BUILDING A FALLS PREVENTION COMMUNITY

David Griffin, DPM
Janet Simon, DPM
Dyane Tower, DPM, MPH
Kyle Bruce, DPM, MPH

National Public Health Week www.nphw.org
AN INITIATIVE OF THE AMERICAN PUBLIC HEALTH ASSOCIATION

APMA
American Podiatric Medical Association

IT TAKES A VILLAGE

. . .

A THRIVING, INTEGRATED APPROACH TO FALLS

Dave Griffin, DPM
Co-Lead, Falls and Fracture Reduction Program
Kaiser Permanente Northwest
Building a Falls Prevention Community
April 6, 2016

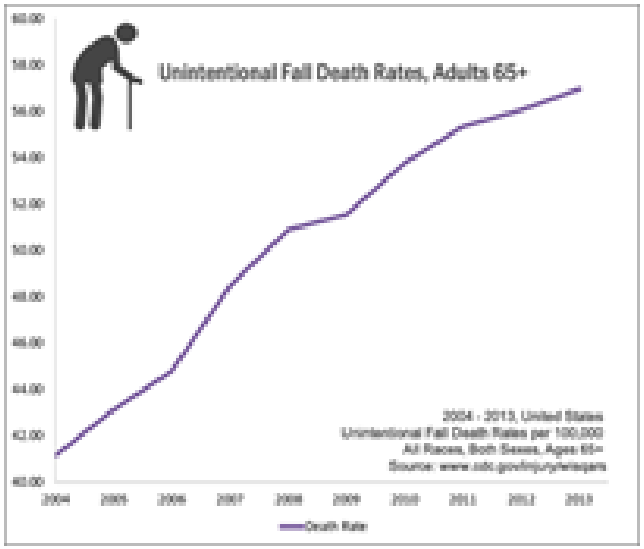
KAISER PERMANENTE®

Your World

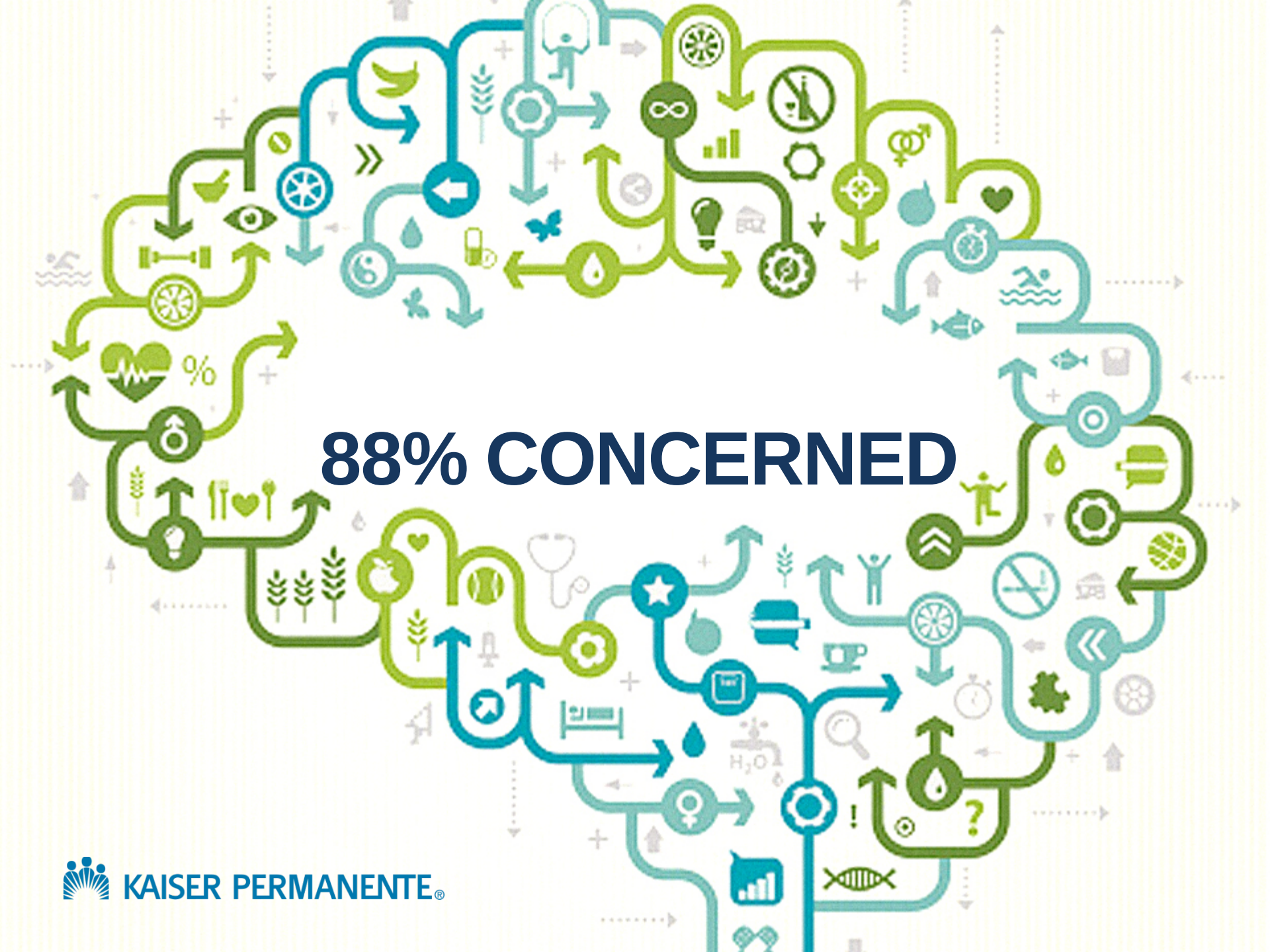

community
people
help
need
see
change
children
education
school
one
many
work
make
time
students
get
families
way
just
system
needs
also
public
country
world
now
others
president
communities
homeless
better
jobs
care
provide
young
Health
KNOW
take
service
Programs
want
America
years
love
government
local
services
College
things
together
volunteer
working
Give
live
hope
believe
place
housing
neighborhood
Healthcare
living
think
new
opportunities
well
find
come
able
important
child
another
issues
life
family
become
Development
area
day
based
civil
learn
National
High
American
city
center
first
within
needed
educational
social
good
even
Kids
called
south
great
Helping
God
man
around
every
involved
resources
small
homes
poor
medical
go
especially
drugs
efforts
opportunity
problem
lives
food
maybe
Rick
future
improve
going
MUCH
feel
free
part
Obama
program
year
crime
currently
put
home
parents
NEVER
person
State
gay
back
rights
bring
without
everyone
training
ask
disabled
done
start
old
schools


Falls are
not normal
KAISER PERMANENTE®

Falls Are Serious and Costly



- One out of five falls causes a serious injury such as broken bones or a head injury.[1,2]
- Each year, 2.5 million older people are treated in emergency departments for fall injuries.[3]
- Over 700,000 patients a year are hospitalized because of a fall injury, most often because of a head injury or hip fracture.[3]
- Each year at least 250,000 older people are hospitalized for hip fractures.[5]
- More than 95% of hip fractures are caused by falling,[6] usually by falling sideways.[7]
- Falls are the most common cause of traumatic brain injuries (TBI).[8]
- Adjusted for inflation, the direct medical costs for fall injuries are $34 billion annually.[9] Hospital costs account for two-thirds of the total.



