

# Physical Therapy Management of Older Adults with Hip Fracture: Clinical Practice Guideline

Combined Sections Meeting 2019



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## Contributors to the Hip Fracture CPG

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## Course Description

The Academy of Orthopaedic Physical Therapy (AOPT) and Academy of Geriatric Physical Therapy (AGPT) collaborated on the development of a Clinical Practice Guideline (CPG) for management of older adults with hip fracture. The methods for development were consistent with national, international, AOPT and AGPT standards. The structure and content of the CPG follows AOPT format using the WHO International Classification of Functioning Health and Disability, providing background on the condition and specific recommendations for examination, including clinical measures of impairment of body function and structures, and self-report and performance measures of activity limitation and participation restriction, and for physical therapy intervention. This course will present the process, findings and recommendations of CPG for management of older adults with hip fracture and relationship to other relevant CPGs, and discuss implementation using cases.

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### Learning Objectives

1. Describe components of examination based on PT practice standards
2. List the recommendations for measures of impairment, activity limitation and participation restriction for older adults recovering from hip fracture
3. List the recommendations for intervention in this clinical population
4. Describe the implementation of evidence-based management strategies based on this CPG

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### Course Outline

| Topic  | Time (min) |
|--|------------|
| Introduction and Methods Overview                            | 5          |
| Development of Recommendations: Interventions                | 10         |
| Recommendations: Examination: Interventions                  | 25         |
| Recommendations: Assessment of Risk for Adverse Outcomes     | 5          |
| Development of Recommendations: Examination-Outcome Measures | 10         |
| Recommendations: Examination-Outcome Measures                | 25         |
| Case Presentation  | 20         |
| Next Steps   | 10         |
| Discussion   | 10         |

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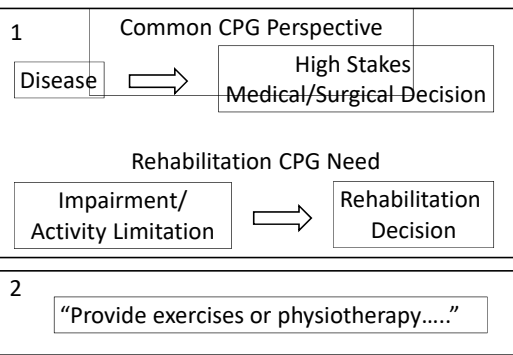
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### Motivation for PT-specific CPGs




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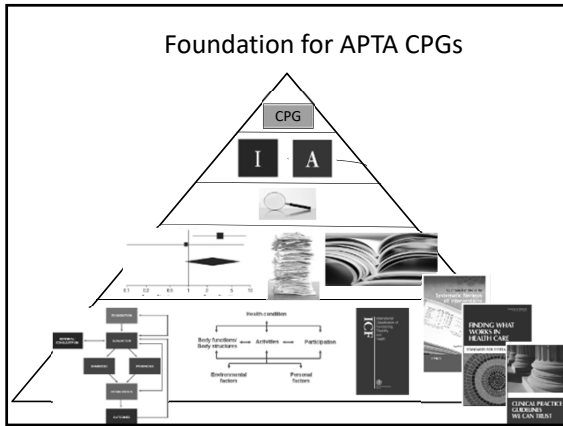
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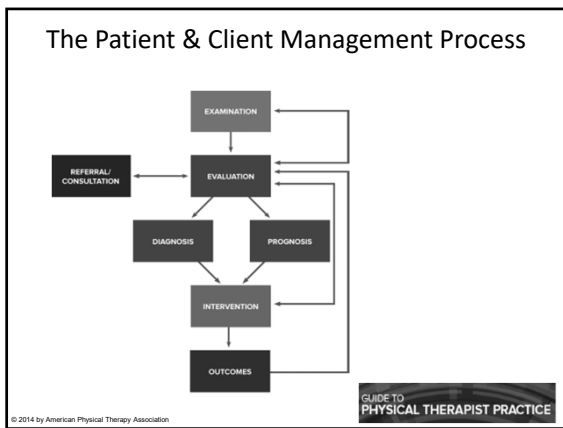
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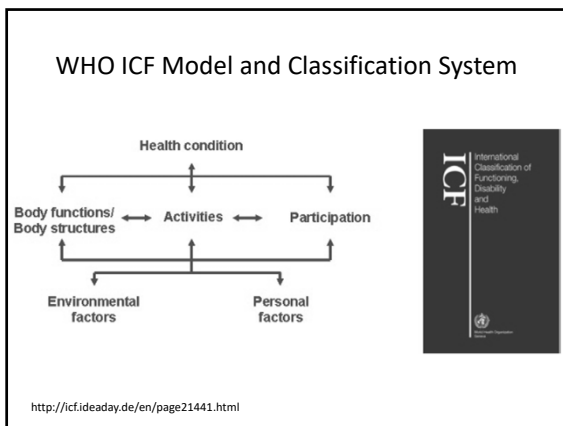
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### National and International Standards

