



EJPRM systematic continuous update on Cochrane reviews in rehabilitation: news from July to December 2011

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Aim. Evidence in medicine depends on original studies but also comes from systematic review. The most the literature grows up, the most systematic reviews are needed to synthesize the evidence, since this can help operators in decision making. The Cochrane reviews are considered the most reliable instruments of synthesis, being based on a strict methodology. Since 2007 the EJPRM offer the service of listing and presenting all these reviews systematically. The aim of the present paper was to methodically review all the new rehabilitation papers published from July 2011 up to December 2011 from the Cochrane Library in order to provide to physicians involved in the field a summary of the best evidence nowadays available.

Methods. The authors thoroughly searched all the new papers of rehabilitative interest from the July 14 to December 4, 2011 in the Cochrane Library. The retrieved papers have been consequently divided in subgroups on the base of the topic and the Cochrane Groups.

Results. The number of included papers was seven, five were new reviews and two were updates. A synthesis of their abstracts is presented.

Conclusion. The field of rehabilitation, being cross-sectional to the whole medicine, can be of interest for many specialty. This was documented by the large number of Cochrane Group publishing reviews of rehabilitative interest. Reviewing periodically the Cochrane reviews is a good way to remain up to date and to find solid bases for everyday clinical practice.

KEY WORDS: Rehabilitation - Physician's practice patterns - Review literature as topic.

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the literature grows up, the most systematic reviews are needed to synthesize the evidence. Rehabilitation literature is quickly growing, but the quality of the research is not always so high. So a synthesis can help operators in decision making. The Cochrane reviews are considered the most reliable instruments of synthesis, reliable because based on a strict methodology. In order to present to our readers the best available evidence in the field of Rehabilitation, we continuously perform systematic reviews of the articles regularly published in the Cochrane Library.¹⁻³ Moreover, according to the aim of the Cochrane Collaboration, in order to diffuse sound data, we invited Cochrane authors to republish their articles in the EJPRM.⁴⁻⁶

In the present article readers can find a list of papers of rehabilitative interest systematically researched and reviewed published from July 14 to December 4, 2011 in the Cochrane Library.

Materials and methods

The authors systematically searched all the new papers of rehabilitative interest from July 14 to December 4, 2011 in the Cochrane Library. The retrieved papers have been then divided in subgroups on the base of the topic and the Cochrane Groups.

Evidence in medicine depends on original studies but also comes from systematic review. The most

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We usually make a list of all the existing systematic reviews of rehabilitation interest and update it regularly after its last publication;² all the new papers have been added to the list of Cochrane reviews of PRM interest, while the withdrawn reviews have been cancelled, but will be omitted from the present publication and presented once per year.

Results

The number of included papers was seven, five were new reviews and two were updates. Three reviews dealt with neurological rehabilitation, namely stroke, the others with cancer rehabilitation and renal disease. The updated ones were about musculoskeletal and pulmonary rehabilitation.

The reviews have been divided according to the topic and the Cochrane Group, and the main findings and authors conclusion are reported directly from the abstract of the original articles.

New reviews

Neurological rehabilitation

COCHRANE STROKE GROUP

*Interventions for disorders of eye movement in patients with stroke.*⁷—Two studies (28 participants but only five were people with stroke) met the inclusion criteria and were included in this review. Both studies investigated pharmacological interventions for disorders of eye movement in patients with stroke. It was not appropriate to pool data and we were not able to draw conclusions from these studies. The authors found no other randomised studies which investigated interventions for disorders of eye movement in patients with stroke. There is insufficient evidence to reach conclusions about the effectiveness of interventions for patients with eye movement disorders after stroke. High quality research in the form of well-designed randomised trials are urgently required.⁷

*Interventions for visual field defects in patients with stroke.*⁸—Thirteen studies (344 randomised participants, 285 of whom were participants with stroke) met the inclusion criteria for this review.

