

Walk-BEST Workbook

Learning to Walk Better, Faster, Longer, Stronger



*This book is for anyone who needs to improve one or more aspects of walking:
quality, quantity and enjoyment.*

INTRODUCTION

We all know about the health benefits of staying physically active throughout our lives. However, maintaining physical activity as people age, are injured, or develop joint problems or neurological conditions is challenging. But walking is still one of the best types of physical activity. It is the most recommended physical activity for seniors and for people with other reasons for limited mobility. Walking is a meaningful activity, easy to perform, promotes independence, allows for exploring the environment, and provides mental stimulation.

Many older persons or those with injuries and other health conditions do not walk well enough to gain health benefits from walking. As a result of a poor walking pattern, walking long enough and at a pace that promotes health is unattainable.

The Walk-BEST Workbook is designed to help you assess your capacity for safe and efficient walking and provides simple exercises for areas of your walking that need work. The Walk-BEST Workbook illustrates necessary components of safe, efficient and healthful walking so that walking becomes more enjoyable and sustainable. The aim is to help you walk your way to better health.

Walk-BEST Workbook covers 15 elements important to walk well identified from 34 national and international gait experts. In addition, 22 community-dwelling seniors endorsed these elements as being important to them and a survey of 677 people across Canada said “YES” to these elements. Research conducted by the Walk-BEST team at McGill University showed that workbook was judged by clinicians, researchers and seniors to be relevant, useful and user-friendly, with the potential to benefit seniors with walking impairments.

Funding for this workbook came from the Edith Strauss Foundation and the Helen Hutchinson Foundation. The development team are Dr Nancy Mayo (James McGill Professor), Dr. Kedar Mate (Postdoctoral Fellow), M. Ahmed Abou-Sharkh (PhD Candidate) from the School of Physical and Occupational Therapy as well as members of the OutcomesRUS research team at the McGill University Health Centers.

Open the workbook and walk BEST.

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Getting Started

Welcome to the Walk-BEST Self-Management Workbook. If you have not done much physical activity for a while, get the all-clear from your doctor before starting. Specifically, make sure there are no physical reasons why you should not (eventually) walk for 30 minutes a day, every day. That is a good long term walking goal to set. Carry out the assessment in the workbook and take the assessment sheet with you to your doctor and discuss any findings or concerns you have. For example, you may have foot problems that need attention or if you walk with a limp, the reason for that should be known. You could also consult a podiatrist for foot problems and/or a Physiotherapist.

The Walk-BEST Workbook includes:

- Self-assessment plan with pictures and step by step instructions on how to perform the assessment
- Set of exercises that match the walking element assessed with pictures.
- Instructions for how to access an app that you can use on your phone or ipad.

Self-assessment of Walking Challenges

The self-assessment pages are designed for you to assess your feet, joint mobility, posture, balance, and walking pattern. Some of the assessments are best done with an observer. So pair up with your spouse, friend, or family member and assess each other. It is also safer if there is someone beside you as you assess your balance and mobility. At the end of the workbook there is a summary sheet so you can keep track of the areas you assessed and those that need work and those that are good to go. You can use this summary sheet to track you progress.

Some walking challenges need professional assessment and treatment. Please consult your physician for any deformities or persistent pain or limping. This assessment is not as complete as the one you would get by a Physiotherapist. So if you find the assessment challenging and you are concerned about your walking, book an appointment with a Physiotherapist.

Exercises to Walk-BEST

Each element of the assessment is accompanied by one or two exercises that you can do on your own to improve your walking. Pick the ones that you need and make a plan to do them everyday. Even 5 minutes a day will make a difference, but 5 minutes three times a day will make an even a greater difference.

Walking Plan

Now that you have identified areas of your walking that need work, and you are actively working to fix these problems, you need to put into practice what you have learned. You need a walking plan. The best way of getting started with a walking plan is to set walking goals.

Remember, you have two things to work on:

1. Exercises you need to do for each of the assessment areas that need work
2. Practicing walking and applying the information in the workbook.



Tips for Setting SMART Goals

To adopt a healthier lifestyle, it is important to set effective goals. People who set their own health goals and define them well, manage their health better. Here are some tips that might help you set your own goals for walking well. And DON'T JUST THINK IT, INK IT

MAKE SURE YOUR GOALS ARE **SMART**.