KAISER PERMANENTE®

Why a Podiatrist

KAISER PERMANENTE®

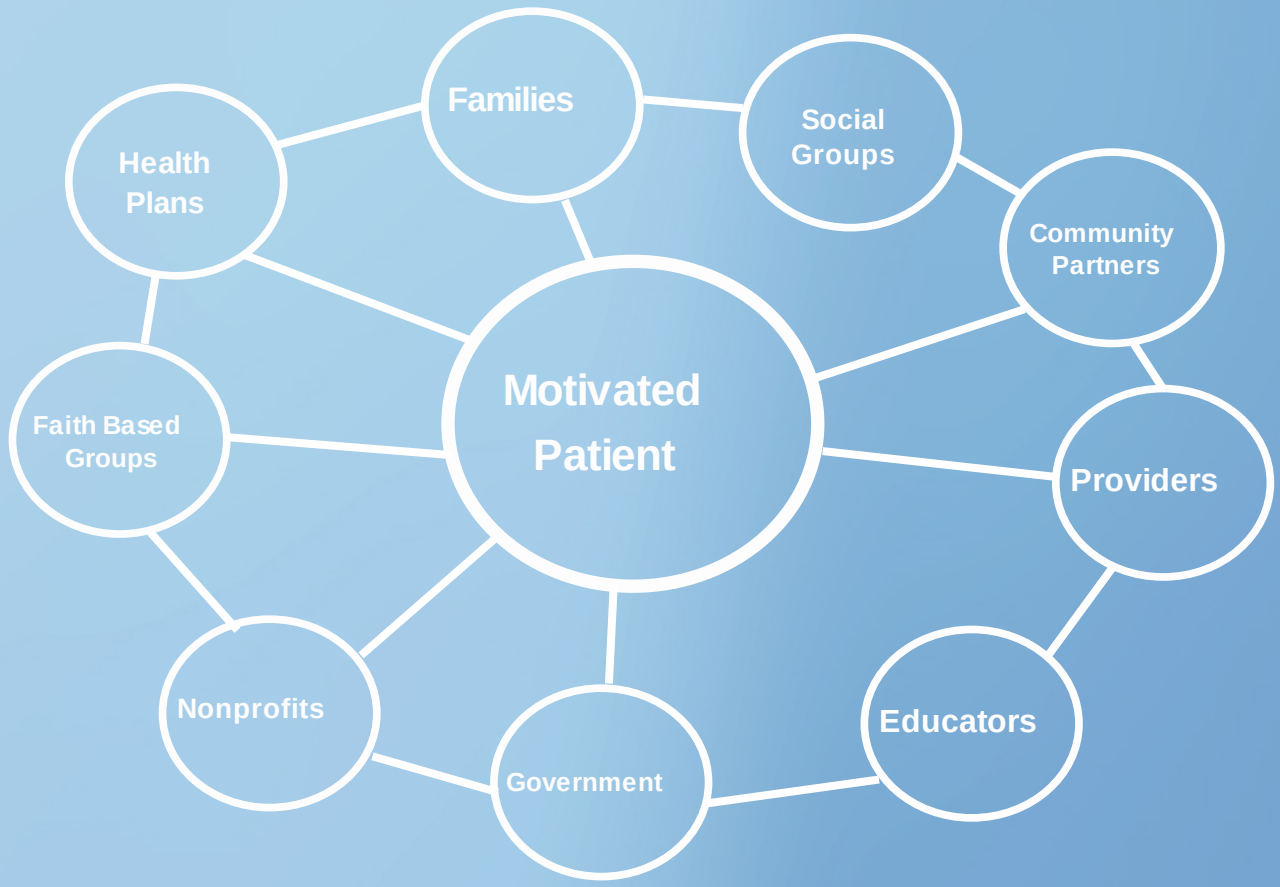
Feet and footwear

Neuropathy

Painful feet with deformities

Check for shoes, slippers , socks, barefoot

It Takes a Village



Talking about Falls with Patients (stages of change)

Many fall prevention strategies call for patients to change their behaviors by:

- Attending a fall prevention program
- Doing prescribed exercises at home
- Changing their home environment

We know that behavior change is difficult. Traditional advice and patient education often does not work.

The Stages of Change model is used to assess an individual's readiness to act on a new, healthier behavior. Research on the change process depicts patients as always being in one of the five "stages" of change.

Behavior change is seen as a dynamic process involving both cognition and behavior, that moves a patient from being uninterested, unaware, or unwilling to make a change (precontemplation); to considering a change (contemplation); to deciding and preparing to make a change (preparation); to changing behavior in the short term (action); and to continuing the new behavior for at least 6 months (maintenance).

The Stages of Change model has been validated and applied to a variety of behaviors including:

- Exercise behavior
- Smoking cessation
- Contraceptive use
- Dietary behavior

Stages of Change model

Stage of change	Patient cognition and behavior
Precontemplation	Does not think about change, is resigned or fatalistic Does not believe in or downplays personal susceptibility
Contemplation	Weighs benefits vs. costs of proposed behavior change
Preparation	Experiments with small changes
Action	Takes definitive action to change
Maintenance	Maintains new behavior over time

From: Prochaska JO, Velicer WF. The transtheoretical model of health behavior change. *Am J Health Promot* 1997;12(1):38-48.


NOWA
STEADI
Pre-screening
MTHA
Physical
Therapy
Class
Partnership with
Oregon Health
Authority
KAISER PERMANENTE®

NOWA

KAISER PERMANENTE®


Oregon
Health
Authority


KAISER PERMANENTE®

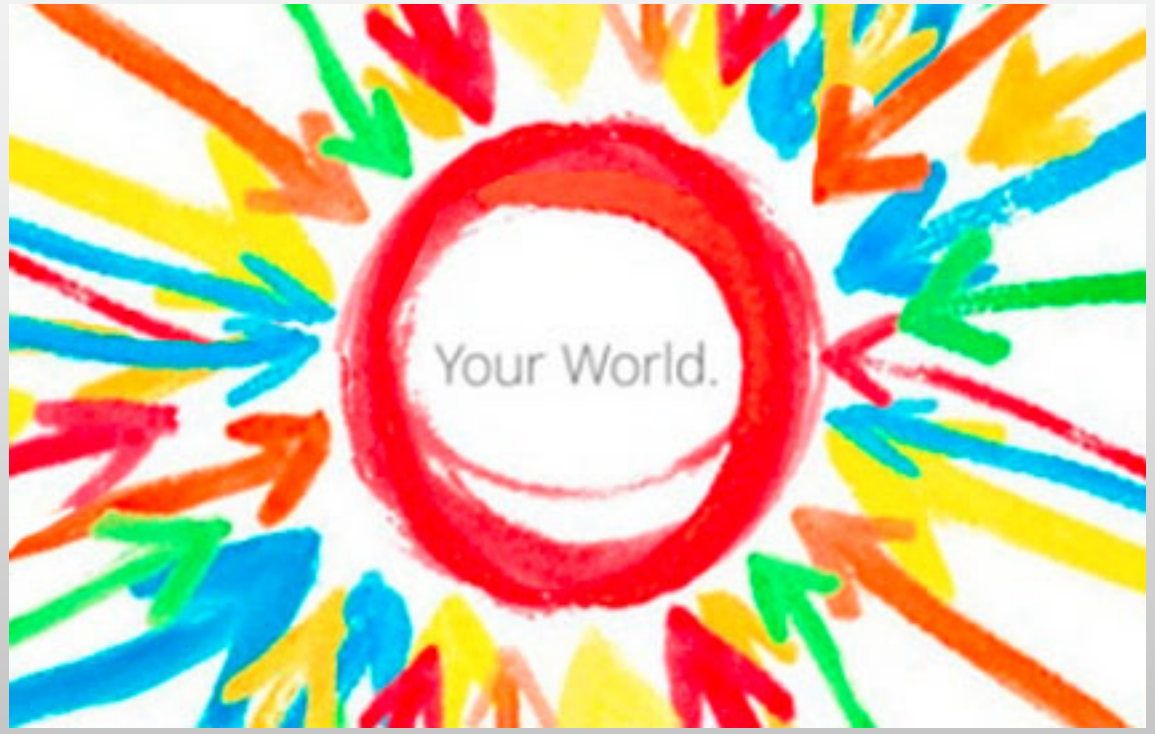

Comfort
Keepers®


Future
KAISER PERMANENTE®

Collaboration not Isolation


EXERCISE AS
A VITAL SIGN
KAISER PERMANENTE®

Application



Janet Simon, DPM

APMA STATE COMPONENT PARTNERSHIPS IN FALLS PREVENTION

Re: RESOLUTION NO. 13-10 (DIRECTIVE)
PUBLIC HEALTH COMMITTEES IN PODIATRIC COMPONENT SOCIETIES

RESOLVED, that the American Podiatric Medical Association (APMA) recommend that all component state podiatric medical societies form a public health committee modeled after that of the Massachusetts Podiatric Medical Society (MPMS) to serve its membership and the public health.

