Balance-Related Outcome Measures of Acquired Brain Injury Patients in a Student-Led Onsite Physical Therapy Clinic: A Retrospective Records Review

Lauren M. Wilson  
*University of Puget Sound*

Corey R. Kaleshnik  
*University of Puget Sound*

Parke K. Humphrey  
*University of Puget Sound*

Ann M. Wilson  
*University of Puget Sound*

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INTRODUCTION

Individuals with acquired brain injury (ABI) frequently seek care in outpatient physical therapy clinics to regain functional abilities in balance and coordination. Impairments to balance and mobility occur among people with brain injury, reducing participation and quality of life. Physical therapy is essential to the rehabilitation of individuals with ABI, because therapists are able to intervene in ways to help patients regain balance. With a progressively growing push for evidence-based practice in healthcare, it is crucial that physical therapists use consistent and effective outcome measures to draw conclusions about treatment effects.

Classic assessment tools such as the Berg Balance Scale (BBS) are particularly useful because they allow researchers to compare results across many studies; however, some assessments have limitations. For example, the BBS demonstrates floor and ceiling effects for very low or very high functioning individuals, it does not measure anticipatory or reactive balance, patients cannot use an assistive device, and there is no gait component (one of the functional activities in which falls often occur). Examples of more appropriate outcome measures that have yet to be widely assimilated into clinical practice include the Clinical Gait and Balance Scale, Fall Prevention Scale, Advanced Balance Scale, Mini-Best Test, and Unified Balance Scale. These are the most comprehensive balance measures to date, as they included 8 of the 9 components of balance.

RESULTS

There are currently a profound lack of research regarding the use of balance outcome measures in outpatient settings in rehabilitation of patients with ABI. In an effort to fill this gap in the literature, the purpose of this retrospective records review is to identify outcome measures used to assess balance impairments in patients with ABI in a student-led outpatient physical therapy clinic housed at the University of Puget Sound. We hypothesize that student physical therapists will select optimal and up-to-date balance measures that capture a meaningful improvement in balance over a specified episode of care.

SUBJECTS

Twenty-three initial patient records were selected from a patient population that had received therapy services in the UPS Onsite Physical Therapy Clinic from fall 2013 to spring 2015. The inclusion criterion was at least 18 years of age, diagnosis of an ABI (either traumatic brain injury or cerebrovascular accident) with at least one identifiable balance impairment, a documented initial and discharge score for a balance measure, the ability to ambulate household distances (approximately 50 feet) with or without an assistive device. Records were excluded if the subject had a congenital or progressive brain disorder, or a confounding illness or musculoskeletal disorder.

METHODS

This retrospective review analyzed the balance-related outcome measures selected by student physical therapists in consultation with their clinical instructors. Records were independently assigned and two reviewers evaluated each record. All reviewers were blinded to the identities of other reviewers. The reviewers independently extracted demographic information, evidence of balance impairments, and presence of balance outcome measures at initial evaluation and discharge. Discrepancies were discussed and for those conflicts for which no consensus could be reached, the research mentor acted as the final arbiter.

Table 1. Demographics

<table>
<thead>
<tr>
<th>Outcome Measure</th>
<th>Number of patients</th>
<th>Achievement of MDC</th>
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</thead>
<tbody>
<tr>
<td>DQI</td>
<td>3</td>
<td>0.67</td>
</tr>
<tr>
<td>Mini-Best Test</td>
<td>2</td>
<td>0.58</td>
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Table 2. Diagnosis and Outcome Measures

DISCUSSION

Student physical therapists in the onsite clinic used a wide range of outcome measures to evaluate balance. The most commonly used assessment tool was the Berg Balance Scale, followed by the DGI, then the TUG and Mini-Best Test. Other outcome measures that were only used with no more than one participant included the Tinetti, Visual Analog Scale of Balance, Five Times Sit to Stand, and the Four Square Step Test. Eight patients completed what was defined as a “general balance measure” which evaluated some components of static or dynamic standing or seated balance. Four of these eight patients were exclusively evaluated on general balance measures without an additional balance outcome measure and therefore were not included in the final analysis.

Interestingly, the patients in the study made progress while being seen for care only one or two times per week. This indicates that significant improvements are possible even in a chronic neurological population with a limited number of visits. This is significant because of the restrictions insurers are placing on number of visits allowed for skilled physical therapy.

CONCLUSION

Student physical therapists in this setting are primarily using validated outcome measures to assess balance, and those measures demonstrate that meaningful improvement is possible over a 1-2x-weekly episode of care. Chronic neurological patients were shown to achieve significant outcomes in this frequency of scheduled appointments. Half of the study population had a “general balance measure” in their notes to assess balance. While this might be appropriate for initial screening, the results have not been normed across various populations and thus outcomes are difficult to interpret. While general balance measures might be appropriate to help inform a therapist’s decision-making process on how specific deficits, this retrospective review highlights the importance of also including a named outcome measure for the sake of detecting significant changes across many care studies.

The research mentor acted as the final arbiter.

Table 3. Achievement of Minimal Detectable Change

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Table 4. Diagnosis and Outcome Measures

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Contact Information

Ann Wilson, PE, Med, GCST
awilson@pugetsound.edu

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