

### Why Fall Prevention?

Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- More than 1 in 4 adults 65 years old fall each year (Stevens et al., 2012)
- Centers for Disease Control and Prevention (CDC) estimate that annually 2.8 million older adults are treated in the emergency room as a result of a fall (CDC, 2016)



Image by tbhasty via <https://www.flickr.com/photos/ered/243383528/sizes/o/>

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### Why Fall Prevention?

Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- According to the United States Census Bureau, by 2030, all baby boomers will be older than 65 (U.S. Census Bureau, 2018)
- Reducing hospital readmissions is a priority with Centers for Medicare and Medicaid (CMS, 2016)
- An upper extremity fracture from a fall may be an initial event for older adults, leading to future falls

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### Hand Therapist Practice Patterns

Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

Assessment measure	Utilization (%)				
	Always	Often	Sometimes	Rarely	Never
FRAX	1	2	5	2	90
Balance testing	11	12	19	20	38
LE muscle strength testing	11	8	12	15	54
Upper extremity muscle strength testing	63	24	11	1	1
Physical activity assessment questionnaire	29	16	19	10	26
Participation assessment questionnaire	24	15	15	8	38
Fear of falling question	13	15	19	19	34
Proprioception assessment	9	16	26	18	31
Cognitive assessment	12	10	24	20	34
Gait/mobility aid assessment	18	10	18	16	38
Comorbidity questionnaire	57	9	5	7	22
List of medications	82	9	4	3	2

(Dewan, MacDermid, MacIntyre, & Grewal, 2018)

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Activities-Specific Balance Confidence (ABC) Scale

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- "Do you have concerns about falling?" (Thompson, Evitt, & Whaley, 2010)
- Objective measure of the fear of falling
- Free
- Self-report, self-administered

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ABC-6

Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- ABC-6 is the shorter version of ABC
- Demonstrated validity and reliability (Thompson et al., 2010)
- Score < 67% are known to be at risk for falling
- ABC-6 is quicker for use in a busy clinical setting

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ABC-6

The Short Activities-specific Balance Confidence (ABC-6) Scale

For each of the following activities, please indicate your level of self-confidence by choosing a corresponding number from the following rating scale:

0% 10 20 30 40 50 60 70 80 90 100%  
no confidence completely confident

"How confident are you that you will not lose your balance or become unsteady when you...

1. ...stand on your tiptoes and reach for something above your head? \_\_\_\_%
2. ...stand on a chair and reach for something? \_\_\_\_%
3. ...are bumped into by people as you walk through the mall? \_\_\_\_%
4. ...step onto or off an escalator while you are holding onto a railing? \_\_\_\_%
5. ...step onto or off an escalator while holding onto parcels such that you cannot hold onto the railing? \_\_\_\_%
6. ...walk outside on icy sidewalks? \_\_\_\_%

Peretz, Herman, Hausdorff, & Giladi, 2006)

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**Psychometrics of ABC-6**

Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- Valid and reliable measure of balance confidence
- Shows stronger relationships to falls than the ABC-16
- ABC-6 significantly correlates with other balance tests like TUG ( $r = -0.69, p \leq 0.001$ ), single leg stance ( $r=0.48, p \leq 0.01$ )
- ABC-6 differentiates between fallers and non-fallers; Mean score of fallers ( $66.65 \pm 5.56$ ) was significantly lower than for non-fallers ( $80.88 \pm 4.09$ ) (Schepens, Goldberg, & Wallace, 2010)

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**Single Leg Stance Test**

Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- Quick, functional, and free
- Ties into occupation-based interventions
- Strong predictor of fall risk (Vellas et al., 1997)
- Could be used as a screening to see if other balance assessments are needed
- 10 seconds is normal with eyes open (Vellas et al., 1997)

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**Psychometrics of the Single Leg Stance Test**

Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- Impaired one-leg balance was the only significant independent predictor of injurious falls (relative risk: 2.13; 95% CI: 1.04, 4.34;  $p= .03$ ) (Vellas et al., 1997).
- Inter-rater reliability is excellent with an intra-class correlation coefficient of 0.994 (95% CI 0.989-0.996) (Springer, Marin, Cyhan, Roberts, & Gill, 2007).

\*Single leg stance\*, 2013).