RESOLUTION #4-16 (DIRECTIVE) FALLS PREVENTION – Passed by APMA HOD 2016

WHEREAS, Falls are an ever increasing public health problem in the United States;

WHEREAS, Podiatric physicians interact with people at increased risk for falls on a regular basis and have unique opportunities to encourage appropriate medical care and lifestyle changes to improve the health outcomes of people at risk for falls;

WHEREAS, The education and training of podiatric physicians allows them to understand the complexities of falls prevention beyond their manifestation in the lower extremity; and

WHEREAS, The involvement of podiatric physicians in the collaborative healthcare team treatment approach is essential to addressing the public health problem represented by falls;

RESOLVED, That APMA strongly encourages its components to join state-wide Falls Prevention Coalitions and provide education on falls prevention to their members and staff; and

RESOLVED, That APMA continue its educational outreach on the role of podiatry in Falls Risk Assessment and Prevention through established organizations such as the Falls Coalition or similar organizations.

Falls and their associated healthcare costs can be reduced by better integrating research on exercise intervention into clinical practice and community programs. J Am Geriatr Soc 64:425–431, 2016.

However, few of these evidence-based interventions have been adopted in clinical or community practice because of a lack of research-to-practice data and gaps in the current guidelines regarding how to prescribe appropriate interventions or implement and integrate them into routine clinical and community practice.

Adoption of Guidelines by Healthcare Providers Is Limited

Why ?

- Adoption of guidelines in clinical practice has been limited and slow. Jones and colleagues showed that only 8% of primary care physicians based their fall prevention practices on guidelines from any recognized organization.

Commonly cited barriers to adoption include :

- Lack of time
- Lack of training opportunities
- Lack of financial incentives
- Lack of coordination among healthcare providers
- The need for simpler and more easily disseminated materials and referral resources

Clinicians and Community Providers Do Not Connect

- Although it seems obvious that maximizing the impact of any intervention relies primarily on clinicians referring patients to existing community-based programs, little effort has been made to bridge the communication gap between clinicians and community service providers.
- Most communities have no coordinated system that allows clinicians to determine what specific interventions are available, which would be the best fit for a particular patient, or whether a patient has enrolled in and completed a program.

(Here's where State Falls Prevention Coalitions play a key role.)

Increasing Physician Awareness and Adoption of Proven Exercise Interventions

- Professional organizations and the public health sector must actively campaign for, and sponsor, in-service and continuing education opportunities for healthcare providers to expose them to specific fall prevention interventions and bring available resources (e.g., referral procedures, ready-to-use pamphlets, referral pads) directly to their attention.
- Research shows that offering providers opportunities to undertake training programs as part of their continuing education increases referrals to fall prevention programs. Li F, Harmer P, Stock R et al. Implementing an evidence-based fall prevention program in an outpatient clinical setting. J Am Geriatr Soc 2013;61:2142–2149.

Increase Knowledge of Resources/Tools

The Centers for Disease Control and Prevention (CDC) Injury Center has created :

- **CDC Compendium of Effective Fall Interventions: What Works for Community-Dwelling Older Adults**
- **STEADI =Stopping Elderly Accidents, Deaths, and Injuries**

State Falls Prevention Coalitions

- 43 States – Contact List posted on APMA Public Health Resource Page
- Funded by State Departments of Health / Departments of Senior Health-Affairs
- Engage partnerships and relationships between clinicians, health insurers, and community service providers to fill gaps in converting evidence-based fall prevention interventions into practice
- Increases funding opportunities and efforts for falls prevention
- Learn more at NCOA

STEADI

Stopping Elderly Accidents, Deaths and Injuries

Dyane Tower, DPM, MPH

APMA – American Podiatri ×

Dyane

www.apma.org/index.cfm

Apps Bookmarks CITI – Collaborative Fitbit Vista Vista WCC Condell PLS Bb Biomed Libraries Typhon Coursera OR Live Atherectomy CBHM Chairs

Welcome, Dyane! Log Out View Cart My APMA

APMA

AMERICAN PODIATRIC MEDICAL ASSOCIATION

Join Donate Media Room Policymakers' Resources eAdvocacy Corporate Opportunities Contact Us

STEADI

Advanced Search

Learn About Feet | Education & Professional Development | Manage Your Practice | APMA Working for You

News

RSS

- APMA Sponsors Capitol Hill Briefing on Limb Salvage
- Register for Webinars: Falls Prevention, At-Risk Foot Care
- Understanding ACA-Related Fee Reductions
- Second Round of MGMA Surveys—April 15 Deadline
- Paul Kinberg, DPM, Accepts Award of Excellence