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### IOM Standards for CPG Development

1. Establish Transparency
2. Manage Conflict of Interest
3. Balanced CPG Development Group
4. Systematic Reviews meeting IOM standards
5. Explanation of foundation for strength of recommendations
6. Clear articulation of recommendations
7. External Review including Public Comment
8. Updating

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### Methods based on Standards

- ✓ Establish a team with appropriate expertise
- ✓ Manage conflict of interest
- ✓ Ensure user and stakeholder input

MD involved in manuscript draft

AOPT & AGPT CPG Coordinator Quality Review

Review by AOPT and AGPT Editors

Consumer/ Patient Representatives, Payers & External Stakeholders

Public Comment Period on Component Websites

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Interventions

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**Hip Fracture CPG Methods Literature Search**

- ✓ Worked with librarian to plan search strategy
- ✓ Searched range of sources: (PubMed, CINAHL, Cochrane, PEDro)
- ✓ Screened and selected studies:
  - ✓ Two or more independent reviewers
  - ✓ Using pre-specified criteria

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*Interventions*

**Pre-specified Inclusion and Exclusion Criteria**

- Article Characteristics
- Patient/Subject Characteristics
- Exposure/PT Interventions
- Outcomes

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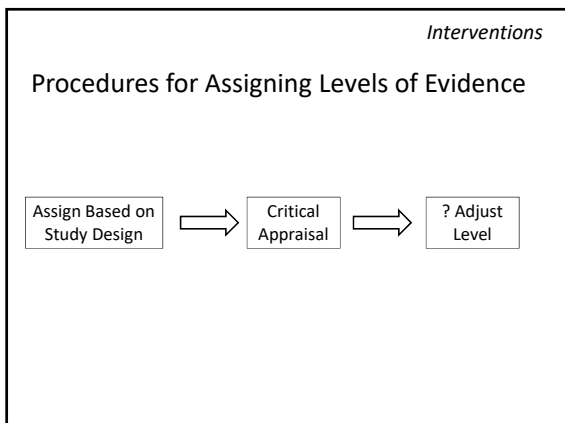
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### Hip Fracture CPG Methods Critical Appraisal

- ✓ 2-member independent team
  - ✓ Discrepancies resolved through discussion and team lead as needed
- ✓ Critical appraisal tools to assess quality:
  - **CAT-EI – RCTs**
    - APTA Critical Appraisal Tool for Experimental Intervention Studies
  - **SIGN – Systematic Reviews**
  - AMSTAR, Case Control and Cohort forms

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*Interventions*

### Evidence Levels

|            |   |
|------------|---|
| <b>I</b>   | Evidence obtained from high quality systematic reviews, diagnostic studies, prospective studies, or randomized controlled trials  |
| <b>II</b>  | Evidence obtained from lesser-quality systematic reviews diagnostic studies, prospective studies, or, randomized controlled trials (eg, weaker diagnostic criteria and reference standards, improper randomization, no blinding, less than 80% follow-up) |
| <b>III</b> | Case control studies or retrospective studies   |
| <b>IV</b>  | Case series   |
| <b>V</b>   | Expert opinion  |

