neural prosthetics

Recent scientific achievements bring the concept of neural prosthetics for reinstating lost motor function closer to medical application. Current research involves severely paralyzed people under the age of 65, but implications for seniors with stroke or trauma-induced impairments are clearly on the horizon. Demographic changes will lead to a shortage of personnel to care for an increasing population of senior citizens, threatening maintenance of an acceptable level of care and urging ways for people to live longer at their home independent from personal assistance. This is particularly challenging when people suffer from disabilities such as partial paralysis after stroke or trauma, where daily personal assistance is required. For some of these people, neural prosthetics can reinstate some lost motor function and/or lost communication, thereby increasing independence and possibly quality of life.

Although some noninvasive applications produce good results, we focus on brain implants that benefit from better quality brain signals. Fully implantable neural prostheses for home use are not available yet, but clinical trials are being prepared. More sophisticated systems are expected to follow in the years to come, with capabilities of interest for less severe paralysis. Eventually the combination of smart robotics and brain implants is expected to enable people to interact well enough with their environment to live an independent life in spite of motor disabilities [1)]

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Ramsey NF, Aarnoutse EJ, Vansteensel MJ. Brain implants for substituting lost motor function: state of the art and potential impact on the lives of motor-impaired seniors. Gerontology. 2014;60(4):366-72. doi: 10.1159/000357565. Epub 2014 Mar 13. PubMed PMID: 24642607.