

Call for Papers for a Special Theme Issue of IEEE Transactions on Neural Systems & Rehabilitation Engineering dedicated to Virtual Rehabilitation

This special issue is dedicated to Virtual Rehabilitation. Virtual Rehabilitation is a broad term referring to combinations of computers, special interfaces, and simulation exercises used to train patients in an engaging and motivating way. If there is no conventional therapy provided, the rehabilitation is said to be "virtual reality-based." Otherwise, if virtual rehabilitation is in addition to conventional therapy, the intervention is "virtual reality-augmented." The term Virtual Rehabilitation applies to both physical therapy and cognitive interventions (such as for patients suffering from executive function disorders, memory impairments, attention deficits, Post Traumatic Stress Disorder, or phobias,). Virtual rehabilitation offers a number of advantages compared to conventional therapeutic methods:

- It is entertaining, thus motivating the patient and improving adherence to training;
- It provides immediate feedback to the patient for error correction and motor learning.
- It provides objective outcome measures of therapy efficacy (limb velocity, range of movement, error rates, game scores, etc.);
- These data are transparently stored by the computer running the simulation and can be made available on the Internet, e.g. to take advantage of social media;
- Thus virtual rehabilitation can be performed in the patient's home and monitored at a distance (becoming *telerehabilitation*).

Topics for this theme include, but are not limited to:

- Motor rehabilitation
- Brain-computer interfaces
- Rehabilitation robotics
- Haptic interfaces
- Novel applications of game consoles
- Psychological & environmental rehabilitation
- Cognitive rehabilitation
- Tele-rehabilitation
- Vestibular and balance rehabilitation
- Regulatory and educational efforts to promote virtual rehabilitation
- Sociological, demographic and legal aspects of virtual rehabilitation

Invited and regular papers will undergo full review by three reviewers, using the Manuscript Central portal.

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