However, only six of these studies compared the effect of an intervention with a placebo, control or no treatment group and were included in comparisons within this review. Four studies compared the effect of scanning (compensatory) training with a control or placebo intervention. Meta-analysis demonstrated that scanning training is more effective than control or placebo at improving reading ability (three studies, 129 participants; mean difference [MD] 3.24, 95% confidence interval [CI] 0.84 to 5.59) and visual scanning (three studies, 129 participants; MD 18.84, 95% CI 12.01 to 25.66) but that scanning may not improve visual field outcomes (two studies, 110 participants; MD -0.70, 95% CI -2.28 to 0.88). There were insufficient data to enable generalised conclusions to be made about the effectiveness of scanning training relative to control or placebo for the primary outcome of activities of daily living (one study, 33 participants). Only one study (19 participants) compared the effect of a restitutive intervention with a control or placebo intervention and only one study (39 participants) compared the effect of a substitutive intervention with a control or placebo intervention.

There is limited evidence which supports the use of compensatory scanning training for patients with visual field defects (and possibly co-existing visual neglect) to improve scanning and reading outcomes. There is insufficient evidence to reach a conclusion about the impact of compensatory scanning training on functional activities of daily living. There is insufficient evidence to reach generalised conclusions about the benefits of visual restitution training (VRT) (restitutive intervention) or prisms (substitutive intervention) for patients with visual field defects after stroke.⁸

*Virtual reality for stroke rehabilitation.*⁹—We included 19 trials which involved 565 participants. Study sample sizes were generally small and interventions and outcome measures varied, limiting the ability to which studies could be compared. Intervention approaches in the included studies were predominantly designed to improve motor function rather than cognitive function or activity performance. The majority of participants were relatively young and more than one year post stroke. Primary outcomes: results were statistically significant for arm function (standardised mean difference (SMD) 0.53, 95% confidence intervals (CI) 0.25 to 0.81 based on

seven studies with 205 participants). There were no statistically significant effects for grip strength or gait speed. We were unable to determine the effect on global motor function due to insufficient numbers of comparable studies. Secondary outcomes: results were statistically significant for activities of daily living (ADL) outcome (SMD 0.81, 95% CI 0.39 to 1.22 based on three studies with 101 participants); however, we were unable to pool results for cognitive function, participation restriction and quality of life or imaging studies. There were few adverse events reported across studies and those reported were relatively mild. Studies that reported on eligibility rates showed that only 34% (standard deviation (SD) 26, range 17 to 80) of participants screened were recruited.

We found limited evidence that the use of virtual reality and interactive video gaming may be beneficial in improving arm function and ADL function when compared with the same dose of conventional therapy. There was insufficient evidence to reach conclusions about the effect of virtual reality and interactive video gaming on grip strength or gait speed. It is unclear at present which characteristics of virtual reality are most important and it is unknown whether effects are sustained in the longer term. Furthermore, there are currently very few studies evaluating the use of commercial gaming consoles (such as the Nintendo Wii).⁹

Cancer rehabilitation

COCHRANE GYNECOLOGICAL CANCER GROUP

*Dance/movement therapy for improving psychological and physical outcomes in cancer patients.*¹⁰—The authors included two studies with a total of 68 participants. No evidence was found for an effect of dance/movement therapy on body image in women with breast cancer. The data of one study with moderate risk of bias suggested that dance/movement therapy had a large beneficial effect on participants' quality of life (QoL). The second trial reported a large beneficial effect on fatigue. However, this trial was at high risk of bias. The individual studies did not find support for an effect of dance/movement therapy on mood, distress, and mental health. It is unclear whether this was due to ineffectiveness of the treatment or limited power of the trials. Finally, the results of one study did not find evidence for

an effect of dance/movement therapy on shoulder range of motion (ROM) or arm circumference in women who underwent a lumpectomy or breast surgery. However, this was likely due to large within-group variability for shoulder ROM and a limited number of participants with lymphedema.