APMA Sponsors Capitol Hill Briefing

Read More News

Find a Podiatrist

ZIP Code

More Options

Mile Radius

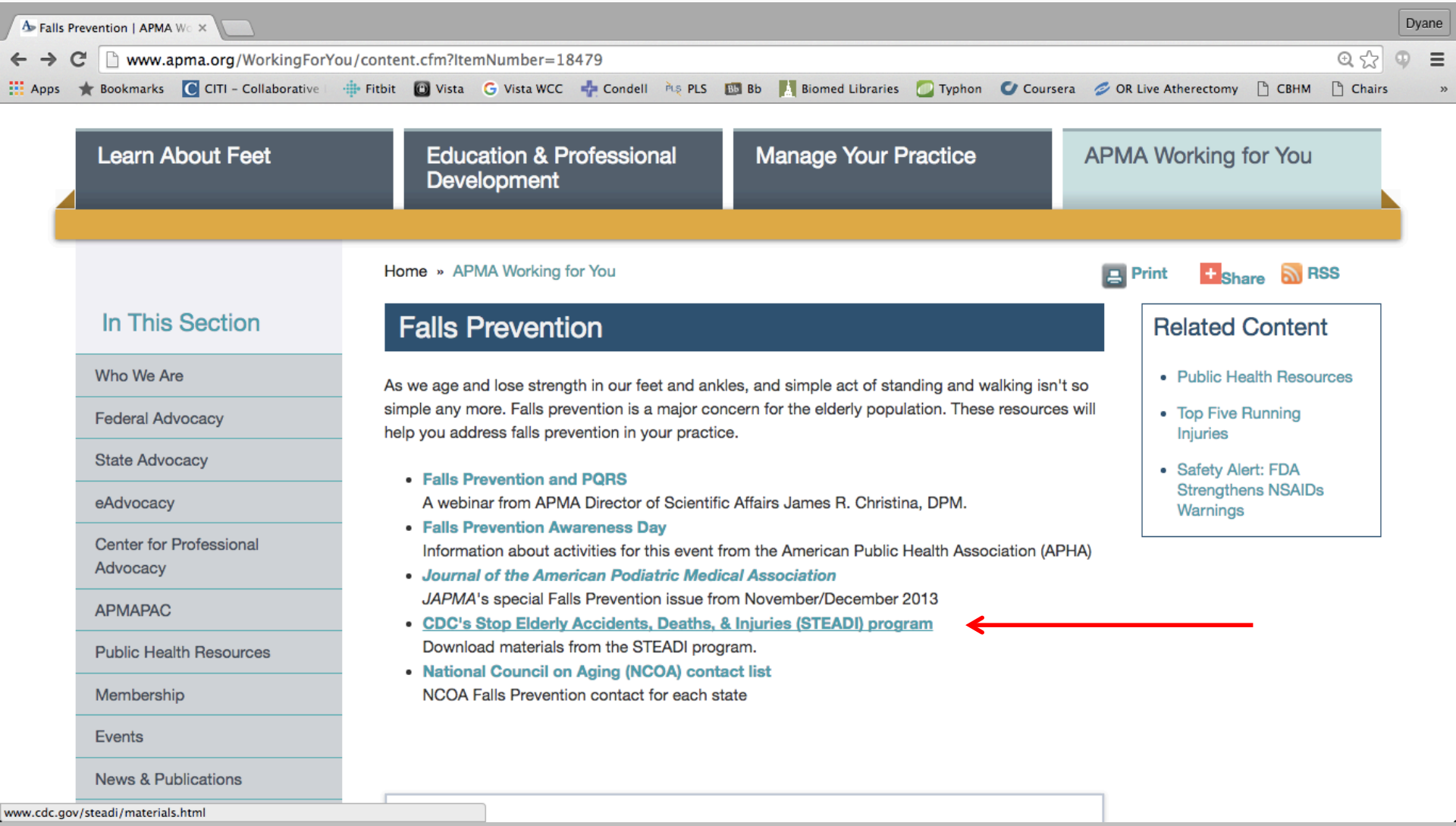
5 10 25 50

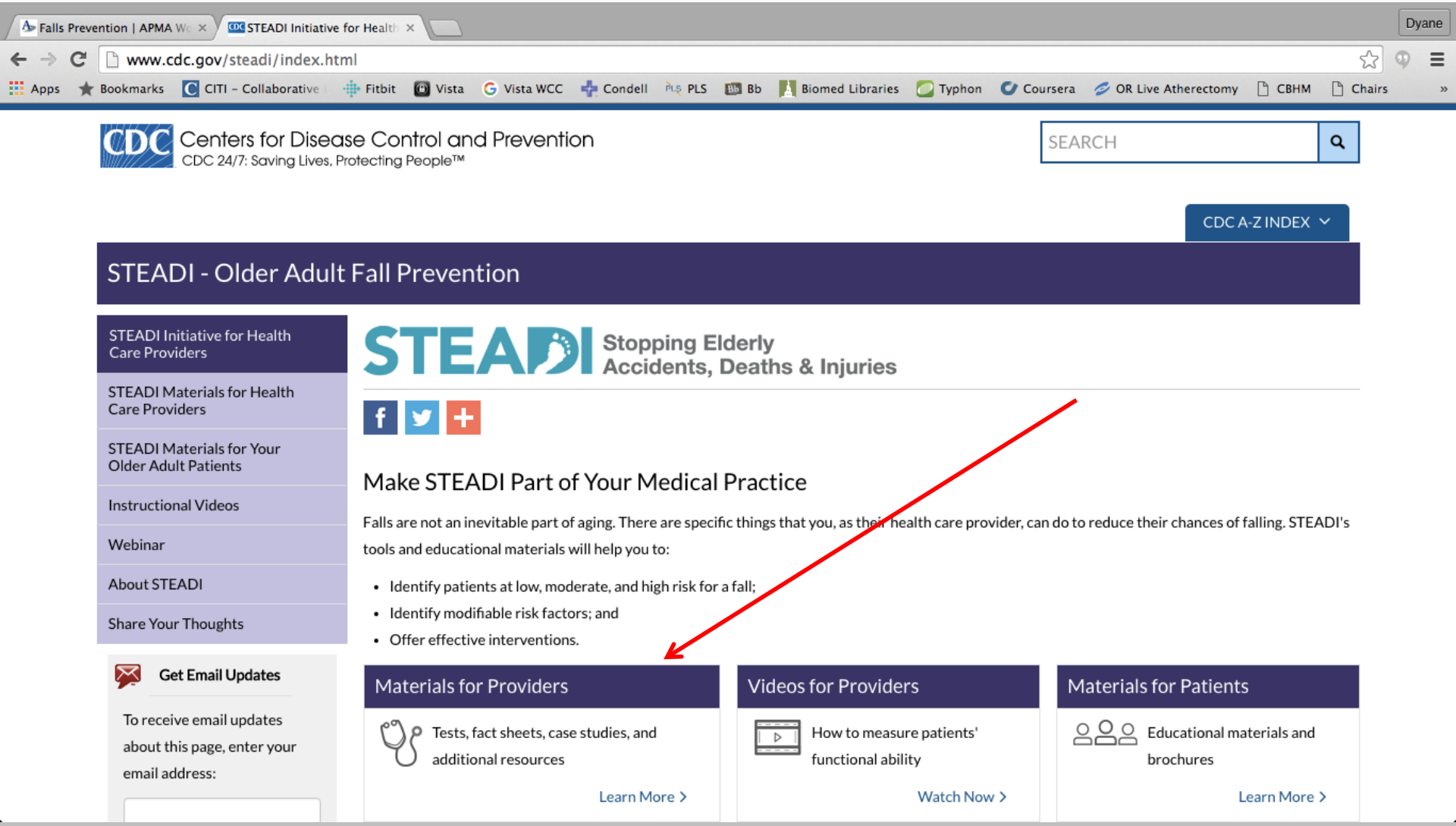
Search

Find an APMA Seal Product

Browse by Company

Browse by Type


Falls Prevention | APMA
Dyane
www.apma.org/WorkingForYou/content.cfm?ItemNumber=18479
Apps
Bookmarks
CITI – Collaborative
Fitbit
Vista
Vista WCC
Condell
PLS
Bb
Biomed Libraries
Typhon
Coursera
OR Live Atherectomy
CBHM
Chairs
Learn About Feet
Education & Professional Development
Manage Your Practice
APMA Working for You
In This Section
Who We Are
Federal Advocacy
State Advocacy
eAdvocacy
Center for Professional Advocacy
APMAPAC
Public Health Resources
Membership
Events
News & Publications
Home » APMA Working for You
Print
Share
RSS
Falls Prevention
As we age and lose strength in our feet and ankles, and simple act of standing and walking isn't so simple any more. Falls prevention is a major concern for the elderly population. These resources will help you address falls prevention in your practice.
Falls Prevention and PQRS
A webinar from APMA Director of Scientific Affairs James R. Christina, DPM.
Falls Prevention Awareness Day
Information about activities for this event from the American Public Health Association (APHA)
Journal of the American Podiatric Medical Association
JAPMA's special Falls Prevention issue from November/December 2013
CDC's Stop Elderly Accidents, Deaths, & Injuries (STEADI) program
Download materials from the STEADI program.
National Council on Aging (NCOA) contact list
NCOA Falls Prevention contact for each state
Related Content
Public Health Resources
Top Five Running Injuries
Safety Alert: FDA Strengthens NSAIDs Warnings
www.cdc.gov/steadi/materials.html


Falls Prevention | APMA
STEADI Initiative for Health
Dyane
www.cdc.gov/steadi/index.html
Apps
Bookmarks
CITI – Collaborative
Fitbit
Vista
Vista WCC
Condell
PLS
Bb
Biomed Libraries
Typhon
Coursera
OR Live Atherectomy
CBHM
Chairs
CDC
Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™
SEARCH
CDC A-Z INDEX
STEADI - Older Adult Fall Prevention
STEADI Initiative for Health Care Providers
STEADI Materials for Health Care Providers
STEADI Materials for Your Older Adult Patients
Instructional Videos
Webinar
About STEADI
Share Your Thoughts
Get Email Updates
To receive email updates about this page, enter your email address:
STEADI
Stopping Elderly Accidents, Deaths & Injuries
Make STEADI Part of Your Medical Practice
Falls are not an inevitable part of aging. There are specific things that you, as their health care provider, can do to reduce their chances of falling. STEADI's tools and educational materials will help you to:
Identify patients at low, moderate, and high risk for a fall;
Identify modifiable risk factors; and
Offer effective interventions.
Materials for Providers
Tests, fact sheets, case studies, and additional resources
Learn More
Videos for Providers
How to measure patients' functional ability
Watch Now
Materials for Patients
Educational materials and brochures
Learn More

