[Poster_15]

Attention-neuromuscular Training for Children with Developmental Coordination Disorder: A Randomised Controlled Trial

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Introduction:

- Poor body balance is common in children with developmental coordination disorder (DCD). Atypical timing of postural muscle activation and inattentiveness to movements are two major underlying causes of poor postural control in these children.
- This single-blinded, randomised controlled study aimed to compare the effects of attention-neuromuscular training (AT-NMT), NMT alone, AT alone and control on reactive balance performance and mental attention and leg muscle activity in children with DCD.

Methods:

- 175 children with DCD were randomly assigned to the AT-NMT (n = 43), NMT (n = 44), AT (n = 44) and control groups (n = 44).
- The 3 intervention groups received the indicated treatment (Fig. 1) twice weekly for 12 weeks.
- Outcomes were evaluated at baseline, 3 months (post-intervention) and 6 months (follow-up). A motor control test (MCT; a reactive balance test) with concurrent electroencephalography (EEG) and electromyography (EMG) were used (Fig. 2) to determine the MCT composite latency score (primary outcome), EEG mental attention level and leg muscle EMG activation onset latency during MCT platform translations.

Fig. 1. AT-NMT

Fig. 2. MCT

Results:

- Post-intervention, the MCT composite latencies were shorter in the AT-NMT, NMT and AT groups than in the control group ($p < 0.001$).
- The attention index before MCT backward platform translation improved from baseline to 3 months only in the AT group ($p = 0.005$), while the attention indices throughout backward platform translation and before forward platform translation improved in the AT-NMT group at 3 and 6 months ($p < 0.017$).

Conclusions:

- AT-NMT, AT and NMT yielded equal improvements in the reactive balance performance of children with DCD. However, only AT-NMT and AT improved attention during or before a postural disturbance.
- Therefore, both AT-NMT and AT are ideal treatments for children with DCD in the primary healthcare settings.

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