

Which interventions are effective for promoting physical activity in people with neuromuscular disease? A Cochrane Review summary with commentary

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Abstract.

BACKGROUND: Neuromuscular diseases (NMDs) are conditions characterized by progressive muscle weakness resulting in limitations in the activities of daily living. Physical inactivity in this population represents a major health issue increasing the risk of further chronic health problems and complications.

OBJECTIVE: To discuss evidence on the effects of intervention for promoting physical activity in people with NMDs from a rehabilitative perspective.

METHODS: To summarize and comment on the published Cochrane Review “Interventions for promoting physical activity in people with neuromuscular disease” by Jones et al.

RESULTS: This Cochrane Review included 13 trials (795 participants from 12 studies, number of participants unclear in one study) evaluating practical, informational, or motivational interventions, designed to promote physical activity, in comparison to no intervention, or another intervention.

CONCLUSION: A low- to very-low certainty of the evidence was found on the effectiveness of physical activity-promoting interventions in people with NMD. Further studies are required to address this topic.

Keywords: Physical activity, neuromuscular disease, exercise, muscle, lifestyle

The aim of this commentary is to discuss from a rehabilitation perspective the Cochrane Review “Interventions for promoting physical activity in people with neuromuscular disease” by Jones

et al.^a, published by Cochrane Neuromuscular. This Cochrane Corner is produced in agreement with NeuroRehabilitation by Cochrane Rehabilitation with

^aThis summary is based on a Cochrane Review previously published in the Cochrane Database of Systematic Reviews 2021, Issue 7, Art. No.: CD013544, DOI: 10.1002/14651858.CD013544.pub2 (see www.cochranelibrary.com for information). Cochrane Reviews are regularly updated as new evidence emerges and in response to feedback, and Cochrane Database of Systematic Reviews should be consulted for the most recent version of the review.

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views^b of the review summary author in the “implications for practice” section.

1. Background

Neuromuscular diseases (NMDs) are conditions with a progressive loss of muscle strength resulting in poor motor performance and a high risk of falls (Iolascon et al., 2019). Exercise, as well as lifestyle interventions, are strongly encouraged in these patients, to counteract consequences of poor mobility such as muscular contracture and low bone mineral density (Iolascon et al., 2019). Recently, the World Health Organization (WHO) has recommended the practice of physical activity in muscle-wasting conditions like NMDs, highlighting the need for careful organisation of exercise characteristics such as frequency, intensity, timing and type (FITT), and safety in this population (Liguori et al., 2021).

A recent Cochrane Review (Jones et al., 2021) assessed the effects of various interventions for promoting physical activity in people with NMDs, aiming to improve their health and well-being.

Interventions for promoting physical activity in people with neuromuscular disease

(Jones K, Hawke F, Newman J, Miller JAL, Burns J, Jakovljevic DG, Gorman G, Turnbull DM, Ramdharry G, 2021)

2. Objective

The Cochrane Review aimed to assess the effectiveness of different interventions designed to promote physical activity in people with NMD.

3. What was studied and methods

The population addressed in this review included people of any age with genetic or acquired NMD. The intervention studied was any practical, informational, or motivational intervention that was designed to promote physical activity, and compared with no

intervention, or another intervention. The primary outcome studied was subjective and/or objective physical activity measures, through monitoring devices (accelerometer or pedometer). Secondary outcomes assessed were quality of life (QoL) and adverse events.

4. Results

The review included 13 studies, with 795 participants from 12 studies (number of participants from one study was unclear).

The findings of the review show that:

- in adults with diabetic peripheral neuropathy (DPN)
 - a physical activity programme (weight-bearing) may lead to an increase in physical activity (duration of walking) per week measured with a StepWatch ankle accelerometer compared to no intervention at 3 months [mean difference (MD) 34 minutes per week, 95% CI -92.19 to 160.19; 69 participants], at 6 months (MD 68 minutes per week, 95% CI -55.35 to 191.35; 74 participants), and 12 months (MD 49 minutes per week, 95% CI -75.73 to 173.73; 70 participants) (*low certainty evidence*).
 - it was uncertain if a sensor-based, interactive exercise programme compared to non-sensor-based exercise programme is effective in improving walking duration over 48 hours at four weeks using a t-shirt embedded sensor (MD -0.64 hours per 48 hours, 95% CI -2.42 to 1.13; 25 participants) and on Physical Component Score (PCS) for QoL (MD 0.24 points, 95% CI -5.98 to 6.46; 35 participants) (*very low certainty evidence*). Further, there was little or no difference on the Mental Component Score (MCS) for QoL (MD 5.10 points, 95% CI -0.58 to 10.78; 35 participants) (*low-certainty evidence*).
- in adults with spinal and bulbar muscular atrophy
 - it was not possible to draw conclusions about the effectiveness of a functional exercise programme, compared to stretching exercise programme, improves daily physical activity count at 12 weeks using an Actical accelerometer (MD -8701, 95%

^bThe views expressed in the summary with commentary are those of the Cochrane Corner author (different than the original Cochrane Review authors) and do not represent the Cochrane Library or Wiley.

CI -38,293.30 to 20,891.30; 43 participants) (*low-certainty evidence*), and there was little or no difference to both component of QoL (PCS: MD -1.10 points, 95% CI -5.22 to 3.02; MCS: MD -1.10 points, 95% CI -6.79 to 4.59; 49 participants) (*low-certainty evidence*).

5. Conclusions

The authors concluded that the effectiveness of physical activity-promoting interventions in people with NMD is still unclear for improved physical activity and QoL with a low to very low certainty of evidence. There was an evidence gap in children, adolescents, and non-ambulant people of any age and limitations within the included primary studies such as the reporting of physical activity as an outcome measure.

6. Implications for practice in neurorehabilitation

To date, there has been a growing body of knowledge on the efficacy and safety of exercise in NMDs, although physical inactivity is common in this population and specific physical activity programmes are still poorly defined.

Interventions aiming to promote physical activity and an active lifestyle could be helpful in the management of these complex diseases.

However, findings from this Cochrane Review suggest there is no conclusive evidence about the effectiveness and safety of interventions in promoting

physical activity in people with NMD. Further randomized controlled trials with proper study design and less variation on the reported physical activity as an outcome measure are required to better address this need.

Conflict of interest

The author declares no conflicts of interest.

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