The authors did not find support for an effect of dance/movement therapy on body image. The findings of one study suggest that dance/movement therapy may have a beneficial effect on QoL. However, the limited number of studies prevents us from drawing conclusions concerning the effects of dance/movement therapy on psychological and physical outcomes in cancer patients.¹⁰

Exercise and rehabilitation

COCHRANE RENAL GROUP

*Exercise training for adults with chronic kidney disease.*¹¹—Forty-five studies, randomising 1863 participants were included in this review. Thirty two studies presented data that could be meta-analysed. Types of exercise training included cardiovascular training, mixed cardiovascular and resistance training, resistance-only training and yoga. Some studies used supervised exercise interventions and others used unsupervised interventions. Exercise intensity was classed as 'high' or 'low', duration of individual exercise sessions ranged from 20 minutes/session to 110 minutes/session, and study duration was from two to 18 months. Seventeen per cent of studies were classed as having an overall low risk of bias, 33% as moderate, and 49% as having a high risk of bias. The results shows that regular exercise significantly improved: 1) physical fitness (aerobic capacity, 24 studies, 847 participants: SMD -0.56, 95% CI -0.70 to -0.42; walking capacity, 7 studies, 191 participants: SMD -0.36, 95% CI -0.65 to -0.06); 2) cardiovascular dimensions (resting diastolic blood pressure, 11 studies, 419 participants: MD 2.32 mmHg, 95% CI 0.59 to 4.05; resting systolic blood pressure, 9 studies, 347 participants: MD 6.08 mmHg, 95% CI 2.15 to 10.12; heart rate, 11 studies, 229 participants: MD 6 bpm, 95% CI 10 to 2); 3) some nutritional parameters (albumin, 3 studies, 111 participants: MD -2.28 g/L, 95% CI -4.25 to -0.32; pre-albumin, 3 studies, 111 participants: MD -44.02 mg/L, 95% CI -71.52 to -16.53; energy intake, 4 studies, 97 participants: SMD -0.47, 95% CI -0.88 to -0.05); and 4) health-related

quality of life. Results also showed how exercise should be designed in order to optimise the effect. Other outcomes had insufficient evidence.

There is evidence for significant beneficial effects of regular exercise on physical fitness, walking capacity, cardiovascular dimensions (*e.g.*, blood pressure and heart rate), health-related quality of life and some nutritional parameters in adults with chronic kidney disease. Other outcomes had insufficient evidence due to the lack of data from RCTs. The design of the exercise intervention causes difference in effect size and should be considered when prescribing exercise with the aim of affecting a certain outcome. Future RCTs should focus more on the effects of resistance training interventions or mixed cardiovascular- and resistance training as these exercise types have not been studied as much as cardiovascular exercise.¹¹

Updated reviews

Pulmonary rehabilitation

COCHRANE AIRWAYS GROUP

*Pulmonary rehabilitation following exacerbations of chronic obstructive pulmonary disease.*¹²—The authors identified nine trials involving 432 patients. Pulmonary rehabilitation significantly reduced hospital admissions (pooled odds ratio 0.22 [95% CI 0.08 to 0.58], number needed to treat [NNT] 4 [95% CI 3 to 8], over 25 weeks) and mortality (OR 0.28; 95% CI 0.10 to 0.84), NNT 6 [95% CI 5 to 30] over 107 weeks). Effects of pulmonary rehabilitation on health-related quality of life were well above the minimal important difference when measured by the Chronic Respiratory Questionnaire (MD for dyspnea, fatigue, emotional function and mastery domains between 0.81 (fatigue; 95% CI 0.16 to 1.45) and 0.97 (dyspnea; 95% CI 0.35 to 1.58)) and the St. Georges Respiratory Questionnaire total score (MD -9.88; 95% CI -14.40 to -5.37); impacts domain (MD -13.94; 95% CI -20.37 to -7.51) and for activity limitation domain (MD -9.94; 95% CI -15.98 to -3.89)). The symptoms domain of the St. Georges Respiratory Questionnaire showed no significant improvement. Pulmonary rehabilitation significantly improved exercise capacity and the improvement was above the minimally important difference (six-minute walk test

(MD 77.70 meters; 95% CI 12.21 to 143.20) and shuttle walk test (MD 64.35; 95% CI 41.28 to 87.43)). No adverse events were reported in three studies.

