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Sport Climbing Tied to Improved Posture in Parkinson's Disease

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Sport climbing can help improve posture in patients with Parkinson's Disease (PD), including older patients, new research suggests.

In a randomized controlled study, those who participated in scaling a wall using ropes and fixed anchors were less stooped at 12 weeks than a control group that participated in some form of unsupervised physical activity.

Dr Heidemarie Zach

The results underscore that it is never too late to learn a new sport or type of movement — and that this type of intervention may have big health payoffs, study investigator Heidemarie Zach, MD, associate professor of neurology, Medical University of Vienna, Austria, told *Medscape Medical News.*

"There's no hurdle too high over which you can't climb, or burden you can't conquer," said Zach. "As long as you can walk independently and walk up a stair, you can go climbing."

The findings were presented at the International Congress of Parkinson's Disease and Movement Disorders (MDS) 2022, held in Madrid, Spain and virtually.

Common Feature of PD

The analysis is part of a larger project that included a study published last year showing a reduced Unified Parkinson's Disease Rating Scale Part III (UPDRS-III) score by almost 13 points in patients who participated in sport climbing. The activity was also significantly associated with improved bradykinesia, rigidity, and tremor.

The current analysis focused on stooped posture, which in addition to motor symptoms is a common feature of PD. This postural deformity can result in significant discomfort, pain, and decreased quality of life.

Pharmaceutical treatments are mostly ineffective for postural deformities, researchers note. Physical therapy may help improve symptoms, but only a few randomized studies have examined improved posture in PD using physiotherapy in general and alternative sports in particular.

Sport climbing is "really unique" in PD, said Zach, who has yet to come across other research on this intervention. A climber herself, she recommended it to one of her patients: a 79-year old man with PD who was a walker and hiker, and who ended up loving the sport. She called him her "pilot patient."

"There's no hurdle too high over which you can't climb, or burden you can't conquer," said study investigator Dr Heidemarie Zach.

The single-center study included 48 adult participants up to age 78 years (mean age, about 65) with mild to moderate PD. Most were at Hoehn & Yahr stage 2, with some at stage 3. All had no previous climbing experience. Exclusion criteria included having a condition other than PD.

Researchers randomly assigned participants to a sport climbing course or to a control group.

The sport climbing group had a 90-minute climbing session each week for 12 weeks in an indoor gym. Under the supervision of an instructor, they were harnessed and connected to ropes with mats placed on the ground for safety.

The climbing wall was about 15 meters (50 feet) high. Participants typically started at 2 or 3 meters (6.5 to 9.5 feet) and worked their way up, Zach noted.

Those in the control group were asked to participate for 12 weeks in unsupervised physical activity, as recommended by the World Health Organization and the European Physiotherapy Guidelines for Parkinson's Disease. This included at least 2½ hours minutes of moderate-intensity activity or 75 minutes of vigorous activity each week.

Whole-Body Workout

The primary outcome was improvement in posture, measured using a "simple" but highly reliable tool, said Zach. While the patients stood with their back straight against a wall, researchers measured the distance in centimeters between the C7 sagittal vertical axis (C7SVA) and the wall.

The mean C7SVA at baseline did not significantly differ between the two groups, at 8.2 cm for the climbing group vs 7.7 cm for the control group.

However, results showed only sport climbing was associated with significantly lessened forward flexion of the cervical spine

The climbing group showed a decrease of the C7SVA by 1.7 cm (95% CI, 0.8 - 2.6 cm). "So climbers were more erect and less stooped after 12 weeks," Zach said.

She noted that the mean difference in the control group was 0.5 cm (95% CI, -0.2 to 1.3 cm), which "is almost nothing."

There did not seem to be any predictor, such as age, sex, or body mass index, for what patient subgroups benefit the most from the intervention, Zach noted.

In explaining why climbing helps posture, she said it is akin to "a whole-body workout."

The activity increases upper-body strength by using back and shoulder girdle muscles, as well as joint flexibility, Zach noted. Movements involved in climbing, such as repeated reaching for a distant hold, stretch the muscles of the hip flexors and hip.

As these movements reduce rigidity, the climbing action may also promote an upright posture. And as wall climbing involves planning and executing movements, it trains spatial body awareness, an important component of maintaining and correcting posture, she said.

Zach noted a motivational group dynamic likely also contributed to the success of the intervention. "They were cheering each other at the bottom" of the climbing wall, she said.

The results show that posture can be added to the improvements in PD already documented from climbing, including improved motor symptoms, rigidity, and tremor, she said. The next step on the research agenda is to show whether the intervention has a positive impact on gait, Zach added.

"Quite Adventurous"

Commenting on the research for *Medscape Medical News*, Rebecca Gilbert, MD, PhD, chief scientific officer at the American Parkinson Disease Association, said she welcomes "any new idea" to help patients with PD — and that sport climbing sounds "quite adventurous."

"The general concept that you're asking the body to move in a novel way is a good thing for everyone and especially for people with PD," said Gilbert, who was not involved with the research.

She noted that in PD, an ideal exercise intervention includes a combination of four modalities: stretching, balance, aerobics, and strengthening. Rope climbing involves many of these, in addition to a cognitive element, Gilbert said. It's also important that patients with PD participate in an activity they enjoy, she added.

However, she stressed that safety has to be "weighed," especially for patients with stage 3 PD, who often have balance problems.

"It may be difficult to climb a rope if you have balance problems," Gilbert said. "The intervention needs to be tailored to the existing disability, and perhaps this activity is more a reasonable thing for patients at milder stages."

Zach and Gilbert have reported no relevant financial relationships.

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Image 1: Climb Up! Head Up! team
Image 2: Climb Up! Head Up! team

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