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**Berg Balance Scale**

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- A standing balance scale made up of 14 progressively more difficult tasks, like picking up an object off the floor.
- Each task scored according to a five point scale
- BBS scores decrease with aging
- Short Form Berg Balance Scale 3 Point

("Berg Balance Scale", 2013)

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**Berg Balance Scale**

Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- Score < 45 can identify clients with high risk for falls (Thompson, Ewert, & Whaley, 2010)
- Relates to functional activities more than Single Leg Stance and Timed Up and Go

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**Psychometrics of Berg Balance Test**

Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- Valid and reliable objective measure of dynamic balance.
- High intrarater and interrater reliability ICC= .98
- Content validity established
- Criterion-related validity has been supported between BBS and Barthel Index (Pearson  $r = .67$ ,  $n = 31$ ) and Timed Up and Go Test (TUG) (Pearson  $r = -.76$ ,  $n = 31$ ).

("Berg Balance Scale", 2013)

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### Timed Up and Go Test (TUG)

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- Measures the time it takes client to stand up, walk, turn and return
- Short, quick test of basic mobility skills for elderly
- Cut off scores in community dwelling older adults > 13.5 seconds

(\*Timed Up and Go\*, 2013)

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### Psychometrics of TUG

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- Excellent test-retest reliability (ICC = 0.83, 95% CI (0.61-0.93)  
(Mehta, MacDermid, Richardson, MacIntyre, & Grewal, 2015).
- Intratester and intertester reliability high in elderly population (ICC=.99) (\*Timed Up and Go\*, 2013)
- Construct validity demonstrated. Correlation between TUG and Functional Reach (r= -0.36) (\*Timed Up and Go\*, 2013)

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### Low Vision

Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- Older adults with low vision are especially vulnerable to falls.
- Low vision is defined as any limitation in vision not correctable by medical intervention, including glasses.
- Glaucoma, macular degeneration, cataracts, diabetic retinopathy

(Blaycock & Vogtli, 2017)

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**Low Vision**

Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- 92% of certified hand therapists rarely advise clients about regular vision testing (Dewan et al., 2018)
- We do not have to conduct vision screening, but occupational therapists can advise clients to seek vision testing

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**Low Vision Interventions**

Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- Qualitative research suggests increasing font size to 18, strong contrast, organization and sans serif font can increase readability on written materials
- Study authors are using this information to adapt a falls prevention intervention and are collecting data.
- Additional adaptations like using audio recording, increased verbal and physical cuing may be necessary. (Blaylock, 2017; Blaylock & Vogtle, 2017)

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**Low Vision Interventions**

Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- Increase lighting for outdoor walkways, porch, garage
- Adequate lighting indoors, overall light level
- Larger font on all written handouts
- Keep objects in same place
- Instruct client to use baseboards as cue where wall ends (Hamby, 2017)

2017)

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**Chair Sit to Stand Test**

Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- Assesses lower extremity strength
- Eliminates the floor effect of the 5 or 10 repetition sit to stand test
- Free
- Risk factor for falls is muscle weakness, specifically lower extremity

(CDC, 2017; "30 Second Sit to Stand", 2013)

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**Chair Sit to Stand Test**

**SCORING**

**Chair Stand Below Average Scores**

AGE	MEN	WOMEN
60-64	< 14	< 12
65-69	< 12	< 11
70-74	< 12	< 10
75-79	< 11	< 10
80-84	< 10	< 9
85-89	< 8	< 8
90-94	< 7	< 4

A below average score indicates a risk for falls.

(CDC, 2017)  
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**Psychometrics of 30 Second Sit to Stand**

Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- Excellent test/retest reliability  $r = 0.89$  (95% CI 0.79-0.93)
- Excellent interrater reliability  $r = 0.95$  (95% CI 0.84-0.97)
- Minimal Clinically Important Difference (MCID) is 2 for those clients with hip OA ("30 Second Sit to Stand", 2013)

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**Grip Testing with Jamar Dynamometer**  
Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- Grip strength is also a clinical indicator for falls
- Clients with < 25<sup>th</sup> percentile had falls 12 months later
- May serve as simple, rapid proxy for general health

(Amaral, Mancini, & Novo Junior, 2012; Bohannon, 2008)

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**Grip Testing with Jamar Dynamometer**  
Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- 63% of certified hand therapists “always” measure upper extremity muscle strength (Dewan et al., 2018)
- Easy to use, already part of our assessment

