Meta-analysis of quality-of-life outcomes from physical activity interventions
Conn VS, Hafsdahl AR, Brown LM

CRD summary
This review found that interventions designed to increase physical activity led to improvements in quality of life, although there was considerable heterogeneity in the magnitude of the effect. These conclusions are likely to be reliable, but should be interpreted with some caution due to the failure to adequately assess study quality.

Authors' objectives
To assess the effects of physical activity interventions on quality of life (QoL) outcomes.

Searching
MEDLINE, Cochrane Central Register of Controlled Trials (CENTRAL), Dissertation Abstracts International, PsycINFO, SPORTDiscus, HealthStar, Clinical Evidence, Scopus, DARE, ABI/Inform, CINAHL and National Institutes of Health databases of funded studies were searched for published and unpublished studies written in English and reported after 1970. Search terms were reported. Reference lists of eligible studies and review articles, conference abstracts and 42 relevant journals were searched. Computerised searches based on authors of eligible studies were conducted. Authors were contacted to identify unpublished studies.

Study selection
Studies that included at least five participants and attempted to increase physical activity behaviour by using supervised center-based exercise interventions or educational/motivational interventions were eligible if they reported data that used measures designed specifically to assess QoL. Studies had to report sufficient data to calculate effect sizes (ES) for QoL measures. Studies that used instruments that measured QoL-related constructs such as mood were excluded.

Studies included patients with heart disease, cancer, diabetes and arthritis. The median proportion of women was 56%. Mean age was 61 years. Studies included supervised exercises and education or motivational content designed to increase physical activity. Some studies targeted other health behaviours as well as physical activity. Interventions were aimed at groups and individuals. Interventions consisted of between 12 and 96 supervised exercise sessions that comprised 17 to 72 minutes of supervised exercise per session. Intervention duration ranged from one week to 52 weeks.

The authors stated neither how the papers were selected for the review nor how many reviewers performed the selection.

Assessment of study quality
Two trained reviewers assessed studies according to the following criteria: attrition, random assignment and length of interval between intervention and outcome measurement. Disagreements were resolved through referral to other team members.

Data extraction
Two trained reviewers extracted data on physical activity behaviour outcomes and QoL measures using pre-defined lists. Where necessary, authors were contacted for further information. Standardised mean difference in effect size was calculated for QoL and physical activity outcomes. For studies that included two groups the difference in means between treatment and control groups after treatment was calculated. For single groups, the difference in means before and after treatment was calculated separately for treatment and, where available, control groups. Disagreements were resolved through referral to other team members.

Methods of synthesis
Pooled effect sizes were calculated using a random-effects model weighted according to sample size. Heterogeneity was assessed using the Q statistic. Outliers were examined graphically and statistically. Meta-regression and analysis of
variance (ANOVA) were conducted to determine whether effect sizes were related to source attributes, methods, intervention characteristics or physical activity behaviour effect sizes. Publication bias was assessed using funnel plots.

Results of the review

Sixty-six studies reporting data on 85 samples (n=approximately 7,291, range eight to 927) were included. The median drop-out rate was 10% across studies.

Studies that included intervention and comparator groups reported significant beneficial effects of the intervention (summary ES of 0.11, 95% CI 0.05 to 0.17; 42 samples). There was modest heterogeneity (p<0.10). Studies that reported pre-post data in treatment groups also reported a beneficial effect of treatment (ES 0.27, 95% CI 0.22 to 0.33). There was significant heterogeneity (p<0.001). There was no difference in pre-post data in studies that provided this information for control groups.

Unpublished studies reported larger mean effect sizes (ES 0.39) compared with published studies (ES 0.09), as did those without external funding (ES 0.31) compared to those with external funding (ES 0.08). Studies that did not use educational/motivational sessions reported larger effect sizes (ES 0.24) than those that did (ES 0.02). Other factors were not found to be significantly related to QoL effect size. Funnel plots suggested no evidence of publication bias.

Authors’ conclusions

Interventions designed to increase physical activity led to improvements in quality of life, although there was considerable heterogeneity in the magnitude of the effect.

CRD commentary

The review addressed a broad question. Inclusion criteria were clearly defined. A very extensive literature search included attempts to locate unpublished studies. The review was restricted to English-language studies, so there was a possibility of language bias. Appropriate steps were taken to minimise bias and error in the extraction of data and quality assessment, but it was unclear whether such steps were also taken in the selection of studies. Some relevant quality criteria were assessed, but a more detailed assessment of study quality would have provided more information on the reliability of the included studies. Given the variety of study designs included in the review, further information on the reliability of the included studies would have been helpful. Limited details were available on the studies included in the review; the authors stated that additional information was available on request. A formal meta-analysis was undertaken and included appropriate investigation of heterogeneity. The authors’ conclusions are supported by the data presented and are likely to be reliable, but should be interpreted with some caution due to the failure to adequately report the quality of the studies.

Implications of the review for practice and research

Practice: The authors did not state any implications for practice.

Research: The authors stated that future studies investigating interventions to increase physical activity should include quality of life outcomes to further explore patterns of relationships among variables.

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