Falls Prevention | APMA W... × STEADI Materials for Healt... ×

Dyane

www.cdc.gov/steadi/materials.html

Apps Bookmarks CITI – Collaborative Fitbit Vista Vista WCC Condell PLS Bb Biomed Libraries Typhon Coursera OR Live Atherectomy CBHM Chairs

CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

SEARCH

CDC A-Z INDEX

STEADI - Older Adult Fall Prevention

- STEADI Initiative for Health Care Providers
- **STEADI Materials for Health Care Providers**
- STEADI Materials for Your Older Adult Patients
- Instructional Videos
- Webinar
- About STEADI
- Share Your Thoughts

Get Email Updates

To receive email updates about this page, enter your email address:

STEADI Stopping Elderly Accidents, Deaths & Injuries

CDC > STEADI Initiative for Health Care Providers

STEADI Materials for Health Care Providers

Tools for Your Practice | Tests | Falls Information | Case Studies | Referral Form | Posters

Make fall prevention part of your practice.

Algorithm for Fall Risk Assessment & Interventions

This tool walks health care providers through assessing a patient's fall risk, educating patients, selecting interventions, and following up.

Download

Algorithm for Fall Risk Assessment & Interventions [English version]

sider additional risk assessment (e.g., medication review, cognitive screen, syncope)

STEADI Stopping Elderly Accidents, Deaths & Injuries

Fall Risk Checklist

Patient: Date: Time: AM/PM

Fall Risk Factor Identified	Factor Present?	Notes
	☐ Yes ☐ No	
	☐ Yes ☐ No	
	☐ Yes ☐ No	
	☐ Yes ☐ No	
	☐ Yes ☐ No	
	No	
	☐ Yes ☐ No	

STEADI Stopping Elderly Accidents, Deaths & Injuries

CS259944J

Falls Prevention | APMA W... × | STEADI Materials for Healt... × | Dyane

www.cdc.gov/steadi/materials.html

Apps | Bookmarks | CITI – Collaborative | Fitbit | Vista | Vista WCC | Condell | PLS | Bb | Biomed Libraries | Typhon | Coursera | OR Live Atherectomy | CBHM | Chairs

STEADI – Older Adult Fall Prevention

- STEADI Initiative for Health Care Providers
- **STEADI Materials for Health Care Providers**
- STEADI Materials for Your Older Adult Patients
- Instructional Videos
- Webinar
- About STEADI
- Share Your Thoughts

Get Email Updates

To receive email updates about this page, enter your email address:

What's this? Submit

Related Content

STEADI Stopping Elderly Accidents, Deaths & Injuries

CDC > STEADI Initiative for Health Care Providers

STEADI Materials for Health Care Providers

Tools for Your Practice | **Tests** | Falls Information | Case Studies | Referral Form | Posters

Use validated tests to assess your patients' falls risk factors.

Timed Up and Go (TUG) Test

Use this test to assess a patient's mobility. See our simple instructions, and watch the short video on how to conduct the test.

Download

The Timed Up and Go (TUG) Test [PDF - 369 KB]

30-Second Chair Stand Test

Use this test to assess a patient's leg strength and endurance. See our simple instructions, and watch the short video on how to conduct the test.

www.cdc.gov/steadi/materials.html#tabs-2

Patient: Date: Time: AM/PM

The Timed Up and Go (TUG) Test

Purpose: To assess mobility

Equipment: A stopwatch

Directions: Patients wear their regular footwear and can use a walking aid if needed. Begin by having the patient sit back in a standard arm chair and identify a line 3 meters or 10 feet away on the floor.

Instructions to the patient:

When I say **"Go,"** I want you to:

1. Stand up from the chair
2. Walk to the line on the floor at your normal pace
3. Turn
4. Walk back to the chair at your normal pace
5. Sit down again

Patient: Date: Time: AM/PM

The 30-Second Chair Stand Test

Purpose: To test leg strength and endurance

Equipment:

- A chair with a straight back without arm rests (seat 17" high)
- A stopwatch

Instructions to the patient:

1. Sit in the middle of the chair.
2. Place your hands on the opposite shoulder crossed at the wrists.
3. Keep your feet flat on the floor.
4. Keep your back straight and keep your arms against your chest.
5. On **"Go,"** rise to a full standing position and then sit back down again.
6. Repeat this for 30 seconds.

On **"Go,"** begin timing.

If the patient must use his/her arms to stand, stop the test. Record "0" for the number and score.

Count the number of times the patient comes to a full standing position in 30 seconds.

If the patient is over halfway to a standing position when 30 seconds have elapsed, count it as a stand.

Record the number of times the patient stands in 30 seconds.

Number: _____ **Score** _____ **See next page.**

A below average score indicates a high risk for falls.

Notes:

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

Patient: Date: Time: AM/PM

The 4-Stage Balance Test

Purpose: To assess static balance

Equipment: A stopwatch

Directions: There are four progressively more challenging positions. Patients should not use an assistive device (cane or walker) and keep their eyes open.

Describe and demonstrate each position. Stand next to the patient, hold his/her arm and help them assume the correct foot position.

When the patient is steady, let go, but remain ready to catch the patient if he/she should lose their balance.

If the patient can hold a position for 10 seconds without moving his/her feet or needing support, go on to the next position.
If not, stop the test.

Instructions to the patient:

for at least 10 seconds

is at increased risk of falling.

Notes:

Patient: Date: Time: AM/PM

STEADI Stopping Elderly Accidents, Deaths & Injuries

Falls Prevention | APMA W... × STEADI Materials for Healt... ×

Dyane

www.cdc.gov/steadi/materials.html

Apps Bookmarks CITI – Collaborative Fitbit Vista Vista WCC Condell PLS Bb Biomed Libraries Typhon Coursera OR Live Atherectomy CBHM Chairs

CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

SEARCH

CDC A-Z INDEX

STEADI - Older Adult Fall Prevention

- STEADI Initiative for Health Care Providers
- **STEADI Materials for Health Care Providers**
- STEADI Materials for Your Older Adult Patients
- Instructional Videos
- Webinar
- About STEADI
- Share Your Thoughts

Get Email Updates

To receive email updates about this page, enter your email address:

STEADI Stopping Elderly Accidents, Deaths & Injuries

CDC > STEADI Initiative for Health Care Providers

STEADI Materials for Health Care Providers

Tools for Your Practice | Tests | **Falls Information** | Case Studies | Referral Form | Posters

Get background information about falls.

Falls Are a Major Threat for Your Patients

Learn how serious a problem falls are for older adults.

Download

Falls Are a Major Threat for Your Patients [PDF - 384 KB]

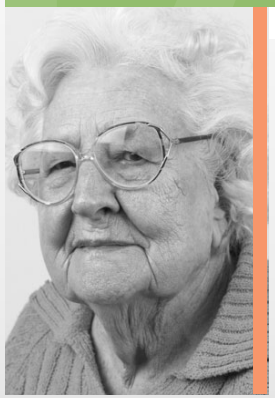
www.cdc.gov/steadi/materials.html#tabs-3

Falls are a Major Threat for Your Patients

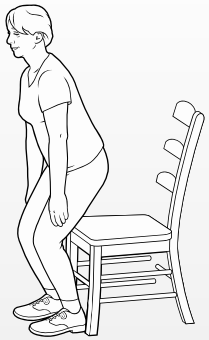
CDC

STEADI Stopping Elderly Accidents, Deaths & Injuries

FALLS



2=search



Chair Rise Exercise

What it does: Strengthens the muscles in your thighs & buttocks.

Goal: To do this exercise without using your hands as you become stronger.

