



**Computer-assisted stroke
rehabilitation - affordable
exercise systems for
independence**

Industrial Research Limited (IRL) is developing novel training systems, including computer gaming, that utilise the latest neurological research alongside remote assessment to improve the quality of life and performance of people with disabilities resulting from neurological injury or disease such as strokes.

Around three-quarters of stroke survivors have upper limb weakness and, as a result, rely on family or caregivers for day-to-day support. IRL's systems are affordable, fun to use and effective.

Innovative rehabilitation science

IRL's technology builds on the latest trends in neurological rehabilitation science including:

- ▶ Harnessing the potential of computer gaming and virtual reality environments to motivate people to exercise upper limbs
- ▶ Task-based regimes using assistive devices
- ▶ Bilateral therapy to train both sides of the body and brain
- ▶ Mirror therapy to activate the brain's mirror neurons
- ▶ Constraint-induced or forced-use therapy (intensive training of the stroke-affected arm)
- ▶ Self-assisted movement therapy



Musculoskeletal modelling for assessment.

Our systems are designed for use in rehabilitation wards and clinics, public gymnasiums, homes and on marae, with minimal supervision from clinicians. Users find them motivating because they offer the chance for independent exercise while playing games that are engaging, task oriented, and tailored to their level of ability. Clinicians value the feedback and ability to engage with more clients at one time.

Key expertise

IRL's knowledge base draws on the latest advances in:

- ▶ Musculoskeletal modelling
- ▶ Neurological rehabilitation
- ▶ Human movement science (understanding human force and motion)
- ▶ Tele-healthcare (remote monitoring)
- ▶ Virtual realities (computer gaming)
- ▶ Robotic rehabilitation
- ▶ Human-intention recognition
- ▶ Human/robotic interactions
- ▶ Bilateral upper limb rehabilitation



Robotic arm exerciser.

Market status

IRL is partnering with Im-Able Ltd (www.im-able.com) to commercialise its computer-aided upper limb rehabilitation systems.

IRL expertise

IRL is New Zealand's leading scientific research and technology business. Together with Industrial Technology Research Institute of Taiwan (ITRI), we partner with industry to take world-class science through to globally competitive market viable technologies. We have a growing profile within the health sector and with rehabilitation centre Burwood Academy of Independent Living, we put our devices through clinically-approved medical trials to prove they are fit for purpose and confirm the benefits to the end user.

**For all enquiries please contact the Industry Engagement team on 0508 CALL (0508 225 5475)
If calling from overseas phone +64 4 931 3000 or visit the *Contact Us* page on our website.**

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