

Fall Prevention

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April 11, 2014

Randolph-Asheboro YMCA

“What if I stumble? What if I fall? What if I lose my step and I make fools of us all?”

-DC Talk

Objectives

- Recognize the importance of preventing falls
- Identify the causes of falls
- Learn strategies to prevent falls
- Learn strategies to minimize injury during a fall
- Learn strategies to get up after a fall
- Utilize what you have learned to decrease your risk of falling.

Overview

1. Consequences
2. Causes
3. Primary Prevention
4. Secondary Prevention
5. What to do when falling
6. What to do after falling
7. What can you do now to prevent falls
8. Resources that you can use

Brainstorming

- Lets make a list of consequences that might occur if someone falls?

1. Consequences of Falls

Obvious

- Injuries
(Osteoporosis)
- Left Stranded
- Hospitalization
- Institutionalization
- Increased cost

Less Obvious

- Fear
- Loss of Confidence
- Activity Restriction
- Decreased
Socialization
- Caregiver burden

Why are these important?

Brainstorming

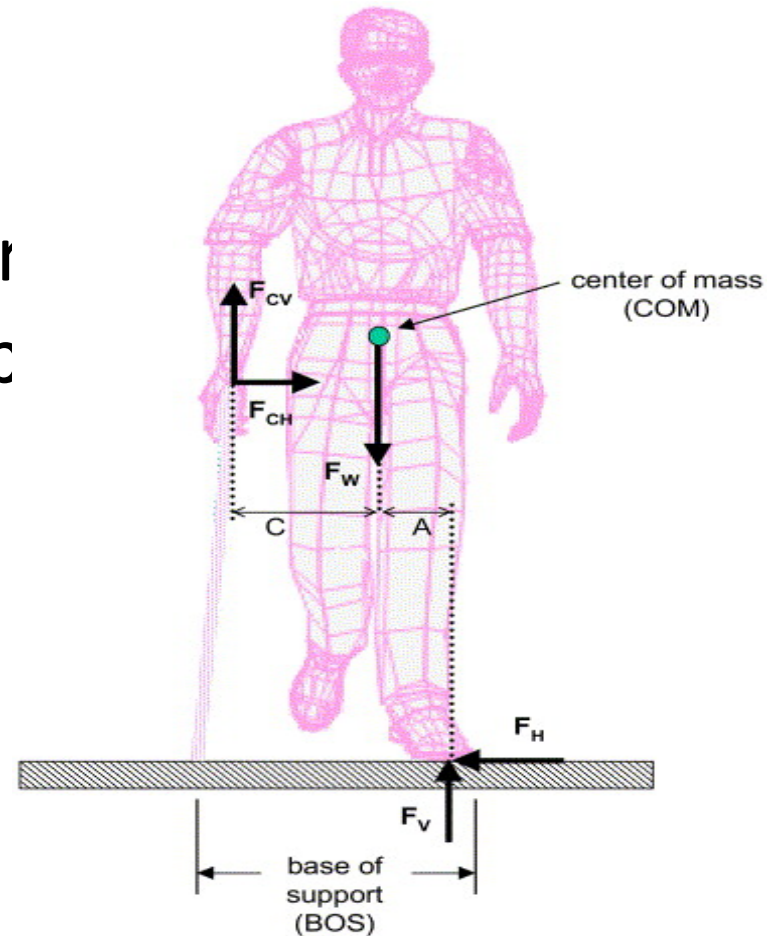
- Lets make a list of things that cause falls.

2. Causes of Falls

- **Aging-** As you age, the body systems below decline naturally, however other factors can increase their decline.
 - Vision- normal aging, medical conditions, glasses
 - Strength- normal aging, medical conditions, lifestyle
 - Balance- normal aging, medical conditions, lifestyle
 - What makes up balance?
 - Reflexes/Reactions- What's the normal response to losing your balance? How does it work?