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**Psychometrics of Grip Strength Measurements**  
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- Good test-retest reliability (Bohannon, 2008)
- Good validity (Bohannon, Wang, Bubela, & Gershon, 2017)
- Good responsiveness (Bohannon, Wang, Yen, & Grogan, 2018)



By Ashashyou [CC0], from Wikimedia Commons

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**Client's Perspective and Adherence**  
Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- Group versus individual (Logan et al., 2010)
- Older adult's view on "at risk for falls" (Gardiner, Pendlebury, & Jackson, 2017)
- Engagement is key (Gardiner et al., 2017)
- Use of technology (Hawley-Hague, Boulton, Hall, Pfeiffer, & Todd, 2014)
- Despite the evidence, there is low implementation (Dewan et al., 2018; Dickinson et al., 2011)

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**Group versus Individual**  
Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- Benefits to both types of intervention
- Some clients prefer group for the social benefit
- Others prefer home exercise program
- Logan et al. (2010) use combination of group and individual co-taught by PT and OT
- Systematic review by Chase et al. (2012)

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**Older Adult's View**  
Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- Reject the fall prevention terminology
- Gardiner et al. (2017) qualitative study
- Engagement requires positive, reframing of terms
- Individual approach
- Constructive, proactive healthy behavior

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**Older Adult's View**

Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- Falling a threat to personal identity, independence
- However, everyone risks falling
- Demonstrate a client-centered approach
- Upholding identity through individualized approach promotes adherence

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**Technology**

Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- Contrary to popular belief, older adults embrace technology
- Useful in home assessment of fall hazards
- Looking at digital photos personalizes the topic (Breedon, 2016)
- Digital photos make the experience more applicable, rather than looking at a pamphlet (Breedon, 2016)
- Video conferencing a useful tool (Breedon, 2016)

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**Technology**

Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- Information and Communication Technologies (ICTs) have emerged in recent years to assist in fall prevention
- Intrinsic factors like control, independence, and need
- Extrinsic factors like usability, feedback and cost
- Ultimately promote independence (Hawley-Hague et al., 2014)

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**Low Implementation of Fall Prevention**  
Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- Qualitative study
- Main purpose of the study was to look at barriers and facilitators to participation
- Role of the health professional was examined
- Participants had participated in at least one fall prevention intervention

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**Qualitative study – Dickinson et al. (2011)**  
The role of health professionals in promoting the uptake of fall prevention interventions: A qualitative study of older people's views

- Credibility – Thick descriptions were obtained through focus groups and interviews
- Transferability – Study findings were context specific, however authors addressed this by a large sample size and diverse population
- Dependability – Audit trail was explicit

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**Dickinson et al. (2011)**  
The role of health professionals in promoting the uptake of fall prevention interventions: A qualitative study of older people's views

- Confirmability – Data was coded independently. However reflexivity was not addressed
- Limitations – Participants were older adults living in England. Minority groups not included in study may have different experiences. Those with cognitive disabilities were not included.

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**Low Implementation – why?**

The role of health professionals in promoting the uptake of fall prevention interventions: A qualitative study of older people's views

- Two themes emerged – “Telling a health professional” and the “health professional response”
- Clients downplay falls
- Language barriers
- Lack of follow-up by healthcare professionals

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**Dickinson et al. (2011)**

The role of health professionals in promoting the uptake of fall prevention interventions: A qualitative study of older people's views

- Need to ask about recent falls
- Make appropriate referrals
- Group and individual interventions
- Despite the evidence, health professionals not implementing

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**Medication's Role in Balance**

Fall Prevention: Assessment and intervention for Occupational Therapy Professionals

- Poly-pharmacy is associated with increased risk of falls
- Total number of drugs taken increases risk of falls
- Clients with higher number of medications were unaware of the risk of falls (  $t = 2.206, p=0.008$ ) (Loke, Gan, &

Isalhudin, 2018)

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Medication's Role in Balance

Continued...

- Drug side effects like hypotension, sedation, blurred vision can contribute to falling
- 82% of hand therapists "always" record a client's list of medications
- Beers criteria  
[https://www.ncoa.org/wpcontent/uploads/2012BeersCriteria\\_JAGS.pdf](https://www.ncoa.org/wpcontent/uploads/2012BeersCriteria_JAGS.pdf)
- Use of alcohol should be considered (Kruschke & Butcher, 2017)

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Medication's Role in Balance

Continued...

