Rehabilitation for Parkinson's disease: a systematic review of available evidence
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CRD summary
The review evaluated the effectiveness of non-pharmacological rehabilitation interventions for people with Parkinson's disease. The authors concluded that these interventions can affect patients' lives for the better in a variety of ways. However, publication bias cannot be ruled out, the clinical importance of the reported improvements is unclear, and more robust research is needed. Overall, the conclusions appear reliable.

Authors' objectives
To evaluate the effectiveness of non-pharmacological rehabilitation interventions for people with Parkinson's disease and to identify future research needs.

Searching
MEDLINE, CINAHL, PsycLIT and the Cochrane Library were searched from 1980 to June 2002. In addition, the reference lists of retrieved papers were screened. The review was restricted to English language publications.

Study selection
Study designs of evaluations included in the review
All study designs of primary research studies or reviews of treatments were eligible for inclusion in the review.

Specific interventions included in the review
Studies investigating non-pharmacological interventions in home or clinical out-patient settings were eligible for inclusion. During the review process, studies involving hospital in-patient or holiday settings were excluded from the review. The included studies evaluated physical therapy, occupational therapy, speech and language therapy, psychological and educational interventions, and multidisciplinary approaches.

Participants included in the review
People with Parkinson's disease living in the community were eligible for inclusion. The proportion of male patients in the included studies varied from 8 to 94%. Some studies also included carers of people with Parkinson's disease.

Outcomes assessed in the review
Inclusion criteria for the outcomes were not specified. The included studies assessed a wide range of outcomes such as mobility, functional status, speech, swallowing and psychological well-being.

How were decisions on the relevance of primary studies made?
Two reviewers screened and discussed the papers for relevance.

Assessment of study quality
The validity assessment covered several aspects: randomisation, control group, blinding, sampling, wastage, follow-up, study size and power, instrument validity, analytical methods and confounding factors. The studies were graded as acceptable, marginal or poor. Poor studies (n=6) were excluded from the review. Two reviewers independently rated the papers. Consensus was reached through discussion.

Data extraction
One reviewer extracted the data into standardised forms, while a second reviewer checked them. Consensus was reached through discussion.
Methods of synthesis
How were the studies combined?
The studies were compared in a narrative synthesis.

How were differences between studies investigated?
The studies were presented in detail in the text and in tabular format, and were grouped by intervention.

Results of the review
Forty-four studies (n=1,974) reported in 51 papers were included in the review. Of these, 18 had a randomised controlled trial (RCT) design, 16 were controlled trials and 10 were observational studies.

All 25 physiotherapy studies reported at least one statistically significant positive outcome. Of the 4 RCTs that provided follow-up data, only two showed lasting improvements after 6 weeks of follow-up (motor score improved after physiotherapy with cueing compared with no cueing; self-assessed disability and attitude to self improved with Alexander Technique compared with massage or no intervention).

Two of the 4 identified occupational therapy studies showed positive effects of the treatment. Of the 2 RCTs with positive effects, one showed maintained improvement after 6 or 12 months for akathisia, functional status and bradykinesia.

All 10 identified speech and language intervention studies showed at least one positive outcome after treatment. Both of the 2 RCTs with follow-up showed maintained improvement 3 months after treatment (prosodic improvement for speech and language therapy, intelligibility improved after therapy plus visual reinforcement; dysarthria improvement after treatment for dysarthria).

All 5 identified psychological, educational and multidisciplinary intervention studies showed improvements for several assessed outcomes. One of the 2 identified RCTs with follow-up assessment showed maintained improvement (improved general health and psychological well-being after tailored patient education on exercise, diet and side-effects compared with no intervention). Another study evaluating a multidisciplinary approach with physical, occupational and speech therapy, specialist nurse, social and group support, and education showed that treated patients and carers had statistically significant worse general and mental health 6 months after the intervention than untreated controls.

Cost information
One included study reported treatment costs for a tailored patient education programme to be $100 per patient, with utilisation savings (fewer doctor visits) of $570 over 6 months (P=0.05).

Authors’ conclusions
The review suggested that interventions can affect patients’ lives for the better in a variety of ways. However, publication bias cannot be ruled out and the clinical importance of the reported improvements is unclear. Methodologically more robust research is needed.

CRD commentary
This was a detailed review with a clear question and clear inclusion criteria for the participants and interventions. The authors searched several electronic databases and screened the references of retrieved papers; other than that, no explicit attempts to identify unpublished papers were reported. In addition, the review was restricted to English language papers and this might have introduced publication and language bias into the review. The reviewers took measures to reduce errors and bias in the study selection and data extraction through independent screening or checking procedures. The quality of the identified studies was assessed and the assessment was used to exclude poor studies from the review.

The comparators in the individual studies varied greatly. Mainly, the effects of the treatments in question were
compared with the effects of a variety of different treatments, e.g. music and movement therapy was compared with stretching; in some cases the control group received no treatment. The individual studies employed a great range of outcomes, and few outcomes were investigated in more than 2 studies within an intervention group. Hence, the authors’ decision to use a narrative synthesis grouped by type of intervention appears appropriate. Relevant details of the included studies were presented in the text and tables. The conclusions appear reliable in that the emphasis should be on the potential for a biased selection of studies and the unsolved question of clinically meaningful improvement.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that further research is needed to evaluate the medium and longer term effectiveness of multidisciplinary programmes, and to distinguish specific from non-specific effects. There is a need to use methodologically rigorous designs with appropriate follow-up periods.

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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.