Exercise and Schizophrenia

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Objectives:

To review the most recent evidence about physical interventions in patients with Schizophrenia

Background and Aims:

Patients with Schizophrenia have higher prevalence of metabolic syndrome than general population, which could be due to biological factors, antipsychotic treatment and also to decreased physical activity¹.

Another issue is that antipsychotics have higher success in treating positive than negative symptoms. An example of the latter is cognitive dysfunction, which includes reduced short-term memory, slow processing speed and poor comprehension of social situations². These symptoms, present in 50–90% of the patients with a first episode psychosis and persisting in 20-40% of the cases, increase disease burden and problematic social outcome, namely a smaller social network and lower social functioning³.

Several different interventions such as Behavioral Therapy and Transcranial Magnetic Stimulation have been investigated but they did not lead to clinically relevant improvements^{4,5}.

Recently, there's a growing interest in studying the influence of physical therapy approaches in those referred symptoms.

Materials and Methods:

A selective literature review, conducted on PubMed with the following keywords: "Exercise"; "Schizophrenia"; "aerobic", "anaerobic", "metabolic syndrome". Articles published in English were reviewed.

Results:

Regular physical activity - aerobic, strength exercises and yoga – have been shown to improve metabolic syndrome parameters, cognitive deficits, positive and negative symptoms, quality of life and global functioning¹.

The impact in mental health depends more on the amount of exercise applied than the chosen modality⁶. This is corroborated by a meta-analysis⁷, where authors found that higher weekly duration tends to be associated with greater improvement in cognition as well as supervision from physical activity instructors.

Exercise also seems to be associated with brain volume changes in certain regions, particularly the hippocampus, a region known to be affected in Schizophrenia patients, with imagiological findings showing a smaller hippocampal volume. This has been correlated to deficits in cognition, memory and executive functioning⁸.

In addition, in these patients, serum brain-derived neurotrophic factor (BDNF) levels were shown to be significantly lower than in healthy controls and were associated with cognitive impairment⁹. Peripheral BDNF was shown to increase after aerobic exercise demonstrating a positive relation between BDNF and cognitive function, providing an important clinical link to enhanced neuroplasticity¹⁰.

Schizophrenia	Impairments	Exercise
↑	Negative Symptoms	↓
↓	Working memory	↑
↓	Attention/Vigilance	↑
↓	Global functioning	↑
↓	Quality of Life	↑

Conclusions

Exercise improves physical and mental health in patients with Schizophrenia, particularly cardiometabolic risk - thus reducing premature mortality -, social cognition, working memory and attention.

This is an important area for future research to complement functional recovery of patients.

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