Balance

- What is base of support?
- What is Center of mass?
- What happens when your outside your base of support



2. Causes of Falls

- Environmental
 - Hazards/obstacles-
 - Assistive Devices- canes, walkers
 - Clothing and Shoes



2. Causes of Falls

- Medications
 - Side Effects
 - Interactions
 - Polypharmacy
 - Mixing
 - Forgetting
 - Taking to many



2. Causes of Falls

- Alcohol
- Medical Reasons
 - Pathologies/Disease
 - Incontinence/ Frequent Urination/**Hurrying to the bathroom**



3. Primary Prevention of Falls

- Medication Review- side effects, interactions
- Exercise
 - Balance
 - Strength
 - Endurance-
 - Flexibility-
 - Functional training- stairs, sitting and standing
 - Tai Chi- [video demonstration](#)
 - Dance - **line dancing, country, ballroom etc**
 - Nordic Pole Walking- [video demonstration](#)

3. Primary Prevention

- Address abnormal walking patterns
 - How long/short are your steps?
 - How wide are your steps?
 - How high are your steps?
 - How fast do you walk?
- How do you identify and address these patterns?

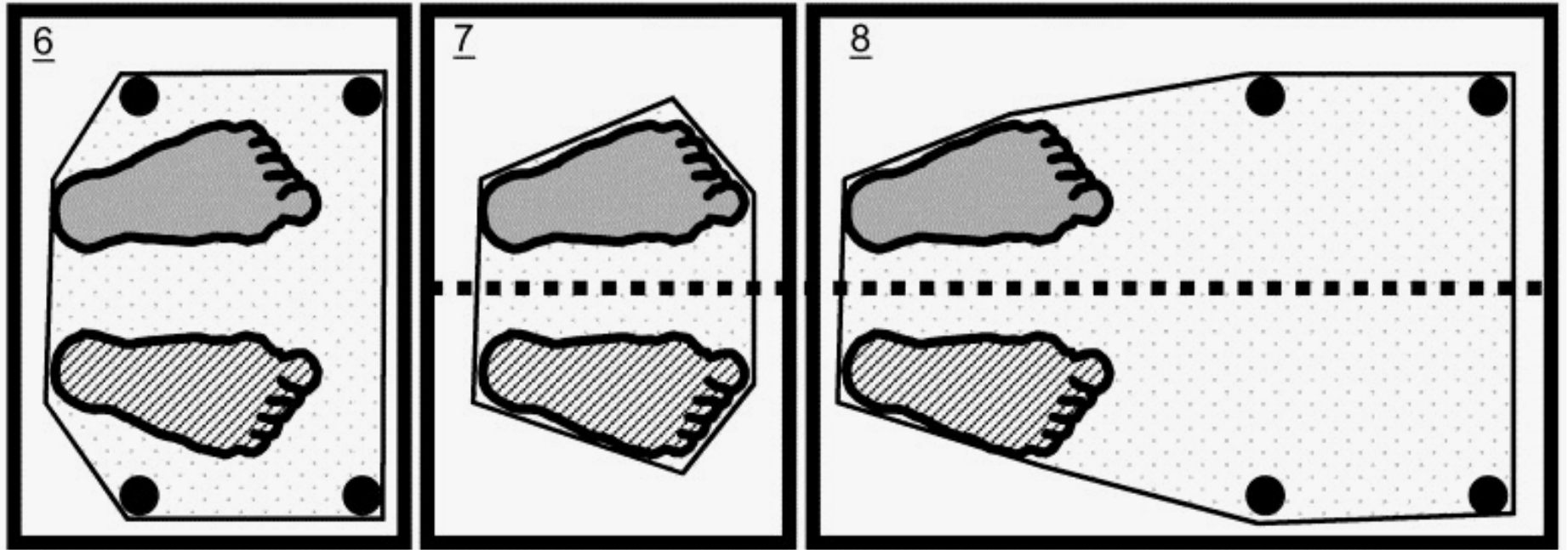
3. Primary Prevention of Falls

- Assistive Devices
 - Cane
 - Walkers



3. Assistive Devices

- How does assistive devices improve stability, and decrease falls?



