The Effects of Dual-Tasking on Fall Risks in Adults with Brain Injury

Kaley Campbell, MOT/S, Anayston Casey, MOT/S, Madison Culpepper, MOT/S, Elizabeth Denton, MOT/S, Katie Morgan, MOT/S

Faculty Advisor: Anita Witt Mitchell, PhD, OTR, FAOTA
Practitioner-Mentor: Jennifer Clone, OTR/L

BACKGROUND AND RATIONALE

Significance
- It is common for various therapeutic disciplines to target either physical or cognitive components, but not both at the same time.

Intervention
- Dual-tasking combines both physical and cognitive components into one therapeutic intervention.

Purpose
- To create a more functional, realistic scenario to promote generalization of skills

SEARCH METHODOLOGY

Databases and Websites Searched:
- CINAHL, MEDLINE, PubMed, Web of Science, Cochrane Library, Science.gov, Scopus, JSTOR, Clinical Key

Inclusion Criteria
- Adults with brain injury including CVA and TBI
- Dual-tasking in relation to fall risk, balance, or gait
- Full text articles
- English only

Exclusion Criteria
- Narrative reviews
- Articles including veteran populations

Main Findings and Limitations

<table>
<thead>
<tr>
<th>Level of Evidence</th>
<th>Study &amp; Quality Rating</th>
<th>Findings</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level I</td>
<td>Pang et al. (2018); 88%</td>
<td>+ Walking + Reducing fall incidence</td>
<td>Inconsistent session times</td>
</tr>
<tr>
<td>Level II</td>
<td>Wang et al. (2015); 88%</td>
<td>+ Center of pressure sway area and Berg Balance Scale scores + Center of pressure distance or the Timed Get Up &amp; Go Test scores</td>
<td>CVA only</td>
</tr>
<tr>
<td>Level III</td>
<td>Perione, Gloria, &amp; Anselmino (2014); 80%</td>
<td>+ Balance Evaluation System scores + Activities-specific Balance Confidence Scale scores</td>
<td>Small sample</td>
</tr>
<tr>
<td>Level IV</td>
<td>Evans, Greenfield, Wilson, &amp; Bateman (2009); 62%</td>
<td>+ Satisfaction with performance of daily activities</td>
<td>Included studies without blinding</td>
</tr>
</tbody>
</table>

Fritz & Basso (2013); 100%
- + Walking speed + Time to descend stairs

SEARCH RESULTS

<table>
<thead>
<tr>
<th>Records identified through database searching (n = 33)</th>
<th>Records after duplicates removed (n = 34)</th>
<th>Records screened (n = 24)</th>
<th>Records excluded by abstract (n = 16)</th>
<th>Records assessed for eligibility (n = 8)</th>
<th>Records included in the CAT synthesis (n = 5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional records identified through other sources (n = 4)</td>
<td>Records excluded by title (n = 10)</td>
<td>Records excluded by abstract (n = 1)</td>
<td>Full-text articles</td>
<td>Full-text articles</td>
<td></td>
</tr>
</tbody>
</table>

CLINICAL BOTTOM LINES

- Strong evidence suggests that dual-tasking decreases fall risks in adults with brain injury.
- Effective interventions ranged from 3 times per week for 60 minutes over 8 weeks to 7 times per week for 15 minutes over 1 week.
- For adults with brain injuries, there is potential for carryover into everyday life after dual-tasking activities.

RECOMMENDATIONS FOR IMPLEMENTATION

- More research is needed to fully determine the effectiveness of dual-tasking for reducing fall risks.
- Close monitoring of the effects of dual-tasking is recommended.

EXAMPLE METHOD FOR MONITORING

- Time Assistance Was Required
- Date of Treatment
- Physical Assistance
- Verbal Cues

REFERENCES