- With a history of falls or fractures:
- Avoid anticonvulsants (except with seizure disorder), antipsychotic (risperidone, clozapine), benzodiazepines (lorazepam, diazepam), nonbenzodiazepine hypnotics (zaleplon), TCAs (amitriptyline) and selective serotonin reuptake inhibitors, opioids (Campanelli, 2012)

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Occupational Therapy's Role in Home Safety

Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- Evidence-based home modifications
- Occupational Therapists versus other disciplines
- Home interventions are part of an interdisciplinary team

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King & Novak (2017)

Effect of bathroom aids and age on balance control during bathing transfers

- Level 3, cross-sectional, repeated-measures design
- The study authors designed a custom, experiential bathroom
- Measured force on plates

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King & Novak (2017)

Effect of bathroom aids and age on balance control during bathing transfers

- Researchers were looking at measurement of COP movement to examine age-related differences in postural control during bathtub transfers
- Also examining the effect of common bathroom aids
- Results indicate a vertically placed grab bar on the side wall, along with bath mat

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Statistics and Results

Effect of bathroom aids and age on balance control during bathing transfers

- The use of the vertical grab bar reduced VarCOP ( $p < .05$ ) where the horizontal bar increased it ( $p < .005$ ).
- For older adults DispCOP was significantly reduced with vertical grab bar use when compared to bath mat and horizontal grab bar use ( $p < .02$ ).

VarCOP is the quality of balance control. DispCOP is how the body tries to change the movement of center of mass. VelCOP is the response to greater balance challenges with lower scores representing more stability.

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**Statistics and Results**

Effect of bathroom aids and age on balance control during bathing transfers

- Older adults showed a significantly decreased VelCOP when exiting the bathtub perpendicular to the axis of progression using a bath mat ( $p < .001$ ).

VarCOP is the quality of balance control. DispCOP is how the body tries to change the movement of center of mass. VelCOP is the response to greater balance challenges with lower scores representing more stability.

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**Pighills, Torgerson, Sheldon, Drummond, & Bland (2011)**

Environmental assessment and modification to prevent falls in older people

- Level 2, pilot three-armed randomized controlled trial
- Assessed the effectiveness of an environmental fall prevention intervention delivered by qualified occupational therapists versus unqualified trained assessors
- Evaluated 238 community-dwelling older adults 70 years old and older

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**Pighills et al. (2011)**

Environmental assessment and modification to prevent falls in older people

- Evaluated fear of falling, quality of life, activities of daily living and number of falls over 12 months
- Builds on emerging evidence that OT environmental assessment and modification is clinically effective

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**Statistics and Results**

Environmental assessment and modification to prevent falls in older people

- Occupational therapy (OT) group had significantly fewer falls (incidence rate ratio (IRR) = 0.54, 95% confidence interval (CI) = 0.36-0.83,  $p = .005$ ).
- No significant effect on falls in the trained assessor group (IRR = 0.78, 95% CI = 0.51-1.21,  $p = .34$ ).
- There was significantly greater adherence to recommendations in the OT group, the odds of greater adherence for those in the OT group were 2.44 (95% CI = 1.03-5.77) (Pighills et al., 2011)

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**Logan et al. (2010)**

Community falls prevention for people who call an emergency ambulance after a fall: Randomised controlled trial

- Level 2, randomized controlled trial
- Intervention group included home interventions including strength and balance led by physical therapist, home assessment and modifications led by occupational therapist, and community-based group interventions
- Control group received no intervention
- Examined the rate of falls over 12 months

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**Statistics and Results**

Community falls prevention for people who call an emergency ambulance after a fall: Randomised controlled trial

- Rate of falls in the intervention group were 3.46 and in the control group 7.68, incidence rate ratio 0.45, 95% CI [0.35 to 0.58],  $p < .001$ .
- Emergency calls decreased in the intervention group and were statistically significant, incidence rate ratio 0.60, 95% CI [0.40 to 0.92].  $p = .018$ .
- At 12 months, the median time to the first fall for the intervention group was 166 days, and for the control group it was 21 days. Hazard ratio was 0.32, 95% CI [0.23 to 0.44].