3. Primary Prevention

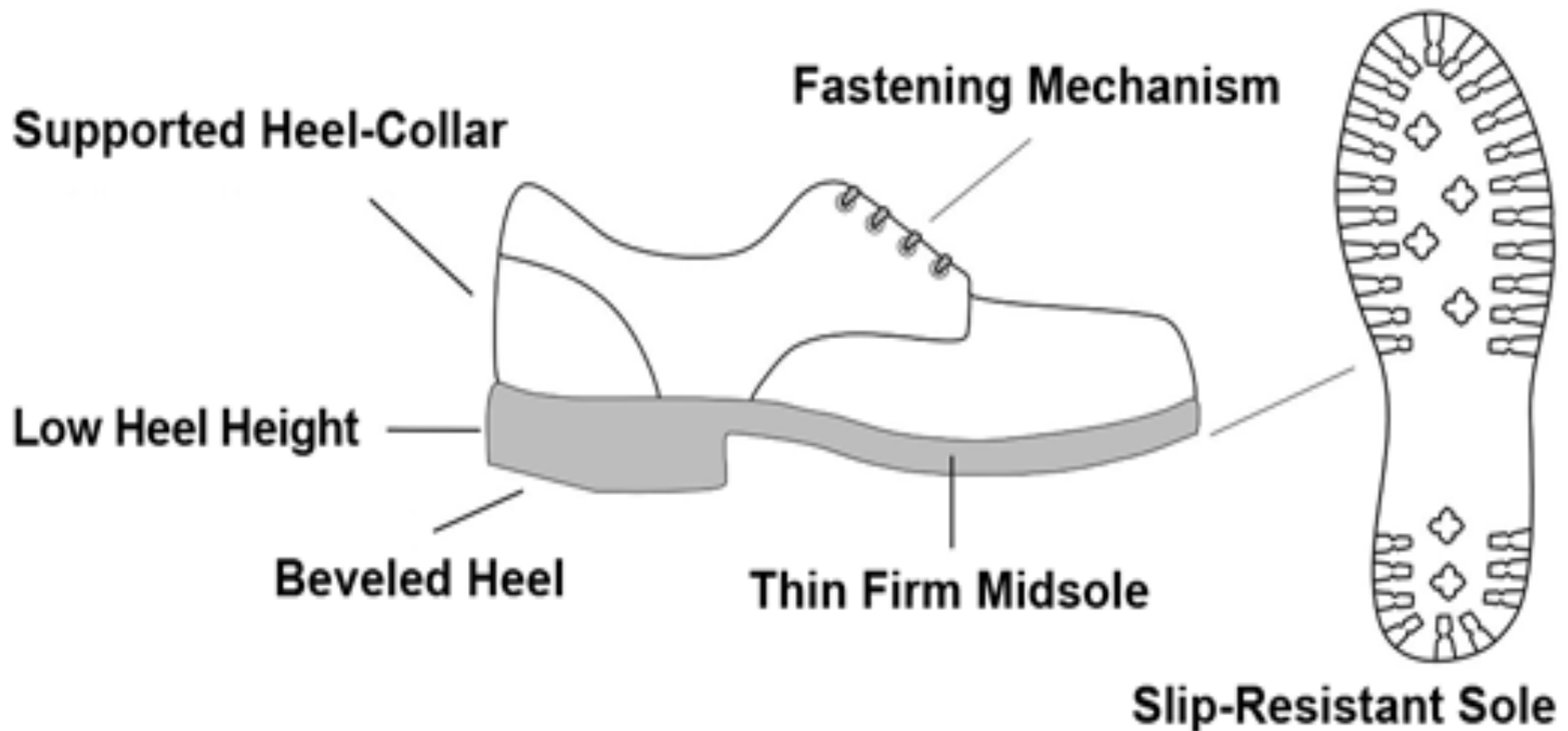
- Education
 - Taking the time to learn what you can do about falls
 - Taking initiative
 - Maintaining health and fitness

4. Secondary Prevention

- Home Modifications-[Fall prevention Checklist](#)
- Assessing Bone Health
- Nutrition Counseling
- Behavioral Therapy

4. Secondary Prevention

- Shoe Wear- Do you want your shoes assessed?