SPECIFIC: A general goal would be: "Do my exercises" or "Walk more".

A specific goal would say: *"I will do the exercises in the workbook 5 minutes in the morning and 5 minutes in the evening, every day for two weeks and then I will reassess"*

"I will practice walking using a heel-to-toe pattern in my corridor for 2 minutes, twice a day, every day, for 2 weeks and then reassess".

MEASURABLE: To determine if your goal is measurable, ask yourself: How will I know when it is accomplished?

For this you can keep a diary and check off each time you do the activity.

ATTAINABLE: You can attain a goal you set when you plan wisely and establish a time frame that allows you to carry out steps towards the goal.

So setting the time, the frequency, and for how long will ensure the goal is attainable particularly if you start small and work up. Don't start with a plan of 30 minutes, start with 5 minutes. If this is attainable, you can set a different kind of goal.

REALISTIC: Your goal is probably realistic if you truly believe that it can be accomplished. Think about the other activities and responsibilities you have. Goals that will be disruptive to your day will not be realistic to accomplish.

TIME: Set a specific time frame for you to accomplish the goal. Set short term goals first. Think about what you can accomplish in a week, or two weeks at a time. You may also have a medium term goal such as a plan to do a particular activity in the near future, next month, next few months. A long term goal could be something you want to do in the future, plan a trip, join a walking group. These medium and long term goals are good to set in order to encourage you to work on your short term goals.



Your goal should reflect what you need and want to do!

Whenever you see this sign, think GOAL!

Safety First

It is important to carry out the assessment safely so do it with a partner.

When doing your exercises or practicing walking:

1. Always use your best judgment about where, when, and for how long:
 - a. Scan the environment and make sure the space is safe and clear of objects
 - b. Stop the exercises at any time if you are feeling unwell or unsafe.
2. Wear shoes with flat, non-skid soles that have good heel support and a flexible sole. Avoid shoes with high heels and backless shoes such as slippers, flip-flops, or clogs.
3. Build up gradually, and stop while you are still enjoying the walking activity.
4.  Any assessment or exercise that has a “red flag” have a caution associated with it.

What Does Walking Well Look Like

1. Heel first
2. Foot roll
3. Arm swing
4. Upright
5. 150 minutes per week in bouts of 10 minutes

Walk-BEST

This book is designed for you to use to improve your walking to the point that you can achieve a level of physical activity that is health promoting. Walking BEST will improve your independence as your walking will be smoother and safer and also less tiring.

PhysioBiometrics Inc.

This workbook is one of a suite of products that we, at PhysioBiometrics Inc., have developed to improve people’s walking, mobility, and posture. More information will soon be available at physiobiometrics.com. Our products include this workbook, as well as apps, workshops, inertial measuring devices, along with signal processing and machine learning algorithms to personalize feedback and treatment recommendations. For more information contact Dr_Nancy_Mayo@physiobiometrics.com.

Terms and conditions!!

This workbook was developed for people to self-manage walking quality. If you have medical conditions, consult a physician before performing this or any exercise program. All information contained in this workbook including but not limited to text, graphics, images, information, exercises, are for informational and educational purposes only.



We Would Like to Hear from You: Send us Your FEEDBACK

Click this active link

[Walk-BEST Feedback Survey](#)

OR

Copy or type the link into your browser

OR

Physiobiometrics.com and leave us a message

Checklist

- Foot deformities2
- Walking Symmetry.....4
- Foot mobility.....6
- Ankle mobility.....8
- Knee mobility.....10
- Hip mobility in extension (backward).....12
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- Arm position and arm swing.....24
- Walking and looking..... 26
- Changing direction.....28
- Walking speed, effort and endurance.....30-33
- Keep track of your step count.....34



FOOT DEFORMITIES

Do you have any of the following:

- Bunions
- Calluses
- Cracked heels
- Crossed toes
- Hammer toe(s)
- Thick toenail(s)
- In-grown toenails(s)
- Nail fungus
- Heel pain
- Redness
- Blistering
- Cold feet
- Swollen feet



WHY DO THIS?