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**Home Safety and Accessibility Assessments**  
Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- In-Home Occupational Performance Evaluation (I-HOPE)
- Safety Assessment of Function and the Environment for Rehabilitation – Health Outcome Measurement and Evaluation (SAFER-HOME)
- Safe At Home Checklist (AOTA, 2017)

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**I-HOPE**  
Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- Measures in-home activity performance and change pre and post home modification
- Requires 45- 60 minutes
- Card sorting task with rating scales (AOTA, 2017)

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**Psychometrics for I-HOPE**  
Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- The subscales' internal consistency from .77 to .85, and intraclass correlation coefficients ranged from .99 to 1.0.
- Demonstrates convergent validity with FIM
- Reliable and valid performance-based assessment (Stark, Somerville, & Morris, 2010)

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**SAFER-HOME**

Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- 74-item assessment that scores clients as having no, mild, moderate or severe safety concerns
- Rating scale based on interview
- Assesses client's ability to safely carry out ADLs
- 45-60 minutes required

(AOTA, 2017)

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**Psychometrics of SAFER-HOME**

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- High internal consistency with a coefficient alpha value of 0.859
- The low correlations between the SAFER-HOME v.2 and the Functional Autonomy Measuring System ( $r = -0.206$ ;  $p = .018$ ) supported the presumption that home safety was related but not limited to functioning.
- SAFER-HOME v.3 is a valid and reliable instrument.

(Chiu & Oliver, 2006)

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**Safe At Home Checklist**

Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- Easily accessible on AOTA website  
<https://www.aota.org/~media/Corporate/Files/Practice/Aging/rebuilding-together/RT-Aging-in-Place-Safe-at-Home-Checklist.pdf>
- Could be given to client to take home and use with digital photography
- Not a standardized assessment
- Rebuilding Together is considering transitioning to an evidence-based outcome tool like SAFER or I-HOPE (AOTA, 2017)

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### Fracture Risk Assessment (FRAX)

Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- FRAX online tool <https://www.sheffield.ac.uk/FRAX/tool.aspx?country=9>
- 90% of hand therapists never assess future fracture risk
- FRAX is validated, free, web-based fracture prediction tool
- Most accurate and comprehensive model to predict 10-year fracture risk
- FRAX was developed as a guide to start drug therapy, part of multifactorial fall risk assessment

(Dewan et al., 2018; Thompson et al., 2010)

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### Fracture Risk Factors

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- Previous fracture
- Parental history of fracture
- Current glucocorticoid treatment
- Smoking
- Alcohol
- Comorbidities: RA, type I diabetes, hyperthyroidism

(Kanis et al., 2009)

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### Fracture Risk Screening- FORE

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- Foundation for Osteoporosis Research (FORE)
- Also has online FORE calculator
- Produces an graph that can be used for client education
- If bone mineral density unavailable, may underestimate
- Women's Health Initiative (WHI) Hip Fracture Risk Calculator

(Thompson, et al., 2010)

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**Bone Mineral Density (BMD)**

Fall Prevention: Intervention and Assessment for Occupational Therapy Professionals

- Routine BMD screening for osteoporosis to prevent fractures
- BMD uses dual-energy X-ray absorptiometry and is the gold standard for identifying risk for fractures
- Only 3%-11% of therapists refer for BMD assessment (Dewan et al., 2018)
- National Osteoporosis Foundation website gives evidence-based recommendations <https://www.nof.org/>

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**Recommendations for Calcium and Vitamin D**

Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- Women
  - 50 y/o and younger 1000 mg
  - 51 y/o and older 1200 mg
- Men
  - 70 y/o and younger 1000 mg
  - 71 y/o and older 1200 mg

(National Osteoporosis Foundation, 2018)



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**Knowledge Translation Tools**

Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- 54% preferred website for clients
- 52% preferred website for therapists
- 40% preferred pamphlets for clients
- Therapists express interest in incorporating fall prevention education, but are not doing it
- Gap in knowledge translation

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**Barriers to Knowledge Translation**  
Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- Knowledge...but not the main barrier
- Lack of time, space, funding, staff
- Scope of practice
- Lack of knowledge of clinical practice guidelines
- Professional training

(Dewan et al., 2018)

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**Evidence-based Interventions**  
Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- Tai Chi
- Lifestyle Integrated Functional Exercise (LIFE) program – functionally based
- HEP including Three static balance exercises
- Interdisciplinary team
- Population-based Fall Prevention

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**Tai Chi versus combined exercise**  
Tai chi vs. combined exercise prescription: A comparison of their effects on factors related to falls

- Level 2, Single blind, randomized controlled trial
- Static and dynamic balance, fear of falling, and mood
- Intervention group - Tai Chi taught by an experienced Tai Chi master, one hour, three times weekly for 12 weeks.
- Control group - exercise group included walking, lower limb strengthening, one hour, three times weekly for 12 weeks.

