The effects of physical activity on psychological well-being for those with schizophrenia: a systematic review

Holley J, Crone D, Tyson P, Lovell G

CRD summary
The review concluded that physical exercise appeared to benefit some areas of psychological well-being in individuals with schizophrenia. Limitations in the review and in the primary studies, notably a lack of randomised evidence and the differences between studies, the authors’ conclusions should be interpreted with caution.

Authors' objectives
To assess the effects of physical activity on the psychological well-being of people with schizophrenia.

Searching
CINAHL, EBSCO, PsycARTICLES, Psychology and Behavioural Sciences Collection, PsycINFO, SPORTDiscus, Science Direct, ASSIA, PubMed, Web of Knowledge, The Cochrane Library, SocINDEX, ProQuest, EMBASE and ClinicalTrials.gov were searched in January/February 2009 for studies published in peer-reviewed journals between 1978 and 2008. There were no language restrictions. Search terms were reported. Conference proceedings, research registers and reference lists of studies and reviews were searched.

Study selection
Studies of any design that evaluated exercise or physical activity in adults (at least 15 years) with schizophrenia were eligible for inclusion. Studies were required to report at least one psychological outcome (cognition, symptom presence or psychological well-being). Diagnosis could be made using a criterion-based system or by expert judgement of a health professional and could include residual, schizoaffective and schizophreniform disorders.

Where reported, most participants in the included studies were male (64%) and had a mean age of 39 years. Participants were recruited from in-patient, outpatient, rehabilitation and day centre settings. All had schizophrenia, in most cases chronic (where reported). Interventions included various types of group or individual exercise, either aerobic (such as walking, football, gardening) or anaerobic (such as yoga). Where stated, mean duration of the intervention was 43 minutes per session and 2.3 weeks overall (range three to 20 weeks) and mean frequency was 3.3 times per week. Most studies had antipsychotics as a cointervention. In some cases physical activity was part of a wider intervention (such as an educational programme). A wide range of psychological outcomes was reported (mental health, social competence, anxiety/tension) and measured with various methods (questionnaires, interviews, focus groups).

One reviewer conducted the initial search. How many reviewers screened the abstracts and full papers was not reported clearly.

Assessment of study quality
Checklists based on published criteria were used to assess study quality. For quantitative studies these were of participants (selection criteria), interventions (use of cointerventions), outcomes measures, design (use of control group) and reporting of results/statistical analysis. For qualitative studies, criteria were of design, sample selection, data collection, researcher bias, data analysis and interpretation of findings. Studies were allocated percentage scores according to the proportion of criteria they met.

The authors did not state how many reviewers performed the validity assessment.

Data extraction
Descriptive data were extracted from each study, with p values for statistically significant findings. Primary study authors were contacted for information.

The authors did not state how many reviewers performed the data extraction.
Methods of synthesis
Studies were combined in a narrative synthesis organised by outcomes and by study design (quantitative or qualitative). Descriptive data were reported in a table ranked by study quality score.

Results of the review
Fifteen studies were included. The total number of participants was reported as 356 but only 310 were evident from the table of studies (range one to 80). There were 12 quantitative studies: one randomised controlled trial (61 participants), five quasi-experimental (190 participants) and six pre-experimental studies (42 participants). There were three qualitative studies (17 participants). Five of the 12 quantitative studies scored over 50% for quality (range 28% to 88%). The three qualitative studies scored 86%, 81% and 29%.

All 12 quantitative studies reported that exercise improved at least one outcome. Areas in which one or more studies reported statistically significant (p<0.05) improvement were mental health and general psychological well-being, quality of life, social competence, physical self-efficacy, body image and reduced anxiety, tension and irritability. Some studies reported negative effects and/or no significant effects after physical activity for some outcomes.

The three qualitative studies supported the findings of the quantitative studies.

Authors’ conclusions
Physical exercise appeared to benefit some areas of psychological well-being in individuals with schizophrenia.

CRD commentary
The objectives and inclusion criteria of the review were clear. Relevant sources were searched for studies. There were no language restrictions. The restriction to published studies meant that the review was at risk of publication bias; this risk was not discussed. The initial stage of study selection was undertaken by a single reviewer. The processes of validity assessment and data extraction were not explained in detail. There was increased risk of reviewer bias and error unless study processes were conducted by more than one reviewer working independently.

The decision not to attempt statistical pooling of data was appropriate, given the marked heterogeneity between studies and the authors took account of differences in study quality in interpreting their findings. Few specific details were provided about methods of quality assessment and no information beyond a summary score was presented about the quality of individual studies. This made it difficult to determine the reliability of the review findings. The only statistical information provided was p values, with no indication of the clinical significance of findings or of statistical variability (for example, confidence intervals). Only one of the studies was randomised, most were very small and their clinical and methodological characteristics differed greatly.

Limitations in the review and in the primary studies, notably a lack of randomised evidence and the differences between studies, the authors’ conclusions should be interpreted with caution.

Implications of the review for practice and research
Practixe: The authors stated that physical activity may help an individual with schizophrenia to maintain a good quality of life and may also promote social integration. The choice of physical activity should be guided by patient preference. Biological, physiological, psychological and environmental factors (such as accessibility) may influence physical activity recommendations.

Research: The authors stated that future studies should focus specifically on individuals with schizophrenia (rather than associated disorders), enrol participants of similar age and gender, evaluate specific types of physical exercise and compare clinical- and cost-effectiveness. Symptoms and psychological well-being should be measured using a standardised and regularly updated tool. They suggested using mixed quantitative and qualitative methods.

Funding
Not stated.

Bibliographic details
Holley J, Crone D, Tyson P, Lovell G. The effects of physical activity on psychological well-being for those with

**PubMedID**
21332522

**DOI**
10.1348/014466510X496220

**Original Paper URL**

**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Adaptation, Psychological; Exercise /psychology; Health Behavior; Humans; Motor Activity; Randomized Controlled Trials as Topic; Schizophrenia; Schizophrenic Psychology

**AccessionNumber**
12011004466

**Date bibliographic record published**
05/10/2011

**Date abstract record published**
28/05/2012

**Record Status**
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.