

# Affordable technologies for healthcare

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The videogame industry has become the largest business in the media industry. In the last decade, alongside advanced graphics, this industry has produced many innovative control devices. These often share principles with tools available in clinical practice, such as motion analysis systems and accelerometers. Besides Nintendo Wiimote and Microsoft Kinect, which have been used in a number of studies, there are plenty of systems originally conceived for gaming that may help in providing better therapy.

In this presentation I will share my experiences with a range of technologies which I have used for rehabilitation of people with neurologic and muscle-skeletal disorders (multiple sclerosis, Parkinson's disease, stroke and whiplash injury). Devices I will present are highly affordable (up to 200\$) and include robots, data gloves, motion tracking systems, EEG and EMG systems. I will also present a range of free open-access software which has allowed me to develop smartphone apps for the delivery of clinical tests such as the Fugl-Meyer score and the Action Research Arm Test. The presentation will also include interactive demos in which attendees can experience these systems.

Given these technologies have been released as off-the-shelf products their usability may be higher than research prototypes, which could possibly lead to greater impact. Their user-friendliness may allow clinicians and patients to work jointly to develop technology-assisted exercises that patients can perform in their homes. Ultimately, these technologies would allow larger access to care within the health system at very low costs.