Just as you would not go a day without brushing your teeth, you shouldn't go a day without taking care of your feet.

EXERCISE PLAN

Professional assessment and diagnosis (e.g. primary care physician, podiatrist, pedicurist, physiotherapist)



Personalized foot care plan



Proper footwear recommendations



WALKING SYMMETRY

When you walk, do both legs move **equally** (i.e. no limp)?

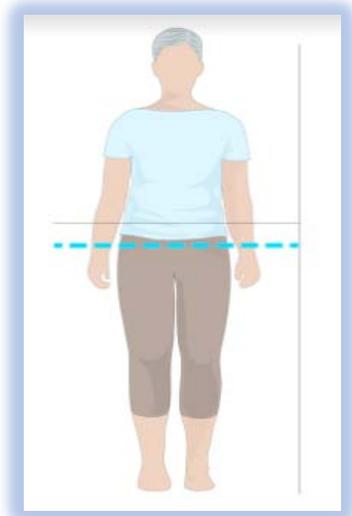
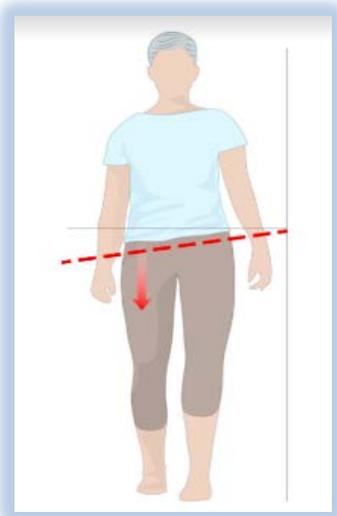
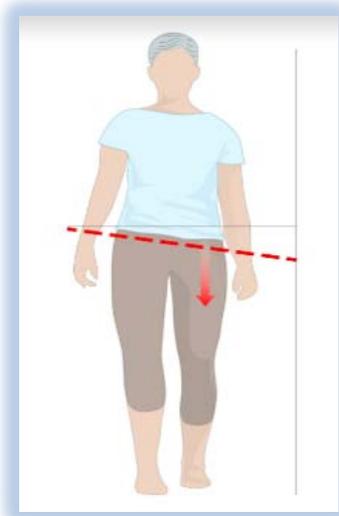
Check off whichever photo you feel best applies to you.

- A Does one leg take a longer step?
- B Do you favor one leg?
- C Do your shoulders dip to one side when walking?

Left limp

Right limp

No Limp



Recommendations

EXERCISE PLAN

Professional assessment of causes of asymmetrical walking



A dashed green rectangular box containing five horizontal blue lines for writing.

Professional treatment recommendations



A dashed green rectangular box containing five horizontal blue lines for writing.

Professional follow-up plan



A dashed green rectangular box containing five horizontal blue lines for writing.

FOOT MOBILITY

Are your feet **stiff** or **painful** to move? If so, circle on the diagrams where the stiffness or pain is, and then check off whichever box applies.

PLANTAR SURFACE



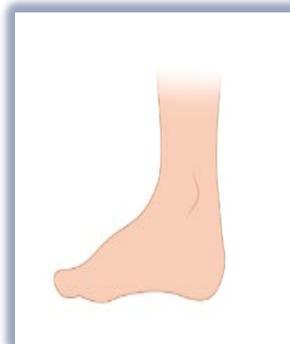
- Pain
- Stiffness
- Both*
- None

DORSAL SURFACE



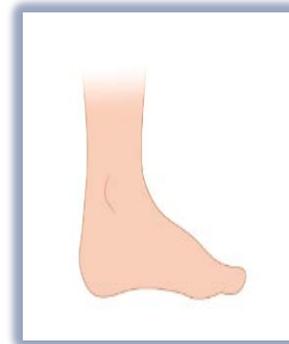
- Pain
- Stiffness
- Both*
- None

RIGHT FOOT



- Pain
- Stiffness
- Both*
- None

LEFT FOOT



- Pain
- Stiffness
- Both*
- None

WHY DO THIS?

