

Falls Prevention & Balance Training

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Objectives:

- **To identify some of the factors involved with Falls Prevention & Balance Training**
- **To demonstrate compassion and sensitivity for those working through the issues involved with Falls & Prevention, Balance & Activities of Daily Living**
- **To identify and understand some of the exercise choices used to assist those in need of Falls Prevention & Balance Training**
- **To be able to select, design and modify exercises for individual & group training to assist with Falls Prevention & Balance Training**

Disclaimer

- **The content in this handout is not to be reproduced in any form without consent of the author**
- **All information provided is written for general knowledge and educational purposes**
- **Any action taken in regards to the direct use of this information must be accompanied by the proper documentation completed by an individual and/or their medical practitioner or health care provider**
- **This information given does not replace consultation with a qualified health care or fitness professional**

Canadian Statistics

- Falls are the second leading cause of hospitalization
- Every 10 minutes in Ontario at least 1 senior visits the emergency room after a fall
- Every 30 minutes 1 senior is admitted to hospital due to a fall
- 25% of falls result in serious injury
- Falls account for 85% of all injury related hospitalizations
- 40% of nursing home admissions occur as a result of a fall
- Falls cause more than 90% of all hip fractures & 20% die within a year of the fracture
- Falls are a leading cause of overall injury costs in Canada

Why do people fall?

Intrinsic Factors

- age (over 80 years)
- functional ADLs
- impaired mobility
- rushing
- muscle imbalance
- misalignment
- gait disorders
- posture
- postural sway
- postural hypotension
- balance deficit
- gait deficit
- inner ear conditions – Vertigo, Labyrinthitis
- vision - especially peripheral vision
- medications (4 or more medications of any kind increase the risk)
- injuries
- loss of muscle mass/strength
- lack of sleep
- urinary incontinence
- impaired cognition
- slower response time
- foot disorders
- medical conditions
- heart rate & heart rhythm
- poor nutrition - low vitamin D for bone & muscle strength
- chronic illness
- depression
- history of falls
- fear of falling
- risk taking behaviors

Extrinsic Factors

- poor building or room maintenance
- positioning of household furniture
- clutter
- floor surface - slippery, uneven
- uneven surfaces, carpets
- raised door sills
- alcohol
- footwear
- rugs, debris on floor
- handrails on stairs - height of handrails
- grab bars, non slip mats
- bathroom positioning of utilities
- height of tub, toilet, shower, sink
- faulty equipment
- position of equipment
- electrical cords
- sudden noise
- lighting
- pets
- low socio-economic status
- curb ramps/designs
- lack of rest areas on city streets
- pavement cracks, unevenness, tree roots
- city obstacles - bike racks, grates, store signage
- weather conditions - cold, icy, bright sunlight

Most Common Risk Factors Involve.....

Muscle Weakness

History of Falls

Gait Deficit

Balance Deficit

Assistive Device Use

Visual Deficit

Arthritis

Impaired ADLs

Depression

Cognitive Deficit

Age > 80 yrs

Assessments

Postural Assessments

Standing Posture - Kent Postural Analysis Chart

Sitting Posture

Lying Posture

Walking Posture

Lifting Posture

Postural Sway - standing, seated

Functional Reach Test

Ankle Mobility Test

Hip Joint Mobility Test

Strength Tests

Balance

What is it?

Types of Balance

Balance Involves the Sensory Systems

Motor - involving the muscles, joints, visual & hearing systems

Somatosensory - involves spatial awareness, touch, pain, temperature

Vestibular - involves the inner ear & hearing systems, reaction to motion

Biomechanical Factors Affecting Gait & Balance

Causes of these Factors

Gait & Gait Analysis

Assessments for Gait & Balance

Tinetti Balance & Gait Analysis

Berg Balance Scale

http://www.aahf.info/pdf/Berg_Balance_Scale.pdf

Fullerton Advanced Balance Scale

http://mobile-pt.com/files/8_Fullerton_Advanced_Balance_Scale.pdf

Functional Movement Screening (FMS Score)

STEADI Algorithm

Questionnaires

Muscle Strength Tests

Posture Can Affect Balance

- head weighs 10-12 lbs.

- different head positions - level of eyes

- centre of gravity - may not be over the base of support

Exercise & Movement Ideas

Weight Transfers

Reaching

Walking Variations

- use different surfaces - stable, unstable, moving

Movement Coordination is ...

- based on past experiences
- motor experiences one has had
- ability to receive feedback
- reaction time
- response strategies (it can take 85-90 sec after the perception of instability is realized to react)
- muscle recruitment abilities
- mobility comes before stability

Let's Play

Passing Over/Under

Pass the Objects

Step Around the Clock

A Walk in the Woods/City Streets

Pick Up Your Toys

Get Down/Get Up

Walk & Read

Walk/Stand & Look

Sitting Balance

Silly Walks

Carry the Tray/Laundry/Presents

Memory Walk

Walk around the cones/chairs/objects

Touch Tag

Hand Reach Around the Clock

Walk over/into the tub (15in)

Stand/Balance & Juggle

Step/Stair work

March in place with head turns/visuals

Ladder Walks

Standing Sways

Obstacle Course

Bean Bag/Tissue on the Head/Shoulder/

Partner Tap, Push & Pull

Thank you!

Upcoming Workshops

- all held at the **canfitpro** Academy

Falls Prevention & Balance Training Sat., Oct. 21st, 9:00am to 12:00pm
2 CECs

Chair Fitness Sat., Oct. 21st, 1:00pm to 4:00pm
2CECs

Common Medical Conditions & Exercise Prescription for the Older Adult
Fri., Nov. 10th, 1:00pm to 8:00pm
4CECs

References

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Accreditation Canada: Preventing Falls

<https://accreditation.ca/sites/default/files/falls-joint-report-2014-en.pdf>

Falls Prevention in Canada

http://www.hiphealth.ca/media/research_cemfia_vickyxcott_plenary.pdf

Video Analysis of Falls, SFU

<https://www.youtube.com/watch?v=Z3e1Xvnj8Wo>

University of California: Falls in Older Adults

https://www.youtube.com/watch?v=mwa8YG_UsVU

Science World British Columbia

<https://www.scienceworld.ca/resources/activities/betcha-cant-balancing-challenges>

Comfort Life

<http://www.comfortlife.ca/retirement-community-resources/exercise-your-sense-of-balance-to-prevent-falls>

Physics of Balance & Weight Shift

<http://www.algarcia.org/AnimationPhysics/BalanceTutorial.pdf>

Tinetti Balance & Gait Assessment Tool

<http://hdcs.fullerton.edu/csa/Research/documents/TinettiPOMA.pdf>

Kent Postural Charts

<https://www.kenthealth.com/product-category/posture-charts>

Functional Reach Test

https://www.youtube.com/watch?v=_aJqJzt-U2s

Medscape

http://www.medscape.com/viewarticle/762687_9

Breaking Muscle - Ankle Mobility

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Soft Star

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<https://eldergym.com/elderly-balance.html>

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[http://www.physio-pedia.com/Functional_Movement_Screen_\(FMS\)](http://www.physio-pedia.com/Functional_Movement_Screen_(FMS))

Falls Among Older Adults, The STEADI Tool Kit

https://www.mainequalitycounts.org/image_upload/STEADI%20overview%20FINAL.pdf

Family Friend Poems

<https://www.familyfriendpoems.com/poem/tinkle-tinkle-little-car>

Fitness & Exercise Poems

<http://www.dennydavis.net/poemfiles/fitness.htm>

Funny Fitness Quotes

<http://funnyfitnessquotes.tumblr.com>