

In order to get a deeper understanding of these processes, valid “disease models” are pivotal. A new cutting edge technique, named brain organoids, has been highlighted as a promising candidate for obtaining a better “disease model”.

Brain organoids derived from patients induced pluripotent stem cells (iPSC) follow in vivo timeline development; they also have the ability to recreate the right complexity of the brains, developmental stages. On the cellular and gene expression level, organoids demonstrate a high similarity to the developing brain in vivo and can therefore recapitulate early stages of the neurogenesis. To date organoids are the most relevant cellular in vitro platform for the understanding of the mechanisms behind ADS pathology. Investigations of “mini brains” at different time points in their development will give a wider and more detailed picture of the disease dynamic and thus the development of therapeutic and prevention strategies. It is a tool that can be used for effective high throughput screening of chemical compounds as potential drugs (“in sphero” drug testing). Organoids are a good modeling system for elucidating the role of epigenetic and environmental factors for development of ASD.

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## Symposium: Clinical and neurobiological impact of physical exercise interventions in Schizophrenia

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### The impact of endurance training on brain structure and function in multi-episode Schizophrenia

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Structural and functional brain alterations as well as cognitive deficits are well-documented findings in schizophrenia patients. Cognitive impairments affect the long-term outcome of schizophrenia and are the main contributors to disability. Despite their clinical impact, however, no effective options are available to treat them sufficiently. Aerobic endurance training has been shown to have effects on brain plasticity, gray and white matter volume as well as functional connectivity measures and on cognitive functioning in animal models and healthy humans. However, effects of physical exercise in combination with cognitive remediation are unknown in Schizophrenia. 21 chronic schizophrenia patients and 21 age and gender-matched healthy controls underwent 3 months of aerobic exercise (endurance training, 30 min, 3 times per week). 21 additionally recruited schizophrenia patients played table soccer (known as “foosball” in the USA) over the same period. After 6 weeks of endurance training or table soccer, all participants commenced standardized cognitive training with a computer-assisted training program. We could show that a 3-month endurance-training program combined with CR therapy had positive effects on everyday functioning in multi-episode Schizophrenia patients. Deficits improved from medium to mild as assessed with the GAF. Negative symptoms, short and long-term verbal memory and cognitive flexibility also improved with training. We could demonstrate grey matter volume increase in the left temporal lobe in schizophrenia patients undergoing endurance training. A non-endurance and coordinative training stimulus like

playing table soccer led to a clearly distinct pattern of grey matter alterations in Schizophrenia patients.

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## Symposium: Current evidence for pharmacological and psychological interventions in the treatment of borderline personality disorder—Findings from two-updated Cochrane reviews

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### Short-term psychological interventions for borderline personality disorder—What Works?

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*Introduction* Borderline personality disorder (BPD) is a common and disabling personality disorder associated with difficulties in controlling emotions and impulses, self-injury, feelings of emptiness and abandonment. It is associated with problems in many areas of life, most notably relationships. Psychotherapy is the first-line treatment for people with borderline personality disorder widely used; however, the evidence is not thoroughly investigated. In addition, several specific short-term interventions have been developed during the last decades.

*Objectives* We are currently updating this cochrane collaboration review on psychological interventions for BPD. First findings on the up-to-date evidence relating to short-term psychological interventions will be presented.

*Methods* We conducted a cochrane systematic review and meta-analysis of randomized controlled trials (RCTs). Any randomized comparisons of psychological interventions versus unspecific control interventions, waitlist or specific psychotherapeutic interventions in adult BPD patients were eligible. Primary outcomes were BPD core pathology as depicted by DSM criteria. Secondary outcomes included depression, anxiety, general psychopathology, dropouts and adverse events. Two independent researchers selected trials, assessed quality and extracted data independently. *Results* The current evidence of short-term psychological interventions in general and the different types of interventions for which RCT evidence is currently available will be evaluated.

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