How to do it:

1. Sit toward the front of a sturdy chair with your knees bent & feet flat on the floor, shoulder-width apart.
2. Rest your hands lightly on the seat on either side of you, keeping your back & neck straight & chest slightly forward.
3. Breathe in slowly. Lean forward & feel your weight on the front of your feet.
4. Breathe out & slowly stand up, using your hands as little as possible.
5. Pause for a full breath in & out.
6. Breathe in as you slowly sit down. Do not let yourself collapse back down into the chair. Rather, control your lowering as much as possible.
7. Breathe out.

Repeat 10–15 times. If this number is too hard for you when you first start practicing this exercise, begin with fewer & work up to this number.

Rest for a minute & then do a final set of 10–15.

Centers for Disease Control and Prevention
National Center for Injury Prevention and Control

2015

CS259944E

CDC

STEADI Stopping Elderly Accidents, Deaths & Injuries

STEADI is available for the whole health care team

oviders who adopt STEADI, over a 5-year period as many as:

6 million more patients could be screened,

$3.5 billion more in direct medical costs could be saved.

Customize STEADI patient materials and post them as a resource on your website, or as handouts.

STEADI materials include:

- **Online clinical training & Instructional videos**
- **Clinical screening algorithm**
- **Case studies**
- **Educational materials for patients, their friends and family**

COMING SOON

Clinical decision support modules for electronic health record systems (Epic and GE Centricity).

Learn more at: cdc.gov/steadi, or contact us at: CDC-INFO@cdc.gov.

For every **5,000** health care providers who adopt STEADI, over a 5-year period as many as:

- **6 million** more patients could be screened,
- **1 million** more falls could be prevented; and
- **$3.5 billion** more in direct medical costs could be saved.

STEADI

Stopping Elderly Accidents, Deaths & Injuries

www.cdc.gov/steadi

PODIATRIST LED INVOLVEMENT IN FALLS PREVENTION

Kyle Bruce, DPM, MPH

Podiatric Risk Factors

- Severe Hallux Valgus (RR 2.36) [1]
- Lesser Toe Deformities (RR 1.32) [1]
- Going barefoot or in socks (OR=11) [2]
- Heel height > 2.5cm (OR 1.9) [3]

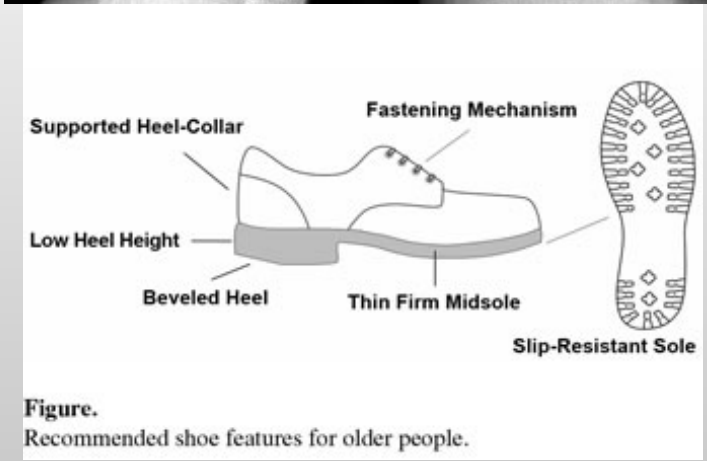


Figure.
Recommended shoe features for older people.

[1] Mickle, Karen J., Bridget J. Munro, Stephen R. Lord, Hylton B. Menz, and Julie R. Steele. "ISB Clinical Biomechanics Award 2009: Toe Weakness and Deformity Increase the Risk of Falls in Older People." *Clinical Biomechanics (Bristol, Avon)* 24, no. 10 (December 2009): 787–91. doi:10.1016/j.clinbiomech.2009.08.011.

[2] Koepsell, Thomas D., Marsha E. Wolf, David M. Buchner, Walter A. Kukull, Andrea Z. LaCroix, Allan F. Tencer, Cara L. Frankenfeld, Milda Tautvydas, and Eric B. Larson. "Footwear Style and Risk of Falls in Older Adults." *Journal of the American Geriatrics Society* 52, no. 9 (September 1, 2004): 1495–1501. doi:10.1111/j.1532-5415.2004.52412.x.

[3] Menant, Jasmine C., Julie R. Steele, Hylton B. Menz, Bridget J. Munro, and Stephen R. Lord. "Optimizing Footwear for Older People at Risk of Falls." *Journal of Rehabilitation Research and Development* 45, no. 8 (2008): 1167–81.

Measure 155: Falls Plan of Care

Must include

- Consideration of Vitamin D supplementation

AND

- Balance, strength and gait training

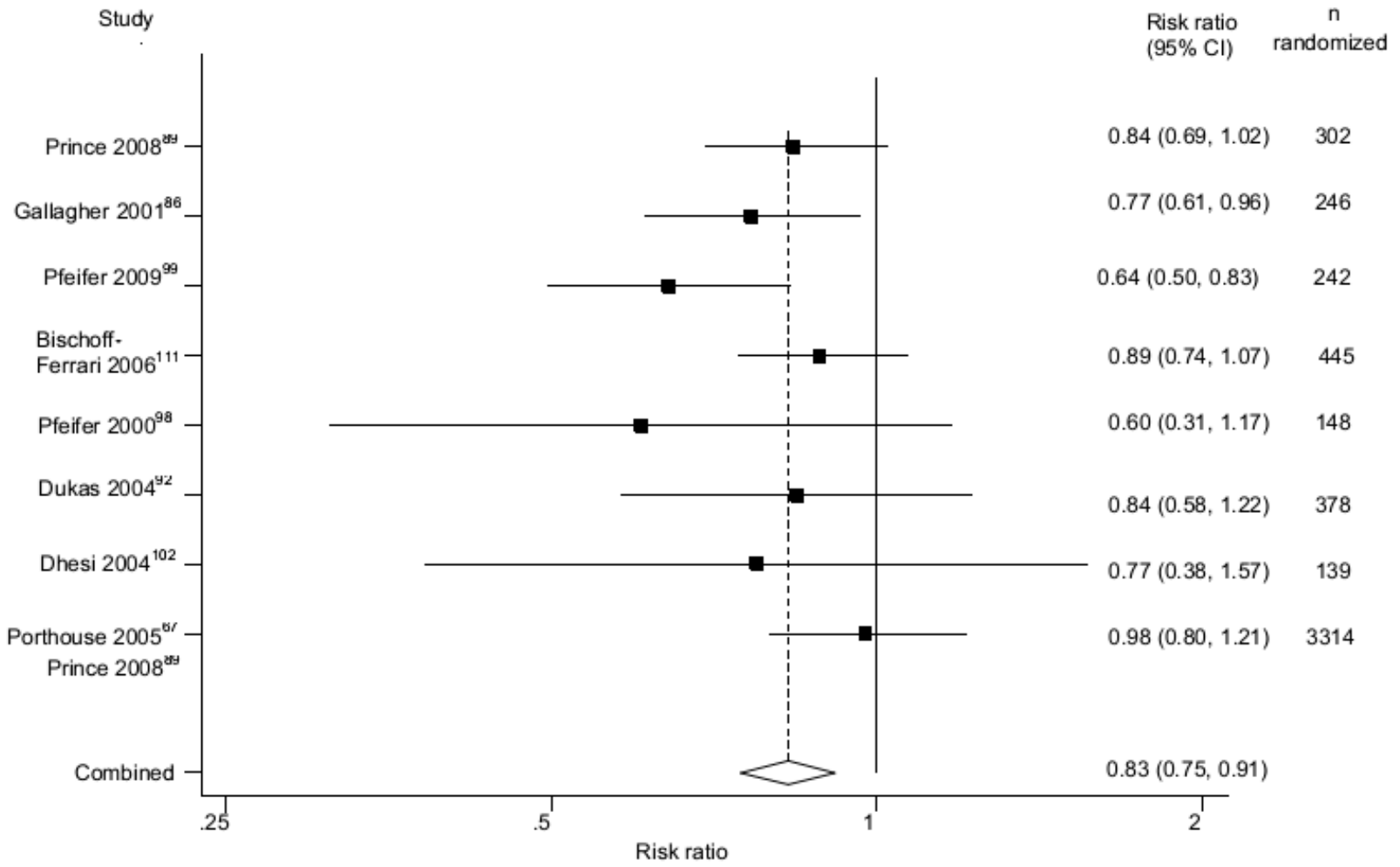
Consideration of Vitamin D supplementation