Recap of Today

- Falls can lead to fear of falling, that results in decreased activity, that results in sedentary lifestyle, that results in weakness, that increases risk of falling even more.
- Falls can also lead to loss of independence from an injury, that is also costly.
- There are a variety of causes, including aging, tripping hazards, and medications
- Preventing falls involves assessing many physical aspects of your body, as well as the environmental factors and modifying them accordingly

For Next Week

- You will learn strategies to avoid injury when falling, and I will demonstrate these strategies
- You will learn strategies of how to get up off the floor, as well as practicing it
- You will learn how different healthcare professionals can help you remain independent by avoiding falls.
- You will be given resources that are available in Randolph County

Fall Prevention Class

Session 2

April 16, 2014

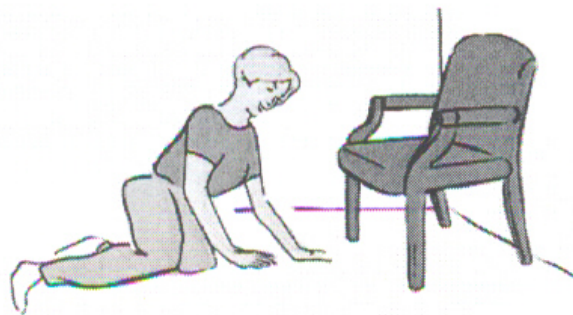
5. Minimize Risk of Injury When Falling

- Lower your center of mass
- Bend your elbows
- Initiate a roll
- Tuck your chin
- Don't tense up

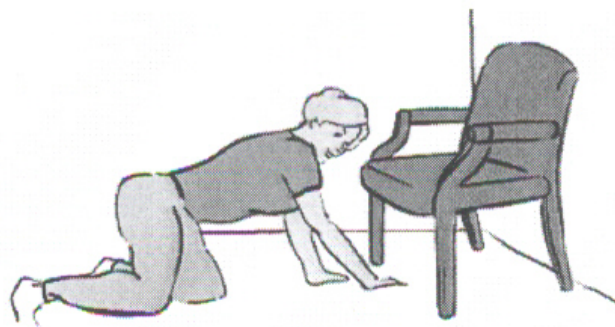
6. Getting Up After A Fall

Sequence of Steps- [How to get up video](#)

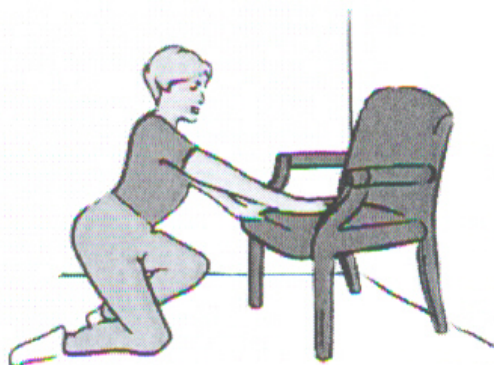
1. Roll on to the left (or right) side.
2. Push up into left side sitting supported on the extended left arm.
3. Place right hand about 12 inches to the side of the left hand and push up on both hands, turning the trunk until kneeling on all fours (prone kneeling).
4. Push up, extending the hips and taking the hands off the floor until kneeling up (high kneeling), using the chair for support if necessary.
5. Bring the left leg through to place the foot on the floor (half-kneeling).
6. Push-up with both hands on the chair to standing or until it is possible to sit on the chair.



