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Environmental enrichment: A viable strategy that holds promise for future neurological rehabilitation**Petra Pohl**

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Introduction: Neurological rehabilitation typically involves training to optimize functional motor control, cardiovascular fitness and muscular strength and endurance. Research in this field has advanced significantly and there has been a remarkable development over the last 15 years. Experimental research on rodents and neuroimaging studies has provided insights into several aspects of experience dependent neural plasticity, i.e., possible mechanisms of structural and functional neural reorganisation in the brain following injury. This line of research has enlightened us on the effects of rehabilitation training on central nervous system physiology. Multimodal interventions that are based on principles of environmental enrichment facilitate enhanced sensory, cognitive and motor stimulation having clinical relevance to a range of neurological and psychiatric disorders. Effects have been found in brain disorders such as stroke, Parkinson's disease, amyotrophic lateral sclerosis, Down syndrome and various forms of brain injury. The purpose is to describe the usability of multimodal interventions within neurological rehabilitation.

Methods: Experiences from two community based clinical trials with stroke survivors and people with Parkinson's disease will be shared, including findings from individual interviews.

Conclusion and significance: When designing neuro rehabilitation interventions, the principles of environmental enrichment may be implemented in order to optimize the efficacy of experience-dependent neuroplasticity after brain lesions.

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