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| Grade of Recommendation <i>Interventions</i> |   |
|--|---|
| GRADE  | STRENGTH OF EVIDENCE  |
| A  | Strong evidence<br>A preponderance of level I and/or level II studies support the recommendation. This must include at least 1 level I study  |
| B  | Moderate evidence<br>A single high-quality randomized controlled trial or a preponderance of level II studies support the recommendation  |
| C  | Weak evidence<br>A single level II study or a preponderance of level III and IV studies, including statements of consensus by content experts, support the recommendation                         |
| D  | Conflicting evidence<br>Higher-quality studies conducted on this topic disagree with respect to their conclusions. The recommendation is based on these conflicting studies                       |
| E  | Theoretical/foundational evidence<br>A preponderance of evidence from animal or cadaver studies, from conceptual models/principles, or from basic sciences/bench research support this conclusion |
| F  | Expert opinion<br>Best practice based on the clinical experience of the guidelines development team   |

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**Intervention Recommendations**

- Early postoperative period...
- Across the entire episode of care ...
- Multidisciplinary...
- Frequency & timing...
- Extended care

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**Examination - Outcome Measures**

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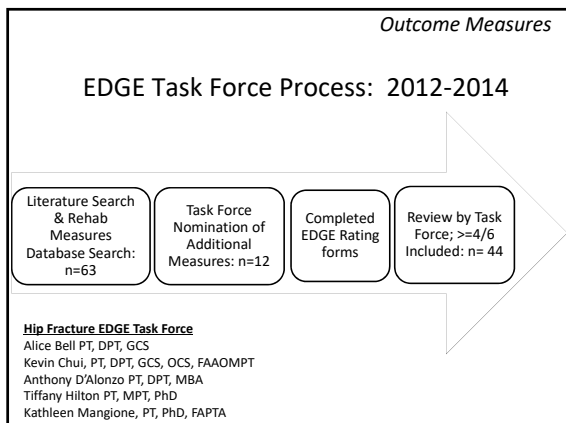
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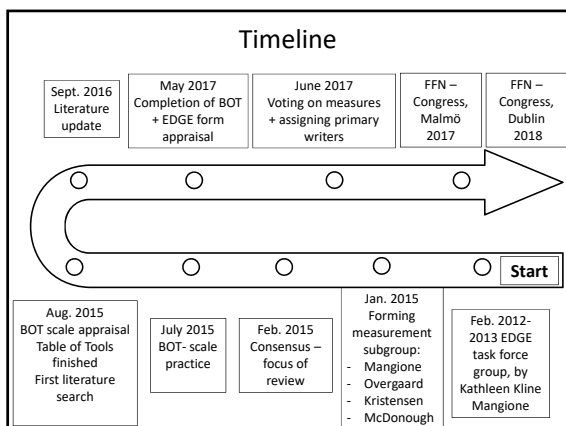
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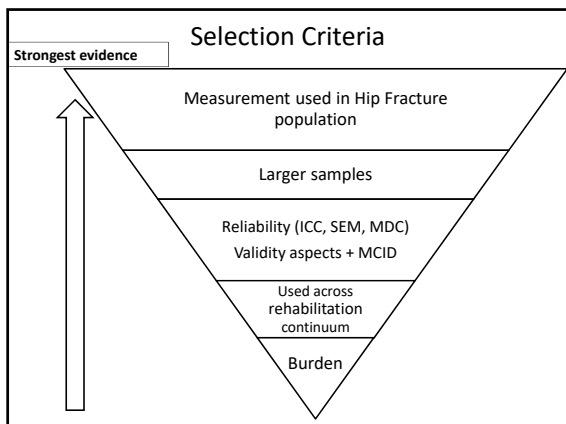
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|   |   |
|---|---|
| Level of Evidence – based on specific studies of patients with hip fracture |   |
| Level of Evidence   |   |
| I   | At least 2 reliability and 2 validity studies |
| II  | At least 1 reliability and 1 validity study   |
| III   | At least 1 reliability or 1 validity study    |

