



# CONNECT

## Virtual Rehabilitation

### Background

The start-up Rehub, which was founded in 2018, focuses on the digitalization of rehabilitation therapies after strokes. The goal of the young company is to help patients find their way back into an independent everyday life as quickly and playfully as possible using digital VR methods. Rehub has already received many awards for its innovative rehabilitation method, such as the Eugen Münch Prize (2018), the Next Economy Award (2019), and most recently the Break Through Award and the Diplomatic Council Startup Leadership Award in 2020. Rehub is currently expanding its portfolio of occupational therapy games to continuously maintain patients' motivation and thus, training success through variety and different difficulty levels.

### Virtual Rehabilitation

Virtual reality in medicine is no longer a future idea, but has become reality. A new area of application is the medical rehabilitation of patients after strokes or the support of chronic pain therapies. The goal of therapies with virtual reality methods is a rapid restoration of physical health as well as the improvement of cognitive abilities and the permanent relief of chronic pain and psychological anxiety.

In Germany, around 260,000 people are affected by a stroke every year. Patients who are treated immediately after the stroke have a good chance of recovering. The probability of a full recovery decreases with increasing age. The average age of stroke patients is 75 years for women and 68 years for men. About 5% of strokes are fatal, and another 25% of stroke patients experience severe functional limitations in their daily lives. This group of patients benefits from early rehabilitation measures or inpatient rehabilitation in order to regain as much of their physical functions as possible or at least to improve them.

Virtual reality, which most of the population would tend to associate with the gaming sector, is now reaching directly into the rehabilitation of stroke patients with therapeutic methods. One company that is intensively involved in the treatment of paralysis after strokes and brain hemorrhages is Rehub. Rehub offers its patients a digitized form of mirror therapy for this purpose. Strokes can damage different regions of the brain, resulting in increased limited functionality and pain in the extremities.

This is where mirror therapy comes in, because the brain damage usually also impairs the perception of the affected body parts. Therefore, the brain cannot activate these specifically. Patients who have suffered hemiparesis respond positively to the use of mirror therapy, but the analog therapy version has limited applicability. A mirror is placed in the center of the patient's body so that the brain is fooled by an illusion and appears to move instead of the side of the body that is impaired.



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Through this illusion, the brain is trained to stimulate activity patterns in the paralyzed extremities. Problems of the analog form are the limited training range and the difficulty that patients cannot train alone at home and training successes often take a long time, which can lead to demotivation.

In Rehago's VR therapy, the patient wears VR goggles during the treatment, on which various occupational therapy programs can be played, thus enabling mental immersion in an illusion or the virtual world. During the therapy session, the patient sees how his paralyzed body parts move in the virtual world - which at this point merges with the real world. Through the use of the virtual world of experience, the patient playfully learns to reactivate impaired muscle parts as well as the associated injured brain areas without requiring a high level of concentration and imagination. To enable the therapist to follow live what the patient sees through the VR goggles, the therapy is additionally guided with a tablet and the Rehago Companion App. In this way, therapists can also actively intervene in or support the movement process. In addition, training progress is recorded based on statistics over the entire training period, which are used to analyze further treatments and create training plans.

The advantage of Rehago and its virtual applications is that they can be used regardless of location and time, and the exercises and difficulty levels can be personalized. In addition, patients of different ages report increased motivation, which manifests itself in more frequent and longer workouts.

Are you interested in modern, unconventional therapies? The use of virtual reality sparks your interest? Then we should exchange ideas in person! Get in touch with us and we will gladly facilitate a connection to the company. arcoro CONNECT links companies, innovation projects and industry experts - personally and directly!

The demand for modern, effective therapy methods is continuously increasing. Innovations are revolutionizing medical technology and the entire healthcare system. The dynamics and the pressure to innovate in the industry. Were we able to arouse your interest? Please find below a selection of other national and international companies specialized in VR rehabilitation and pain therapy.



COMPANY	LOCATION	WEBSITE	FIELD OF EXPERTISE
ReHub GmbH	Germany	<a href="https://rehago.eu/">https://rehago.eu/</a>	Rehabilitation
CUREosity GmbH	Germany	<a href="https://www.cureosity.de/cureo">https://www.cureosity.de/cureo</a>	Rehabilitation
InMotion VR	The Netherlands	<a href="https://inmotionvr.com/">https://inmotionvr.com/</a>	Rehabilitation
VTplus GmbH	Germany	<a href="https://www.vtplus.eu/">https://www.vtplus.eu/</a>	Rehabilitation
VR Coach GmbH	Austria	<a href="https://www.vr-coach.at/">https://www.vr-coach.at/</a>	Rehabilitation & Psychology
Rewellio GmbH	Austria	<a href="https://www.rewellio.com/">https://www.rewellio.com/</a>	Rehabilitation
HypnoVR	France	<a href="https://hypnovr.io/de/">https://hypnovr.io/de/</a>	Pain Therapy
XR Health IL Ltd	USA (MA)	<a href="https://www.xr.health/">https://www.xr.health/</a>	Pain & Behaviour Therapy
Penumbra Inc	USA (CA)	<a href="https://www.realsystem.com/">https://www.realsystem.com/</a>	Rehabilitation

We are also happy to connect you directly with experts in the field of VR Rehabilitation. Exciting research approaches, inspiring start-ups and actively helping to shape the future of medical technology - years of industry knowledge and a strong vision - discover some international opinions on leaders in the field of VR Rehabilitation here:

INDUSTRY EXPERT	JOB POSITION	FIELD OF EXPERTISE
Prof Giuseppe Riva	Director Human Technology Lab	VR Psychology & Rehabilitation
Prof. Dr. Marc Erich Latoschik	Head of Chair for Human-Computer Interaction	VR Rehabilitation
Tej Tadi	Young Global Leader (MindMaze CEO)	VR Rehabilitation
Prof. Dr. Ing. Peter Eisert	Head of Vision & Imaging Technologies Department	Vision & Imaging Technologies