The force of your entire body weight is transmitted to your feet – together only about the size of a piece of paper. Your feet must be in good condition to accept those forces

EXERCISE PLAN

Roll your foot on a ball

Instructions:

Find a tennis ball, or a ball that is similar in firmness and size

1. Roll your foot on this ball in standing or in sitting, in all directions (right, left, forward and back)
2. Repeat on other side

★ If you decide to do the exercise in standing, make sure to hold on to something for support (i.e. kitchen counter)



Notes

ANKLE MOBILITY

When sitting, are you able to.....

Raise your toes



- Yes
- Somewhat
- No

Raise your heels



- Yes
- Somewhat
- No

If you answered yes or somewhat to both, do they raise the same amount?

- Yes
- No

WHY DO THIS?

The force of your entire body weight is transmitted to your feet – together only about the size of a piece of paper. Your feet must be in good condition to accept those forces

EXERCISE PLAN

a) Calf Stretch

Instructions:

1. Find a wall and place hands flat on the wall at shoulder height.
2. Keeping hands on the wall, place one knee in front of the other.
3. Bend the front knee until you feel a stretch in the other leg.
4. Repeat on the other side.



b) Ankle Rotations

Instructions:

1. In a sitting position, cross one lower leg over the thigh of the other, holding your foot to assist with the motion.
2. Rotate the ankle in a circular motion, in both directions.
3. Repeat on the other side.



How long?
<u>30 seconds</u>
How often?
<u>Every day</u>

KNEE MOBILITY

Instructions:

1. **Sit on a firm surface** with your **legs straight out**. Make sure that your back is well supported on a wall. You can also lie flat on your back. Chose a position that is comfortable to you.
2. Place a small **towel under one knee**
3. **Push knee** into the towel so that **heel lifts** off the ground
4. Repeat on the other side



Do your heels lift off the ground when you do this?

- Yes
 No



Do your heels lift off the ground the same amount?

- Yes
 No

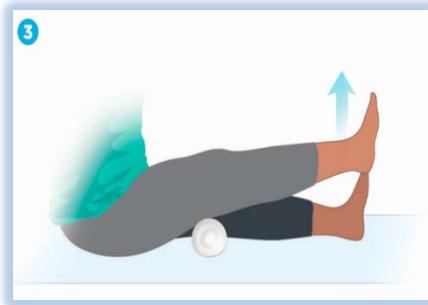
WHY DO THIS?

To work the muscle on the front of the thigh. The knee extension targets the quadriceps muscle. Strong quadriceps muscles make it easier to walk.

EXERCISE PLAN

Instructions:

1. Sit on a firm surface with your legs straight out. Make sure that your back is well supported on a wall. You can also lie flat on your back. Chose a position that is comfortable to you.
2. Place a small towel under one knee
3. Push knee into the towel so that heel lifts off the ground
4. Repeat on the other side



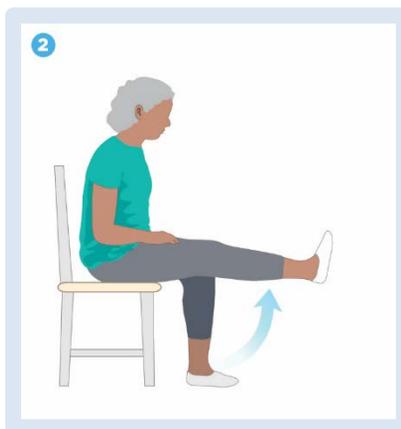
How long?
5 seconds

How many times?
10 times

How often?
Every day

Instructions:

1. Sit on a chair.
2. Place feet flat on the floor.
3. Straighten your knee so that your foot does not touch the floor and that your knee becomes straight.
4. Repeat on the other side.