- Document it was advised

OR

- Document that patient was referred to PCP for advice on Vitamin D supplementation

Figure 7. Pooled Risk for Falling In Single Clinical Treatment Interventions: Vitamin D (KQ 2)



NNT=6 for Vitamin D supplementation

Michael, Yvonne L., Jennifer S. Lin, Evelyn P. Whitlock, Rachel Gold, Rongwei Fu, Elizabeth A. O'Connor, Sarah P. Zuber, Tracy L. Beil, and Kevin W. Lutz. *Interventions to Prevent Falls in Older Adults: An Updated Systematic Review.* U.S. Preventive Services Task Force Evidence Syntheses, Formerly Systematic Evidence Reviews. Rockville (MD): Agency for Healthcare Research and Quality (US), 2010. http://www.ncbi.nlm.nih.gov/books/NBK51685/.

How much to supplement?

- A vitamin D dose of 700 to 800 IU/d reduced the relative risk (RR) of **hip fracture by 26%** and any **nonvertebral fracture by 23%** versus calcium/placebo

- No significant benefit was observed for RCTs with 400 IU/d vitamin D

	Rate of falls*			Risk of falling*		
Intervention	Rate ratio (95% CI)	No. of participants	No. of trials	Relative risk (95% CI)	No. of participants	No. of trials
Vitamin D						
Vitamin D supplementation	1.00 (0.90–1.11)	9 324	7	0.96 (0.89–1.03)	26 747	13
Vitamin D supplementation in people with low vitamin D levels	0.57 (0.37–0.89)	260	2	0.70 (0.56–0.87)	804	4

Bischoff-Ferrari HA, Willett WC, Wong JB, Giovannucci E, Dietrich T, and Dawson-Hughes B. "Fracture Prevention with Vitamin D Supplementation: A Meta-Analysis of Randomized Controlled Trials." *JAMA* 293, no. 18 (May 11, 2005): 2257–64. doi:10.1001/jama.293.18.2257.

Balance, strength and gait training

- Referral to physical therapy for BGST

OR

- Referral to exercise program

OR

- Documentation that BGST instructions were provided

Exercise to prevent falls in older adults: an updated meta-analysis and best practice recommendations

- Meta-analysis of 54 studies
- "Exercise for falls prevention should provide a moderate or high challenge to balance and be undertaken for at least 2 hours per week on an ongoing basis"
- The pooled estimate of the effect of exercise on the rate of falls indicates a 16% reduction

NNT=6 for Balance, gait, strength program

Sherrington, C. "Exercise to Prevent Falls in Older Adults: An Updated Meta-Analysis and Best Practice Recommendations. NSW Health Bulletin. 2011.

Component	Reduction in falls in studies with this component		
	Reduction %	95% CI	Studies *n*
Exercise that aims to provide a moderate or high challenge to balance	22	14–30	43
Exercise that aims to provide a high challenge to balance	25	15–34	30
Total exercise dose more than 50 hours	23	13–32	30
Inclusion of walking training	10	0–22	30
A high risk study population	10	0–20	39

"The programs that included balance training, a higher dose of exercise and did not include walking training had the greatest effect on reducing falls"

Sherrington, C. "Exercise to Prevent Falls in Older Adults: An Updated Meta-Analysis and Best Practice Recommendations. NSW Health Bulletin. 2011.

Table 3 (part 1 of 2): Interventions for preventing falls among older people living in the community (Gillespie et al.[23])

Intervention	Rate of falls*			Risk of falling*		
	Rate ratio (95% CI)	No. of participants	No. of trials	Relative risk (95% CI)	No. of participants	No. of trials
Exercise						
Tai chi	0.72 (0.52–1.00)	1 563	5	0.71 (0.57–0.87)	1 625	6
Strength and resistance training	1.80 (0.84–3.87)	64	1	0.77 (0.52–1.14)	120	1
Walking groups	NR	NR	NR	0.95 (0.77–1.18)	222	1
Any exercise interventions	NR	NR	NR	Risk of fall-related fracture: 0.34 (0.18–0.63)	810	6
Multicomponent group exercise (combination of 2 or more categories of exercise)	0.71 (0.63–0.82)	3 622	16	0.85 (0.76–0.96)	5 333	22
Multicomponent home-based exercise	0.68 (0.58–0.80)	951	7	0.78 (0.64–0.94)	714	6
Exercise training including only one of gait, balance or functional training	0.72 (0.55–0.94)	519	4	0.81 (0.62–1.97)	453	3
Vitamin D						
Vitamin D supplementation	1.00 (0.90–1.11)	9 324	7	0.96 (0.89–1.03)	26 747	13
Vitamin D supplementation in people with low vitamin D levels	0.57 (0.37–0.89)	260	2	0.70 (0.56–0.87)	804	4
Home assessment						
Home safety assessment and modification interventions						
Overall	0.81 (0.68–0.97)	4 208	6	0.88 (0.80–0.96)	4 051	7
Led by occupational therapist	0.69 (0.55–0.86)	1 443	4	0.79 (0.70–0.91)	1 153	5
Not led by occupational therapist	0.91 (0.75–1.11)	3 075	4	0.94 (0.85–1.05)	2 975	3

Gillespie LD, Robertson MC, Gillespie WJ, et al. Interventions for preventing falls in older people living in the community. *Cochrane Database Syst Rev* 2012;(9):CD007146.

Intervention	Rate of falls*		
	Rate ratio (95% CI)	No. of participants	No. of trials
Exercise			
Tai chi	0.72 (0.52–1.00)	1 563	5
Strength and resistance training	1.80 (0.84–3.87)	64	1
Walking groups	NR	NR	NR
Any exercise interventions	NR	NR	NR
Multicomponent group exercise (combination of 2 or more categories of exercise)	0.71 (0.63–0.82)	3 622	16
Multicomponent home-based exercise	0.68 (0.58–0.80)	951	7
Exercise training including only one of gait, balance or functional training	0.72 (0.55–0.94)	519	4

Gillespie LD, Robertson MC, Gillespie WJ, et al. Interventions for preventing falls in older people living in the community. *Cochrane Database Syst Rev* 2012;(9):CD007146.

Tai Chi

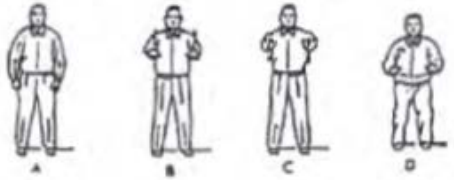
- Soft and slow movements with breathing, movement and awareness exercises and meditation
- Specifically targets:
  - Balance
  - Transfer of weight
  - Muscle strength
  - Coordination and mobility

Intervention	Rate of falls*		
	Rate ratio (95% CI)	No. of participants	No. of trials
Exercise			
Tai chi	0.72 (0.52–1.00)	1 563	5

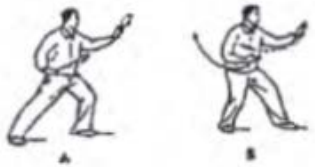
"TAI CHI PRINCIPLES FOR FALLS PREVENTION IN OLDER PEOPLE – CDC.GOV

(Photo : Bethany Clarke/Getty Images)