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| Grade of Recommendation   |                     |
|---|---------------------|
| Grade of Recommendation   | Level of Obligation |
| A - strong  | Must or should use  |
| B - moderate  | Should use          |
| C - weak  | May use             |
| <p>The grade might not be the same as the evidence level as it also is based on the feasibility of administering the measure including:</p> <ul style="list-style-type: none"> <li>• Training required and resources available,</li> <li>• Time to complete and score,</li> <li>• Specific steps for scoring,</li> <li>• Equipment needed,</li> <li>• How the test addresses assistive device use</li> <li>• License and cost requirements for use</li> </ul> |                     |

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|   |  |   |                                    |
|---|--|---|------------------------------------|
| <b>Focus:</b><br><b>Physical Domain – included self-report and clinical / performance-based tests</b> | Pain<br>Swelling<br>Range of Motion<br>Strength<br>Flexibility<br>Postural Control | Changing Position<br>Walking<br>Dressing<br>Meal Prep<br>Eating | Working<br>Caregiving<br>Traveling |
|   |  |   |                                    |
|   | <b>ICF Level</b>   |   |                                    |
| <b>Recovery Phase/Setting</b>   | Body Functions & Structures  | Activity  | Participation                      |
| Acute/Inpatient   |  |   |                                    |
| Sub-acute/Inpatient Rehabilitation/Skilled Nursing  |  |   |                                    |
| Community-based: Home Care and Outpatient   |  |   |                                    |

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**Selected outcome measures included**

|   |  |
|---|--|
| <ul style="list-style-type: none"> <li>• <b>Description &amp; Discussion</b></li> <li>• <b>Scoring</b></li> <li>• <b>Time to Administer</b></li> <li>• <b>Equipment Required</b></li> <li>• <b>Training Required &amp; Resources Available</b></li> <li>• <b>Assistive Devices</b></li> </ul> | <ul style="list-style-type: none"> <li>• <b>Reliability &amp; Precision</b></li> <li>• <b>Validity</b></li> <li>• <b>Sensitivity/Responsiveness /Score Interpretation</b></li> <li>• <b>Floor/Ceiling effect</b></li> <li>• <b>How to access – License/fee for use</b></li> <li>• <b>Reference values</b></li> <li>• <b>Research recommendations</b></li> <li>• <b>References</b></li> </ul> |
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**Outcome Measure Recommendations**

| DOMAIN  | Recommendations |        |     |
|---|-----------------|--------|-----|
|   | MUST            | SHOULD | MAY |
| <b>Impairment</b>                                 |                 |        |     |
| Pain  |                 |        |     |
| Strength  |                 |        |     |
| ROM   |                 |        |     |
| <b>Activity Limitations</b>                       |                 |        |     |
| Basic Mobility: Balance, Transfers and Ambulation |                 |        |     |
| Gait Speed/Endurance                              |                 |        |     |
| Physical Function                                 |                 |        |     |
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**CASE STUDY**  
**IMPLEMENTING EVIDENCE**

**HIP, HOP & HAPPENING!**  
**EARLY HIP FRACTURE REHABILITATION**

Michelle Fitzgerald BSc, MSc, MISCP  
Senior Physiotherapist, Tallaght Hospital, Dublin

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### Selected References - Interventions