How long?
5 seconds

How many times?
10 times

How often?
Every day

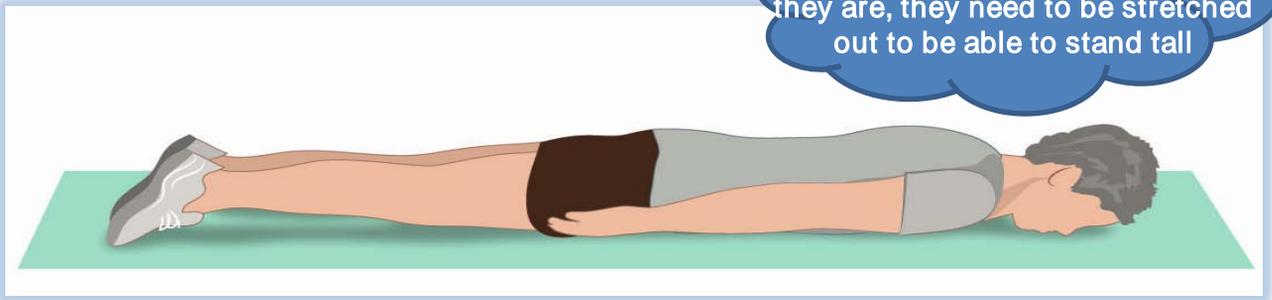
HIP MOBILITY IN EXTENSION

A Instructions:

1. Lie on your stomach
2. Slide your hand under the front of your hip.

WHY DO THIS?

To know if your hips are tight. If they are, they need to be stretched out to be able to stand tall



Is there space between the front of your hip and the surface, such that your hand slides easily between the gap.

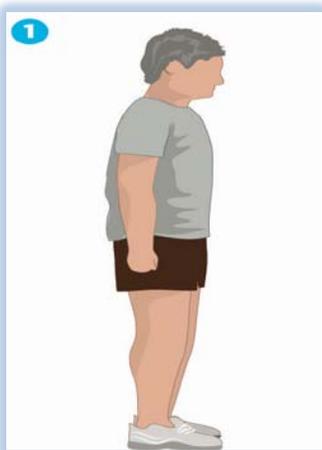
Yes

No

If no, proceed to Test B.

B. Instructions:

1. Stand **facing a wall**, keeping your hips **close as possible to the wall**. Try to make your hips touch the wall. Keep knee straight and bring one foot a few inches behind opposite heel.
2. Repeat on the other side.



Does each leg extend back more than 18 inches (45 cm)?

Yes

No

EXERCISE PLAN

Instructions:

1. Standing facing a wall, try and make your hip touch the wall.
2. Keep knee straight, and extend leg backwards.
3. Repeat on the other side



WHY DO THIS?

To preserve your independence! Many daily activities – such as walking and getting in and out of a car – require good hip extension.

How long?

5 seconds

How many times?

10 times

How often?

Every day

Notes

Four horizontal blue lines for writing notes, enclosed in a dashed green border.

HIP MOBILITY IN FLEXION

A Instructions:

1. Lie flat on your back.
2. Pull one **knee as close to chest as possible**.
3. Keep opposite leg as straight as possible.
4. Repeat on other side.



Does each leg move the same amount?

- Yes
- No

Is the movement painful?

- Yes
- No

Can you get your knees close to your chest?

- Yes
- No

Notes

EXERCISE PLAN

A Instructions:

1. Lie flat on your back.
2. Pull one knee as close to chest as possible.
3. Keep opposite leg as straight as possible.
4. Repeat on other side.



WHY DO THIS?

Hip flexion helps to keep the pelvis in line.

How long?

5 seconds

How many times?

10 times

How often?

Every day

Notes

Four horizontal blue lines for taking notes, enclosed in a dashed green border.



HIP MOBILITY IN ROTATION

A Instructions:

1. Lie flat on your back with knees bent and feet spread apart.
2. Rotate one **knee** at a time to **touch the surface between your feet**, like windshield wipers.



Does each leg move the same amount?

Yes

No

Is the movement painful?

Yes

No

Can you get your knees close to the floor?

Yes

No



Notes

If you have had hip surgery in the past year, do not try this movement.

EXERCISE PLAN

A Instructions:

1. Lie flat on your back with knees bent and feet spread apart.
2. Rotate one knee at a time to touch the surface between your feet, like windshield wipers.



How long?	<u>5 seconds</u>
How many times?	<u>10 times</u>
How often?	<u>Every day</u>



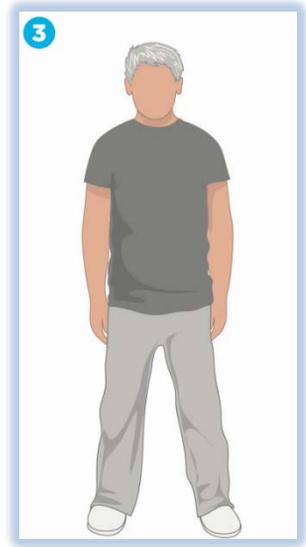
Notes

If you have had hip surgery in the past year, do not try this exercise.

