

## Effects of aerobic exercise on cognitive performance and individual psychopathology in depressive and schizophrenia patients

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### Abstract

Cognitive deficits are core symptoms in patients with schizophrenia (SZ) and major depressive disorder (MDD), but specific and approved treatments for cognitive deterioration are scarce. Experimental and clinical evidence suggests that aerobic exercise may help to reduce psychopathological symptoms and support cognitive performance, but this has not yet been systematically investigated. In the current study, we examined the effects of aerobic training on cognitive performance and symptom severity in psychiatric inpatients. To our knowledge, to date, no studies have been published that directly compare the effects of exercise *across* disease groups in order to acquire a better understanding of disease-specific versus general or overlapping effects of physical training intervention. Two disease groups ( $n = 22$  MDD patients,  $n = 29$  SZ patients) that were matched for age, gender, duration of disease and years of education received cognitive training combined either with aerobic physical exercise or with mental relaxation training. The interventions included 12 sessions (3 times a week) over a time period of 4 weeks, lasting each for 75 min (30 min of cognitive training + 45 min of cardio training/mental relaxation training). Cognitive parameters and psychopathology scores of all participants were tested in pre- and post-testing sessions and were then compared with a waiting control group. In the total group of patients, the results indicate an increase in cognitive performance in the domains visual learning, working memory and speed of processing, a decrease in state anxiety and an increase in subjective quality of life between pre- and post-testing. The effects in SZ patients compared with MDD patients were stronger for cognitive performance, whereas there were stronger effects in MDD patients compared with SZ patients in individual psychopathology values. MDD patients showed a significant reduction in depressive symptoms and state anxiety values after the intervention period. SZ patients reduced their negative symptoms severity from pre- to post-testing. In sum, the effects for the combined training were superior to the other forms of treatment. Physical exercise may help to reduce psychopathological symptoms and improve cognitive skills. The intervention routines employed in this study promise to add the current psychopathological and medical treatment options and could aid the transition to a multidisciplinary approach. However, a limitation of the current study is the short time interval for interventions (6 weeks including pre- and post-testing).