1



2



3



4



5

6. Helping Someone Get up from a fall

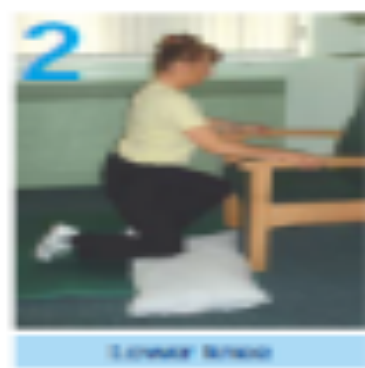
- **If the individual cannot get up**, call for help (911?) and administer first aid if you are able to do so. Help the person find a comfortable position and keep him or her warm using an item of clothing or blanket.
- **If the individual appears able to get up**, proceed with care and follow the steps below.
 - Bring a chair close by; help the person turn onto the side and bend the upper leg; help the person into a semi-seated position.
 - Placing yourself behind the person and getting a firm grip on the hips, help the person to a kneeling position with both hands on the chair.
 - Holding on to the chair, the person should then place the stronger leg in front. You may help by guiding his or her leg.
 - With a firm grip on the hips, help the person to stand, then turn and sit on the chair.

6. Technique to learn getting up from the floor safely

Backward Chaining

1. Sit in chair or standing holding chair.
2. Sitting-slide knee to floor while utilizing arm rests to control slide.
Standing-facing chair or standing so that it is on the side.
3. Use arm rest or seat to help support UE's and kneel with single knee weight bearing. After knee contact, elderly should stand back up or come to sitting, and repeat.
4. Bring other knee down, then back to half kneeling and stand/sit.
5. Place one hand then the other, to achieve prone kneeling, then return to high kneeling, then sit/stand.
6. Lower body to half sitting on elder's side, then back through to sit/stand
7. Proceed to sidelying by lowering body with the same side UE to the floor, then back through previous steps.
8. Roll to supine, and back through the steps

Backward Chaining.



Brainstorming

- What do you think it takes to remain living independently?

7. Proactive vs. Reactive

- Who should I see if I am at a high risk of falling?
 - Doctor/Primary Care Provider/Geriatrician
 - Pharmacist
 - Physical Therapist
 - Nutritionist (Dietician)
 - Psychologist

7. Proactive vs. Reactive

- What Should I do if I want to take steps to prevent a fall, even if I'm low risk
 - Check Vision
 - Assess medications
 - Begin an exercise program, that suits you
 - Assess and modify home to decrease risk of falling
 - Consult with a physical therapist to identify falls risk, and set up a customized exercise program according to your needs.

8. Resources

- Health in Aging- provides information on all aspects of aging
 - www.Healthinaging.org
- Emergency Response Systems- These systems can help you stay independent longer because they are worn on the body. There are many systems that are on the market, and you can ask doctor about them as well. Things to consider when buying a emergency response system are
 - Price, waterproof, ease of use, replacement warranty, are the operators trained, and is it 24/7 service.
 - This link can provide you with information on alert systems medical-alert-systems-review.toptenreviews.com

8. Resources

- Move Forward PT- This website can provide you with information on different symptoms/conditions that physical therapists can assist you with, as well as help you find a PT close to where you live.
 - www.moveforwardpt.com/Default.aspx
- Silver Sneakers- Having certain health plans, and Medicare plans can qualify you for the silver sneaker program. This program allows you to take exercise classes you prefer and the locations that are qualified by this program.
 - Here is a link to the website to find out if you qualify and where exercise programs are offered
<http://www.silversneakers.com>

8. Resources

- Randolph County Senior Center- offers many services including screenings, transportation services, and financial assistance/counseling. They are located on 133 West Wainman Avenue PO Box 1852 Asheboro, North Carolina 27204-1852 Phone: 336-625-3389
- Asheboro-Randolph YMCA- offers several silver sneaker approved programs for seniors. Pick up flyer for more information.



Equipping others to live a

LIFE WITHOUT BOUNDARIES

References

Causes-General

1. Tinetti ME, Kumar C. The patient who falls: "It's always a trade-off". JAMA. 2010 Jan 20;303(3):258-66.
2. Sturnieks DL, St George R, Lord SR. Balance disorders in the elderly. Neurophysiol Clin. 2008 Dec 38(6):467-78.