- Abou-Setta, A. M., Beupre, L. A., Rashiq, S., Dryden, D. M., Hamm, M. P., Sadowski, C. A., . . . Jones, C. A. (2011). Comparative effectiveness of pain management interventions for hip fracture: a systematic review. *Ann Intern Med*, 155(4), 234-245. doi:10.7326/0003-4819-155-4-201108160-00346 and supporting doc: Abou-Setta, A. M., Beupre, L. A., Jones, C. A., Rashiq, S., Hamm, M. P., Sadowski, C. A., . . . Dryden, D. M. (2011). AHRQ Comparative Effectiveness Reviews.
- Auais MA, Eilayyan O, Mayo NE. Extended exercise rehabilitation after hip fracture improves patients' physical function: a systematic review and meta-analysis. *Phys Ther*. 2012;92(11):1437-1451.
- Bachmann S, Finger C, Huss A, Egger M, Stuck AE, Clough-Gorr KM. Inpatient rehabilitation specifically designed for geriatric patients: systematic review and meta-analysis of randomised controlled trials. *BMI*. 2010 Apr 20;340:c1718. doi: 10.1136/bmj.c1718.
- Braid V, Barber M, Mitchell SL, Martin BJ, Granat M, Stott DJ. Randomised controlled trial of electrical stimulation of the quadriceps after proximal femoral fracture. *Aging Clin Exp Res*. 2008 Feb;20(1):62-6.
- Bischoff-Ferrari HA, Dawson-Hughes B, Platz A, Orav EJ, Stähelin HB, Willett WC, Can U, Egli A, Mueller NJ, Looser S, Bretscher B, Minder E, Vergopoulos A, Theiler R. Effect of high-dosage cholecalciferol and extended physiotherapy on complications after hip fracture: a randomized controlled trial. *Arch Intern Med*. 2010 May 10;170(9):813-20. doi: 10.1001/archinternmed.2010.67
- Diong J, et al. Diong J, et al. Structured exercise improves mobility after hip fracture: a meta-analysis with meta-regression *Br J Sports Med* 2016;50:346-355. doi:10.1136/bjsports-2014-094465

### Selected References - Interventions

- Gorodetskiy IG, Gorodnichenko AJ, Tursin PS, Reshetnyak VK, Uskov ON. Non-invasive interactive neurostimulation in the post-operative recovery of patients with a trochanteric fracture of the femur. A randomised, controlled trial. *J Bone Joint Surg Br*. 2007 Nov;89(11):1488-94.
- Halbert J, Crotty M, Whitehead C, Cameron I, Kurrle S, Graham S, Handoll H, Finnegan T, Jones T, Foley A, Shanahan M; Hip Fracture Rehabilitation Trial Collaborative Group. Multi-disciplinary rehabilitation after hip fracture is associated with improved outcome: A systematic review. *J Rehabil Med*. 2007 Sep;39(7):507-12. Review.
- Handoll HH1, Sherrington C, Mak JC. Interventions for improving mobility after hip fracture surgery in adults. *Cochrane Database Syst Rev*. 2011 Mar 16;(3):CD001704. doi: 10.1002/14651858.CD001704.pub4.
- Karumo I. Recovery and rehabilitation of elderly subjects with femoral neck fractures. *Ann Chir Gynaecol*. 1977;66(3):170-176.
- Lamb SE, Oldham JA, Morse RE, Evans JG. Neuromuscular stimulation of the quadriceps muscle after hip fracture: a randomized controlled trial. *Arch Phys Med Rehabil*. 2002 Aug;83(8):1087-92.
- Lauridsen UB, de la Cour BB, Gottschalk L, Svensson BH. Intensive physical therapy after hip fracture. A randomized clinical trial. *Dan Med Bull*. 2002 Feb;49(1):70-2.
- Oldmeadow LB, Edwards ER, Kimmel LA, Kipen E, Robertson VJ, Bailey MJ. No rest for the wounded: early ambulation after hip surgery accelerates recovery. *ANZ J Surg*. 2006 Jul;76(7):607-11.
- Taraldsen K, Sletvold O, Thingstad P, Saltvedt I, Granat MH, Lydersen S, Helbostad JL. Physical behavior and function early after hip fracture surgery in patients receiving comprehensive geriatric care or orthopedic care—a randomized controlled trial. *J Gerontol A Biol Sci Med Sci*. 2014 Mar;69(3):338-45. doi: 10.1093/gerona/git097. Epub 2013 Jul 31.

