

New treadmill significantly improves rehabilitation

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Learning to walk again after a stroke, broken hip or amputation can now be made a lot more realistic thanks to a new treadmill. The so-called C-Mill has been developed by NWO researcher Melvyn Roerdink (VU University Amsterdam) and is gradually entering rehabilitation practice in the Netherlands and abroad.

Loose paving stones, a banana skin or puddles of water are dangerous situations for people who have to learn to walk again properly following an accident or operation. Up until now no equipment was available in rehabilitation practice that could systematically train patients to walk in such situations. This meant that for a long time rehabilitating patients had a higher risk of falling and experienced considerable anxiety about this. However, thanks to a new [treadmill](#), the C-Mill, patients can now safely practice functional adjustments to their gait.

The fundamental research of movement scientist Melvyn Roerdink into how people move in response to images and sound provided the basis for the treadmill. The walking surface of a woodland path with potholes and tree roots can be projected onto the new treadmill. The technology behind the mill makes it possible for the obstacle to appear exactly at the spot where the patient would place their foot a few steps further. With this exercise the patient is trained to avoid the obstacle and is thus prepared to resume walking on the street with confidence.

'The immediate matching of the gait with the projected context makes training on the C-Mill more realistic and challenging than traditional

treadmill training, which rapidly becomes monotonous and boring,' says Roerdink. 'That is a major benefit of the C-Mill; the more enjoyable training becomes the more motivated patient is to persist with the rehabilitation treatment.' Furthermore the treadmill automatically records each step of the patient. 'This allows the therapist to simply and objectively record the patient's progress. The C-Mill therefore contributes to greater transparency in walking rehabilitation,' says Roerdink.

Patent

Roerdink devised the treadmill in collaboration with partners from rehabilitation centres and industry. The C-Mill is now protected by European and American patents and it is being manufactured and marketed by the company ForceLink from Culemborg. Various nursing homes and [rehabilitation](#) centres in the Netherlands and abroad are already using the product.

Roerdink developed the treadmill with the help of a Veni grant from the Netherlands Organisation for Scientific Research (NWO). The Veni grant of 250,000 euros is intended for scientists who have recently gained their doctorates and counts as an important step in a scientific career. It is one of the most prestigious grants for young, talented researchers. Roerdink works at the VU University Amsterdam.

Provided by Netherlands Organisation for Scientific Research (NWO)

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