<hr/> <hr/> <hr/> <hr/>

BASE OF SUPPORT WHILE WALKING

When you walk, how are your feet typically positioned? Select one.



When you walk, how are your feet typically positioned? Select one.



EXERCISE PLAN

LEG EXERCISES: Instructions:

1. Sit in a chair
2. Place a medium-sized ball in between your legs
3. Holding the ball in place, extend your legs outwards
4. Repeat on the other side



How long?

5 seconds

How many times?

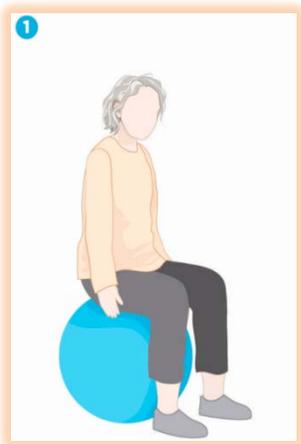
10 times

How often?

Every day

BALANCE EXERCISES: Instructions:

1. Sit and center yourself on an exercise ball.
2. If unable to balance yourself on exercise ball, sit on a chair.
3. Staying as still as possible, lift one leg up as high as you can
4. Repeat on the other side



HEEL TO TOE GAIT

When you walk, **CAN** you walk from heel to toe? The image below demonstrates what this means.

- Yes
- No



When you walk, **DO** you walk from heel to toe?

- Yes
- No

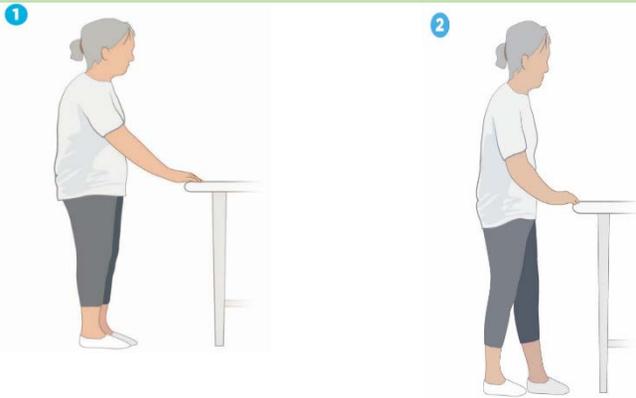
Notes



EXERCISE PLAN

LEG EXERCISES: Instructions:

1. Stand in front of a counter.
2. Place one foot in front of the other so that the heel of the front foot touches the toes of back foot (tandem stance).
3. Apply a very light touch on the counter.



How long?

30 seconds

How many times?

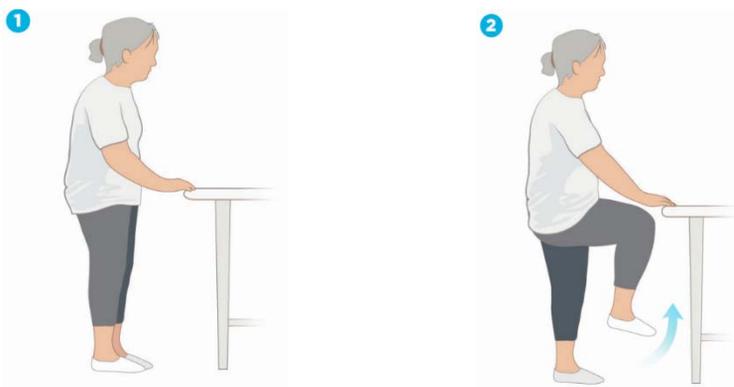
10 times

How often?

Every day

BALANCE EXERCISES: Instructions:

1. Stand straight with a steady object in front of you. Put only the tips of your fingers on the object only to keep your balance.
2. Lift one knee toward your chest while keeping your balance.
3. Return to the starting position and repeat with the other side.



How long?

5 seconds

How many times?