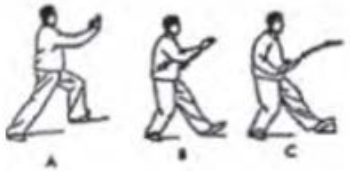
FORM 1. OPENING FORM



FORM 2

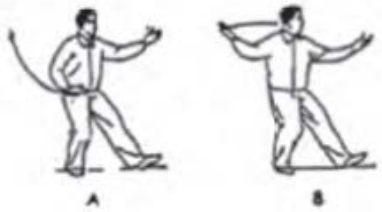


FORM 3

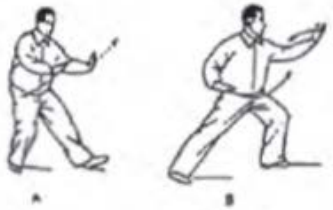


FORM 4

FORM 5



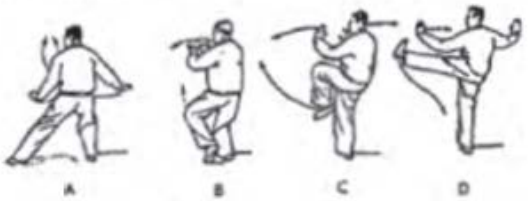
FORM 6



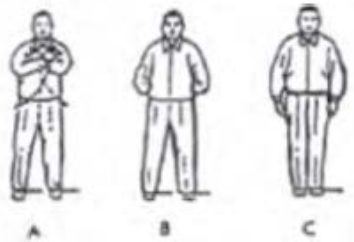
FORM 7

FORM 8

FORM 9



FORM 10



A CDC Compendium of Effective Fall Interventions:

What Works for Community-Dwelling Older Adults

Multicomponent Exercise Programs

The Otago Exercise Program
Campbell, et al. and Robertson, et al.
(1997, 1999, 2001, 2005)

- Home based program with 5 physical therapist visits
  - Lower extremity exercises with ankle weights
  - Tip-toe walking
  - Near tandem standing
  - Gentle ROM exercises
  - 30 minute sessions 3x weekly + 2x weekly walk outside

Falls rate reduced by 35%

Multicomponent Exercise Programs

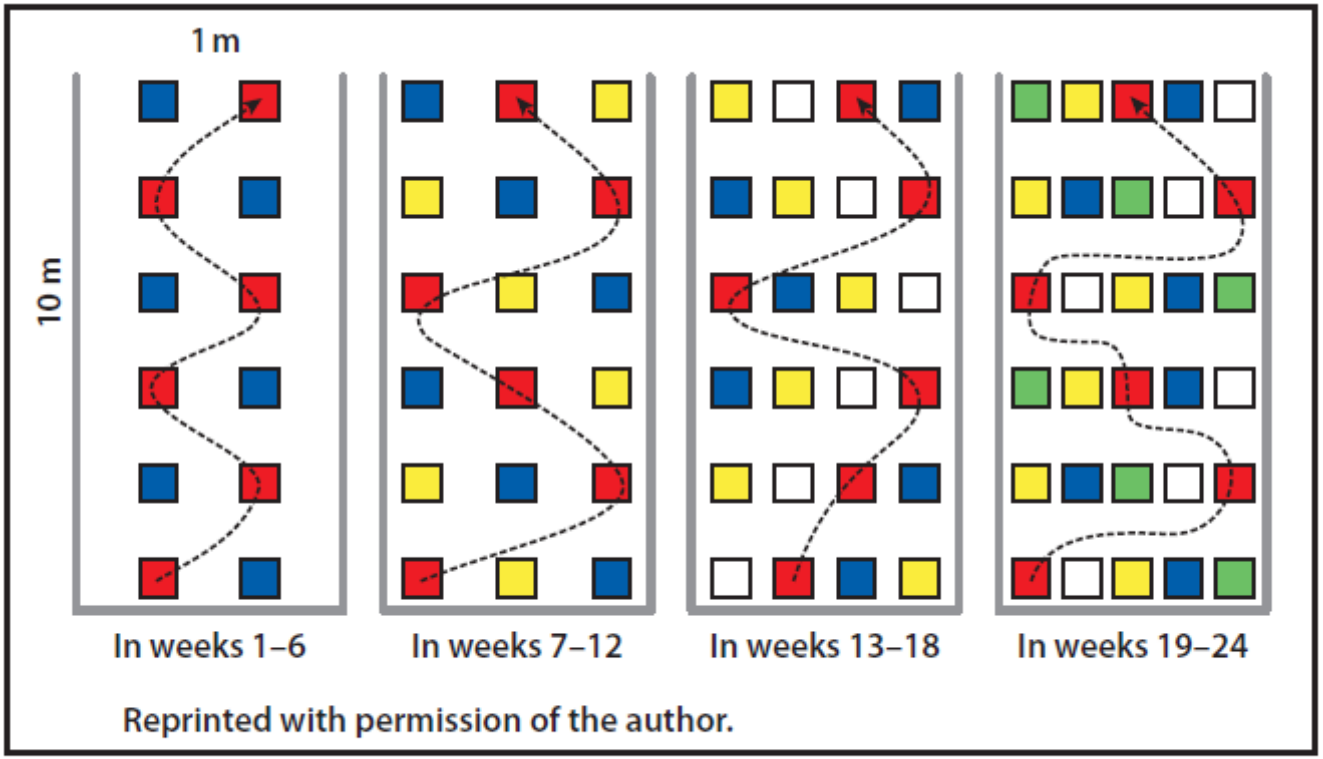
Falls Team Prevention Program
Logan, et al. (2010)

- OT and PT led group sessions lasting 2 hours, biweekly x 6 weeks
- PT instructed patients in home exercises based on Postural Stability program
- OT conducted home hazard assessment
- RN reviewed medications and assessed blood pressure

Falls rate reduced by 55% after 12 months

Multi-target Stepping Program
Yamada, et al. (2013)

- Color coded stepping course
- 7 minute sessions, biweekly



This picture illustrates the progression of the 24-week MTS course

Effectiveness of the Podiatrist Led Program

- 305 community dwellers (Mean age 74) with foot pain
- Intervention Group:
  - Pre-fab inserts with callus offloading
  - Shoegear recommendation, voucher for safe shoes
  - Falls prevention education
  - Exercise program (30 minutes, 3x per week)

Spink MJ, Menz HB, Fotoohabadi MRf, E Wee, Landorf KB, Hill KD, Lord SR. Effectiveness of a multifaceted podiatry intervention to prevent falls in community dwelling older people with disabling foot pain: randomized controlled trial. *BMJ* 2011; 342:d3411.

Effectiveness of the Podiatrist Led Program

- The mean number of falls per person per year was 1.06 for the control group (range 0-15) and 0.67 for the intervention group (range 0-6).

Falls rate decreased by 36%

Spink MJ, Menz HB, Fotoohabadi MRf, E Wee, Landorf KB, Hill KD, Lord SR. Effectiveness of a multifaceted podiatry intervention to prevent falls in community dwelling older people with disabling foot pain: randomized controlled trial. *BMJ* 2011; 342:d3411.

Podiatrist Led Program

- Adherence rates:
  - foot orthoses (69%)
  - footwear (54%)
  - home-based exercise (72%)

Spink J, Fotoohabadi R, Wee E, et al. Predictors of adherence to a multifaceted podiatry intervention for the prevention of falls in older people. BMC Geriatr 2011;11:51.

For every **5,000** health care providers who adopt STEADI, over a 5-year period as many as:

- **6 million** more patients could be screened,
- **1 million** more falls could be prevented; and
- **$3.5 billion** more in direct medical costs could be saved.

STEADI
Stopping Elderly Accidents, Deaths & Injuries
www.cdc.gov/steadi

- By integrating screening, reviewing and modifying medications, and recommending Vitamin D supplementation, physicians can reduce fall risk by 25%

Am J Lifestyle Med. 2016 Jan-Feb;10(1)

THANK YOU

National Public Health Week www.nphw.org
AN INITIATIVE OF THE AMERICAN PUBLIC HEALTH ASSOCIATION

APMA
American Podiatric Medical Association