

## Effects of Aerobic Exercise On Negative Symptoms in Schizophrenia: a Meta-analysis

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### Introduction

Negative symptoms in patients with schizophrenia are strongly associated to disease burden. Aerobic exercise might be beneficial in treating negative symptoms.

### Objective

The meta-analysis aims to evaluate the effect of aerobic exercise on negative symptoms in schizophrenia.

### Methods

The Cochrane Library, Medline, Embase, PsycINFO and CINAHL were searched from their inception until 16 March 2014. Randomised controlled trials (RCT's) comparing aerobic exercise with other psychosocial interventions in schizophrenia were included if negative symptoms were assessed. The methodological quality of the studies was assessed with the Clinical Trial Assessment Measure (CTAM).

### Results

Nine studies were included (N= 488). Seven out of nine studies had poor methodological quality as measured with the CTAM. The meta-analysis showed a small non-significant treatment effect in favour of exercise interventions (Hedges'  $g = -0.310$ , CI  $-0.787$   $0.168$ ) with a power of 75%. The analysis indicates high heterogeneity ( $Q(8)=37.163$  ( $P<0.000$ )  $I^2= 75\%$ ). A meta-regression analysis showed that more training sessions were associated with a higher decrease in negative symptoms (Hedges'  $g = 0.460$   $-0.006$   $0.925$  ( $P=0.053$ )). This was confirmed in a moderator analysis including studies with  $>20$  sessions (Hedges'  $g = 0.640$ , CI  $-1.281$   $0.000$ ,  $Q(5)=24.214$  ( $P < 0.000$ )  $I^2=79\%$ ).

A large significant effect of exercise was found in five studies comparing exercise to TAU (Hedges'  $g=-1.370$ , CI  $-2.352$   $-0.389$ ,  $Q(4)=29.278$  ( $P < 0.000$ )  $I^2=86\%$ ).

### Conclusions

This meta-analysis demonstrated a significant effect of aerobic exercise on negative symptoms in schizophrenia compared to TAU, but no effect compared to any other (active) control condition. The quality of the included studies was low.