10 times

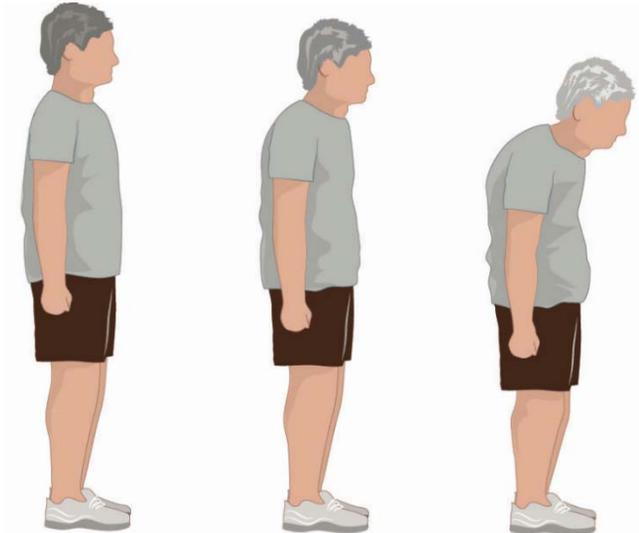
How often?

Every day

POSTURE AND POSTURE CHANGE

Is your posture straight, slightly stooped, or stooped?

- Straight
- Slightly stooped
- Stooped



Straight

Slightly stooped

Stooped

What happens to your posture when you walk backwards?

- Back straightens
- Back remains stooped
- Can't walk backwards

Notes



EXERCISE PLAN

FLAT LYING

Tight chest muscles play a big role in stooped posture.

Lying flat on your back

(or with a thin pillow under your head, if it is too painful at first) can help to stretch these muscles out and improve your posture!

BACKWARD WALKING

Try to spend a few minutes walking backwards every day. It sounds funny, but it really does help to improve posture!



WALKING WITH GOOD POSTURE

Whenever you think of it, try to correct your walking posture. Eventually, proper posture will become effortless!



ARM POSITION AND ARM SWING

When you walk, are your arms swinging? You might ask somebody to watch you.

At sides



Swinging



FOR WATCHER (if present):

Which of the following best describes their arm swing?

- Rhythmical
- One arm different from the other
- Arms don't swing

Notes

EXERCISE PLAN

LEG EXERCISES: Instructions:

1. Lie flat on your back with your knees bent.
2. Without your upper body moving, let both knees fall to one side.
3. Place the hand on that side on your upper thigh and pressure, such that you feel a slight stretch
4. Repeat on the other side.



How long?

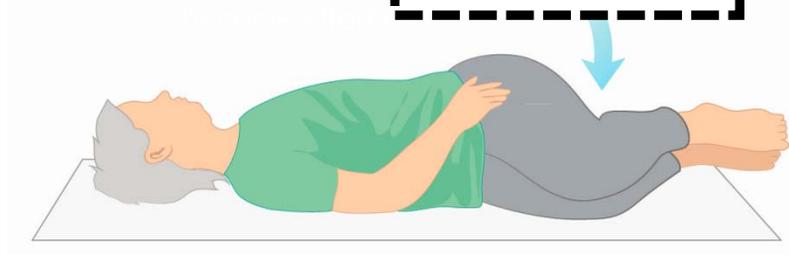
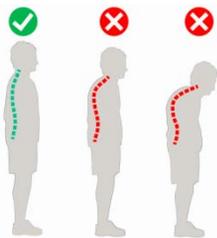
5 seconds

How many times?

10 times

How often?

Every day



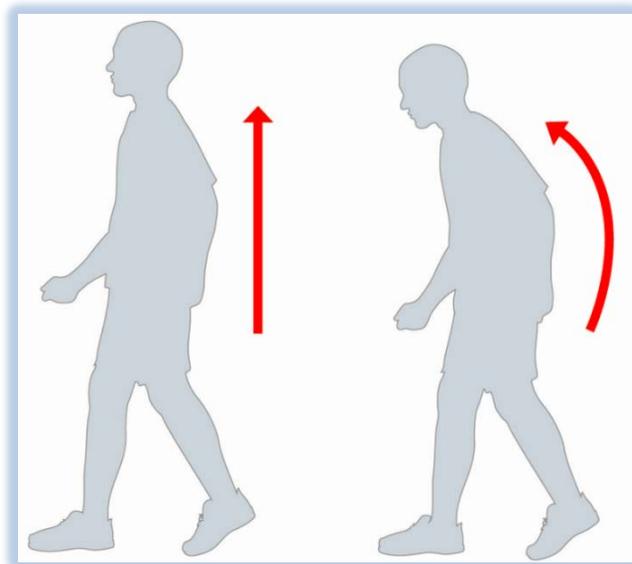
PRACTICE GOOD POSTURE

Posture is really important! Proper posture allows your arms to swing the way they're supposed to when you walk. In turn, it may help to prevent falls and injuries!

