented at The 5th Global Conference on Myositis (GCOM), Pittsburgh 13-16th of March 2024 by Malin Regardt OT, PhD. at Karolinska Institutet. Results to be published.

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Summary of evidence for Carbonhand as an assistive device

Several studies have been performed with Carbonhand, including more than 360 study participants with reduced grip strength and/or impaired hand function due to various reasons and diagnoses.

For example; people with Stroke, Spinal Cord Injury, Multiple Sclerosis, Sarcopenia, and Myopathy benefited from using Carbonhand within these trials.

The results from these trials show:

- Manipulation of several objects encountered in ADL was experienced as improved during the use of Carbonhand
- A sustained and strong grip was perceived as the most beneficial effect while using Carbonhand
- The participants experienced an improved grip strength during the use of Carbonhand
- The usability of Carbonhand was rated as high
- Carbonhand is safe to use.

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