

Neuroforma - innovative solution for neurorehabilitation

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Neuroforma is an innovative platform for motor, cognitive and balance control exercises. It consists of a large display, a computerized system for data analysis and an optical system for movement analysis in 3D.

While using Neuroforma, the patient stands or is seated in front of the screen, which shows their real, mirror reflection. Around that reflection, virtual objects appear. The patient's task is to move their body in such a way that the reflection displayed on the screen catches, hits or moves the appearing objects.

Individual rehabilitation in the patient's home is a very important element in the process of regaining fitness and keeping it. It also happens that home rehabilitation is more effective than the one conducted in specialist rehabilitation centres. More and more often, patients decide to go for rehabilitation that taps into the potential of software for rehabilitation at home.

Virtual reality technology enables the patient to receive constant, immediate biofeedback. Neuroforma offers also telerehabilitation module to use at home.

On the market there are many tools available to support the process of rehabilitation at home and allow users to perform a wide variety of exercises. Rehabilitation at home may involve patients performing:

- overall fitness exercises,
- active exercises,
- strengthening exercises,
- stretching exercises, balance exercises,
- posture correction exercises,
- exercises designed to improve proprioception
- and exercises to increase the function of upper and lower limbs.

Aids for home rehabilitation can be divided into many categories. From the patient's point of view, one of the main division criteria is intended use.

Combining motor and cognitive tasks in a so-called dual-task paradigm is what makes the system unique. The patient controls the objects displayed on the screen by moving their own body, which serves to improve their physical abilities. The mirror therapy module is a set of specialised exercises targeted primarily at patients recovering from strokes. Advanced analysis and image transformation enable patients suffering from hemiparesis to see a reflection of their non-

functional limb moving symmetrically and exactly the same way as the unaffected one. Effectiveness of mirror therapy with Neuroforma has been proved scientifically.

Other muscle and joint groups can be trained using small-sized domestic sports Atlas devices. Compact fitness-based devices offer great opportunities for strengthening different muscle groups.

A very useful rehabilitation device that facilitates training at home is a gym ladder attached to the wall. It is an indispensable tool for stretching, balance and overall fitness exercises.

Exercise mats, among many other useful accessories, allow for performing exercises one one's own, without the risk of falling.

Modern rehabilitation aids also include software for home rehabilitation. Software for rehabilitation at home consists in displaying exercises on a computer screen. Many programs use a camera to track patient's movements, thus providing feedback on the correctness of the exercises.

The part of rehabilitation that is often overlooked and underestimated, is the self-improvement of cognitive abilities. Especially the rehabilitation of neurological disorders should focus on designing tasks that require both physical and mental effort. Software for neurorehabilitation at home allows users for combining motor and mental tasks.

An example of a tool to support comprehensive neurological rehabilitation at home is software for neurorehabilitation at home by Neuroforma. Each exercise in Neuroforma involves both motor and mental functions, so that rehabilitation is comprehensive and, consequently, more effective.

The program lets the users develop e.g.:

- range of motion,
- muscle strength and
- endurance, hand-eye
- coordination,
- memory and attention capabilities.

Biography: Maciej Pawlowski has completed his BSc in Physiotherapy and MSc in Cognitive Science from University of Medical Science in Poznań, Poland. He represents Meden-Inmed company as a Training Consultant. Company has almost 30 years of experience in producing and distributing medical devices for rehabilitation in Europe and beyond