(Yildirim, Offuoglu, Aydogan, & Akyuz, 2016)

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**Statistics and Results**

Tai chi vs. combined exercise prescription: A comparison of their effects on factors related to falls

- Significant differences for Tai Chi group pre and post intervention for all balance assessments: Single Leg Stance ( $p<.05$ ), Berg Balance Scale ( $p<.05$ ) and Timed Up and Go ( $p<.05$ ).
- Significant improvements in Survey of Activities and Fear of Falling in the Elderly, Beck Depression Scale, and Geriatric Depression Scale after Tai Chi intervention (all  $p<.05$ ).
- Tai Chi was more effective than combined exercise prescription

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**LiFE versus regular exercise**

Effectiveness of a lifestyle exercise program for older people receiving a restorative home care service: a pragmatic randomized controlled trial

- Level 2, parallel pragmatic randomized controlled trial
- Intervention - LiFE program is a lifestyle and functional exercise program. Developed to improve balance and strength by embedding exercise in ADLs.
- Control group – structured exercise program based on Otago falls prevention program.

(Burton, Lewin, Clemson, & Boldy, 2013)

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**Statistics and Results**

Effectiveness of a lifestyle exercise program for older people receiving a restorative home care service: a pragmatic randomized controlled trial

- LiFE group significantly improved in 95% of the outcome measures. Physical tests showed significant improvement ( $p=.008$ ).
- Significant improvements in balance confidence was seen in the LiFE intervention. ABC Scale mean baseline score  $M=56.37$ , and for structured exercise  $M=52.74$ . After 8-week post testing LiFE was  $M=77.52$  and structured exercise was  $M= 65.22$ .

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**LiFE is occupation-based**

Effectiveness of a lifestyle exercise program for older people receiving a restorative home care service: A pragmatic randomized controlled trial

- Incorporated into daily tasks
- Based on evidence (Burton et al., 2013; Clemson et al., 2012; Elliot & Leland, 2018)
- Combining SLS or tandem stand with ADLs like brushing teeth
- Side to side weight shift with washing dishes at sink
- Infinite options - Unique and novel (Clemson et al., 2012)

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**Results**

Occupational therapy fall prevention interventions for community-dwelling older adults: A systematic review

- Elliot and Leland (2018) in their systematic review, found two level 1 studies indicating LiFE was effective
- Systematic reviews are the highest level of evidence and literature gathered from 2008 to 2015.
- The study authors recommend LiFE to reduce fall risk
- It is important to note these study authors are experts in the field of productive aging

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**Tisher, Mann, VanDyke, Johansson, & Vallabhajosula (2018)**

Functional measures show improvements after a home exercise program following supervised balance training in older adults with elevated fall risk

- Level 2, pilot randomized controlled trial
- Effects of HEP following clinic-based interventions
- Simple three static balance exercises, purposefully chosen
- Experimental group clinic based intervention, home exercise group (HEPG) and non home exercise group (NoHEPG)
- Small sample size (Tisher et al., 2018)

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**Results and Statistics**

Functional measures show improvements after a home exercise program following supervised balance training in older adults with elevated fall risk

- Individuals adhered to three HEP exercises
- Functional balance and strength maintained for HEPG
- SPPB showed increase for HEPG ( $p = 0.002$ )
- Weaknesses of study: small sample size, client self report of exercise log (recall bias)

(Tisher et al., 2018)

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**Tisher et al. (2018)**

Functional measures show improvements after a home exercise program following supervised balance training in older adults with elevated fall risk



HEP: feet together stance, tandem stance, single-leg stance

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**Population-based Fall Prevention**

Fall Prevention: Assessment and Intervention for Occupational Therapy Professionals

- Stepping On <http://www.steppingon.com/>
- A Matter of Balance <https://www.ncoa.org/healthy-aging/falls-prevention/falls-prevention-programs-for-older-adults/>
- Both are existing effective fall prevention programs
- CDC STEADI program

References available upon request

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