Assistive Devices

3. Van Hook FW, Demonbreun D, Weiss BD. Ambulatory devices for chronic gait disorders in the elderly. Am Fam Physician 2003 Apr 15;67(8):1717-24.
4. Stevens JA, Thomas K, Teh L, et al. Unintentional falls injuries associated with walkers and canes in older adults treated in U.S. emergency departments. J Am Geriatr Soc 2009 Aug;57(8):1469-9.
5. Hoenig H. Assistive technology and mobility aids for the older patient with disability. Ann Long Term Care 2004 Sep 1;12(9):12-9.
6. Bateni H, Maki BE. Assistive devices for balance and mobility: benefits, demands, and adverse consequences. Arch Phys Med Rehabil 2005 Jan;86(1):134-45.
7. Lam R. Practice tips: choosing the correct walking aid for patients. Can Fam Physician. 2007 Dec;53(12):2115-6.

References

Vision

8. Lord SR, Smith ST, Menant JC. Vision and falls in older people: risk factors and intervention strategies. *Clin Geriatr Med*. 2010 Nov;26(4):569-81.

Alcohol

9. Gaxatte C, Faraj E, Lathuillierie O, Salleron J, Deramecourt V, Pardessus V, Destailleur MH, Boulanger E, Puisieux F. Alcohol and psychotropic drugs: risk factors for orthostatic hypotension in elderly fallers. *J Hum Hypertens*. 2013 Sep 19.
10. Carter JR, Stream SF, Durocher JJ, Larson RA. Influence of acute alcohol ingestion on sympathetic neural responses to orthostatic stress in humans. *Am J Physiol Endocrinol Metab*. 2011 May;300(5):E771-8.
11. Heuberger RA. Alcohol and the older adult: a comprehensive review. *J Nutr Elder*. 2009 Jul;28(3):203-35.

Orthostatic Hypotension/hypertension

12. Gangavati A, Hajjar I, Quach L, Jones RN, Kiely DK, Gagnon P, Lipsitz LA. Hypertension, orthostatic hypotension, and the risk of falls in a community-dwelling elderly population: the maintenance of balance, independent living, intellect, and zest in the elderly of Boston study. *J Am Geriatr Soc*. 2011 Mar;59(3):383-9.

References

Medication

13. Huang AR, Mallet L, Rochefort CM, Egualé T, Buckeridge DL, Tamblyn R. Medication-related falls in the elderly: causative factors and preventive strategies. *Drugs Aging*. 2012 May 1;29(5):359-76.
14. Cumming RG. Epidemiology of medication-related falls and fractures in the elderly. *Drugs Aging*. 1998 Jan;12(1):43-53. Review.
15. Landi F, Onder G, Cesari M, Barillaro C, Russo A, Bernabei R; Silver Network Home Care Study Group. Psychotropic medications and risk for falls among community-dwelling frail older people: an observational study. *J Gerontol A Biol Sci Med Sci*. 2005 May;60(5):622-6.
16. Cooper JW, Burfield AH. Medication interventions for fall prevention in the older adult. *J Am Pharm Assoc (2003)*. 2009 May-Jun;49(3):e70-82; quiz e83-4.
17. Hill KD, Wee R. Psychotropic drug-induced falls in older people: a review of interventions aimed at reducing the problem. *Drugs Aging*. 2012 Jan 1;29(1):15-30.

References

Fear of falling

18. Zijlstra GA, van Haastregt JC, van Rossum E, van Eijk JT, Yardley L, Kempen GI. Interventions to reduce fear of falling in community-living older people: a systematic review. *J Am Geriatr Soc.* 2007 Apr;55(4):603-15.

