TITLE: Whole Body Vibration for Pediatrics: Clinical Effectiveness and Cost-Effectiveness

DATE: 15 January 2016

RESEARCH QUESTIONS

1. What is the clinical effectiveness of whole body vibration in pediatric patients with cerebral palsy or hypertonia?

2. What is the cost-effectiveness of whole body vibration in pediatric patients with cerebral palsy or hypertonia?

KEY FINDINGS

Two systematic reviews, four randomized controlled trials, and two non-randomized studies were identified regarding whole body vibration for pediatric patients with cerebral palsy.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library, University of York Centre for Reviews and Dissemination (CRD) databases, ECRI, Canadian and major international health technology agencies, as well as a focused Internet search. No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2011 and January 4, 2016. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.
SELECTION CRITERIA

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

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<th>Table 1: Selection Criteria</th>
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<tr>
<td><strong>Population</strong></td>
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<td><strong>Intervention</strong></td>
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<td><strong>Comparator</strong></td>
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<td><strong>Outcomes</strong></td>
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RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, non-randomized studies, and economic evaluations.

Two systematic reviews, four randomized controlled trials, and two non-randomized studies were identified regarding whole body vibration for pediatric patients with cerebral palsy. No health technology assessments or economic evaluations were identified.

OVERALL SUMMARY OF FINDINGS

Two systematic reviews,\(^1\)\(^2\) were identified evaluating the effects of whole body vibration (WBV) for pediatric patients with cerebral palsy. One systematic review\(^1\) indicated that WBV could be included in rehabilitation programs for children with cerebral palsy, suggesting that it may improve gait speed and standing function. The other systematic review\(^2\) indicated that WBV has the potential to provide symptomatic relief and that it may improve spasticity, muscle strength, and coordination for patients with cerebral palsy. The review also stated that there is a lack of research to determine if WBV alters bone mineral density.\(^2\)

Four randomized controlled trials (RCTs)\(^3\)-\(^6\) were identified evaluating the effects of WBV training for pediatric patients with cerebral palsy. One RCT\(^3\) compared whole body vibration training to traditional physical therapy exercise programs. The results indicated that WBV may be a useful tool for improving muscle strength and balance in children with cerebral palsy.\(^3\) The other identified RCTs\(^4\)-\(^6\) compared a combination of WBV training and traditional physical...
therapy exercise programs to traditional physical therapy exercise programs alone. The results in all three studies suggested that combination treatments that included WBV training have the potential to improve spasticity,\(^4\) motor development,\(^4\) muscle strength,\(^4-5\) mobility,\(^4-5\) and bone mineral density\(^6\) in children with cerebral palsy.

Two non-randomized studies\(^7-8\) were identified evaluating the effects of WBV for pediatric patients with cerebral palsy. One study\(^7\) administered WBV training and a control condition in a counterbalanced order on two separate days. This study suggested that spasticity, ambulatory performance, and active range of motion can be improved through WBV training.\(^7\) The study also suggested the potential use of WBV in clinical rehabilitation for children with cerebral palsy.\(^7\) The other study\(^8\) administered WBV training to half of the participants followed by a washout period, after which they received a sham WBV program. The other half received the intervention in a reversed order. This study suggested that WBV training normalized muscle tone, improved active joint range, and enhanced ambulatory performance in children with cerebral palsy.\(^8\)
REFERENCES SUMMARIZED

Health Technology Assessments
No literature identified.

Systematic Reviews and Meta-analyses


Randomized Controlled Trials


Non-Randomized Studies


Economic Evaluations
No literature identified.

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