Evidence from nine small studies of moderate methodological quality, suggests that pulmonary rehabilitation is a highly effective and safe intervention to reduce hospital admissions and mortality and to improve health-related quality of life in chronic obstructive pulmonary disease (COPD) patients who have recently suffered an exacerbation of COPD.¹²

Pulmonary rehabilitation

COCHRANE BONE, JOINT AND MUSCLE TRAUMA GROUP

*Interventions for treating chronic ankle instability.*¹³—Ten randomised controlled trials were included. Limitations in the design, conduct and reporting of these trials resulted in unclear or high risk of bias assessments relating to allocation concealment, assessor blinding, incomplete and selective outcome reporting. Only limited pooling of the data was possible. Neuromuscular training was the basis of conservative treatment evaluated in four trials. Neuromuscular training compared with no training resulted in better ankle function scores at the end of four weeks training (Ankle Joint Functional Assessment Tool (AJFAT): mean difference (MD) 3.00, 95% CI 0.3 to 5.70; 1 trial, 19 participants; Foot and Ankle Disability Index (FADI) data: MD 8.83, 95% CI 4.46 to 13.20; 2 trials, 56 participants). The fourth trial (19 participants) found no significant difference in the functional outcome after six weeks training programme on a cyclo-ergometer with a bi-directional compared with a traditional uni-directional pedal. Longer-term follow-up data were not available for these four trials. Four studies compared surgical procedures for chronic ankle instability. One trial (40 participants) found more nerve injuries after tenodesis than anatomical reconstruction (risk ratio (RR) 5.50, 95% CI 1.39 to 21.71). One trial (99 participants) comparing dynamic versus static tenodesis excluded 17 patients allocated dynamic tenodesis because their tendons were too thin. The same trial found that dynamic tenodesis resulted in higher numbers of people with unsatisfactory function (RR 8.62, 95% CI 1.97 to 37.77, 82 participants). One trial comparing techniques of lateral ankle ligament reconstruction (60 participants) found that operating time was shorter using the reinsertion technique

than the imbrication method (MD -9.00 minutes, 95% CI -13.48 to -4.52). Two trials (70 participants) compared functional mobilisation with immobilisation after surgery. These found early mobilisation led to earlier return to work (MD -2.00 weeks, 95% CI -3.06 to -0.94; 1 trial) and to sports (MD -3.00 weeks, 95% CI -4.49 to -1.51; 1 trial).

Neuromuscular training alone appears effective in the short term but whether this advantage would persist on longer-term follow-up is not known. While there is insufficient evidence to support any one surgical intervention over another surgical intervention for chronic ankle instability, it is likely that there are limitations to the use of dynamic tenodesis. After surgical reconstruction, early functional rehabilitation appears to be superior to six weeks immobilisation in restoring early function.¹³

Discussion

As usually happens, stroke is one of the topic on which the Cochrane collaboration products most reviews. Two of these focused on problems relative to visual damages, but both failed to find solid data on treatments.^{7, 8} A third one was about virtual reality, which is a topic gaining much interest, but also in this case no solid evidence was found.⁹

Interestingly, two new Cochrane Groups, the Renal Groups and the Gynaecological Cancer Group published paper of Rehabilitation interest, showing once again that rehabilitation is a cross-sectional element in Medicine.^{10, 11}

Conclusions

The field of Rehabilitation, being cross-sectional to the whole Medicine, can be of interest for many

specialty. This was documented by the large number of Cochrane Group publishing reviews of Rehabilitative interest. Reviewing periodically the Cochrane reviews is a good way to remain up to date and to find solid bases for everyday clinical practice.

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