Nutrition

19. Muir SW, Montero-Odasso M. Effect of vitamin D supplementation on muscle strength, gait and balance in older adults: a systematic review and meta-analysis. *J Am Geriatr Soc.* 2011 Dec;59(12):2291-300.
20. Murad MH, Elamin KB, Abu Elnour NO, Elamin MB, Alkatib AA, Fatourechi MM, Almandoz JP, Mullan RJ, Lane MA, Liu H, Erwin PJ, Hensrud DD, Montori VM. Clinical review: The effect of vitamin D on falls: a systematic review and meta-analysis. *J Clin Endocrinol Metab.* 2011 Oct;96(10):2997-3006.
21. Shahar D, Levi M, Kurtz I, Shany S, Zvili I, Mualleme E, Shahar A, Sarid O, Melzer I. Nutritional status in relation to balance and falls in the elderly: a preliminary look at serum folate. *Ann Nutr Metab.* 2009;54(1):59-66.

References

Falling and Floor Rise strategy

22. Groen BE, Smulders E, de Kam D, Duysens J, Weerdesteyn V. Martial arts fall training to prevent hip fractures in the elderly. *Osteoporos Int*. 2010 Feb;21(2):215-21.
23. Fleming J, Brayne C; Cambridge City over-75s Cohort (CC75C) study collaboration. Inability to get up after falling, subsequent time on floor, and summoning help: prospective cohort study in people over 90. *BMJ*. 2008 Nov 17;337:a2227.
24. Zak M, Skalska A, Szczerbińska K. Instructional programmes on how to rise unassisted effectively after sustaining an incidental fall, designed specifically for the elderly: a randomized, controlled trial. *Ortop Traumatol Rehabil*. 2008 Sep Oct;10(5):496-507.
25. Weerdesteyn V, Groen BE, van Swigchem R, Duysens J. Martial arts fall techniques reduce hip impact forces in naive subjects after a brief period of training. *J Electromyogr Kinesiol*. 2008 Apr;18(2):235-42.
26. Groen BE, Weerdesteyn V, Duysens J. Martial arts fall techniques decrease the impact forces at the hip during sideways falling. *J Biomech*. 2007;40(2):458-62.
27. Hofmeyer MR, Alexander NB, Nyquist LV, Medell JL, Koreishi A. Floor-rise strategy training in older adults. *J Am Geriatr Soc*. 2002 Oct;50(10):1702-6.
28. Reece A, Simpson JM. Preparing Older People How to Cope After a Fall. *Physiotherapy*. 1996 Apr;82(4):227-235.

References

Osteoporosis

29. Jakobsen A, Laurberg P, Vestergaard P, Andersen S. Clinical risk factors for osteoporosis are common among elderly people in Nuuk, Greenland. *Int J Circumpolar Health*. 2013;72:195-96.

Prevention

30. Balzer K, Bremer M, Schramm S, Lühmann D, Raspe H. Falls prevention for the elderly. *GMS Health Technol Assess*. 2012;8:Doc01. doi: 10.3205/hta000099. Epub 2012 Apr 12.
31. Moncada LV. Management of falls in older persons: a prescription for prevention. *Am Fam Physician*. 2011 Dec 1;84(11):1267-76.
32. Howe TE, Rochester L, Neil F, Skelton DA, Ballinger C. Exercise for improving balance in older people. *Cochrane Database Syst Rev*. 2011 Nov 9;(11):CD004963.
33. Panel on Prevention of Falls in Older Persons, American Geriatrics Society and British Geriatrics Society. Summary of the Updated American Geriatrics Society/British Geriatrics Society clinical practice guideline for prevention of falls in older persons. *J Am Geriatr Soc*. 2011 Jan;59(1):148-57.
34. Logghe IH, Verhagen AP, Rademaker AC, Bierma-Zeinstra SM, van Rossum E, Faber MJ, Koes BW. The effects of Tai Chi on fall prevention, fear of falling and balance in older people: a meta-analysis. *Prev Med*. 2010 Sep-Oct;51(3-4):222-7.
35. MacCulloch PA, Gardner T, Bonner A. Comprehensive fall prevention programs across settings: a review of the literature. *Geriatr Nurs*. 2007 Sep-Oct;28(5):306-11.