### Selected References - Measures

- Katoh, M. and Y. Kaneko (2014). "An Investigation into Reliability of Knee Extension Muscle Strength Measurements, and into the Relationship between Muscle Strength and Means of Independent Mobility in the Ward: Examinations of Patients Who Underwent Femoral Neck Fracture Surgery." *J Phys Ther Sci* 26(1): 15-19.
- Sherrington, C. and S. R. Lord (2005). "Reliability of simple portable tests of physical performance in older people after hip fracture." *Clinical Rehabilitation* 19(5): 496-504.
- Bech, R. D., J. Lauritsen, O. Ovesen and S. Overgaard (2015). "The Verbal Rating Scale Is Reliable for Assessment of Postoperative Pain in Hip Fracture Patients." *Pain Research and Treatment* 2015: 676212.
- Leino, K. A., K. S. Kuusniemi, K. K. Lertola and K. T. Olkkola (2011). "Comparison of four pain scales in patients with hip fracture or other lower limb trauma." *Acta Anaesthesiol Scand* 55(4): 495-502.
- Grana, E., S. Verzellotti, F. A. Grassi, G. Ferriero, M. T. Kristensen, C. Cisari and M. Invernizzi (2016). "Cross-cultural validation of the Italian version of the Cumulated Ambulation Score." *Int J Rehabil Res* 39(2): 160-164.
- Kristensen, M. T., L. Andersen, R. Bech-Jensen, M. Moos, B. Hovmand, C. Ekdahl and H. Kehlet (2009). "High intertester reliability of the cumulated ambulation score for the evaluation of basic mobility in patients with hip fracture." *Clinical Rehabilitation* 23(12): 1116-1123.
- Kristensen, M. T., S. Henriksen, S. B. Ste and T. Bandholm (2011). "Relative and absolute intertester reliability of the timed up and go test to quantify functional mobility in patients with hip fracture." *Journal of the American Geriatrics Society* 59(3): 569-567.
- Overgaard, J.A., Larsen, C.M., Holtze, S., Ockholm, K., Kristensen, M.T. (2017). Inter-rater reliability of the 6-Minute Walk Test in Women With Hip Fracture. *J Geriatr Phys Ther*, 40(3), 158-166

### Selected References - Measures

- Alley DE, Hicks GE, Shardell M, et al. Meaningful improvement in gait speed in hip fracture recovery. *J Am Geriatr Soc.* 2011 Sep;59(9):1650-7
- Palombaro KM, Craik RL, Mangione KK, Tomlinson JD. Determining meaningful changes in gait speed after hip fracture. *Phys Ther.* 2006 Jun;86(6):809-16.
- Kristensen, M.T, Bandholm, T., Foss, N.B., Ekdahl, C., Kehlet, H. (2008). High inter-tester reliability of the new mobility score in patients with hip fracture. *Journal of Rehabilitation Medicine* 40 (7), 589-591
- Visschedijk JH<sup>1,2</sup>, Terwee CB<sup>3</sup>, Caljouw MA<sup>1</sup>, Spruit-van Eijk M<sup>1</sup>, van Balen R<sup>1</sup>, Achterberg WP<sup>2</sup>. Reliability and validity of the Falls Efficacy Scale-International after hip fracture in patients aged ≥ 65 years. *Disabil Rehabil.* 2015;37(23):2225-32. doi: 10.3109/09638288.2014.1002573. Epub 2015 Jan 14.
- de Morton, N.A., et al., *Validity of the de Morton Mobility Index (DEMMI) for measuring the mobility of patients with hip fracture during rehabilitation.* *Disability & Rehabilitation*, 2013. 35(4): p. 325-33.

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