WALKING AND LOOKING

When you walk, where are you looking? Select one.

- Ahead and around the environment
- Ahead
- The ground in front
- My feet



VIP: Practice not looking at your feet when you walk.



Notes

EXERCISE PLAN

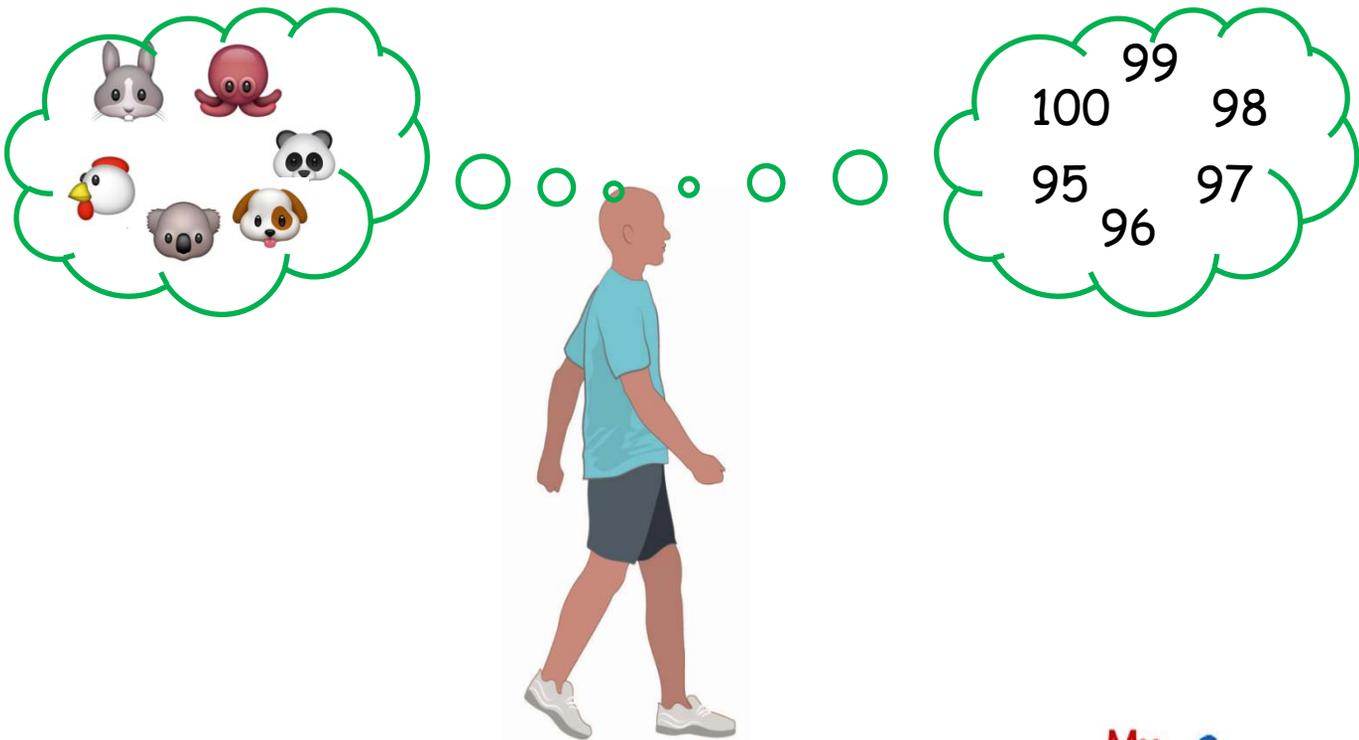
WALKING AND TALKING : Instructions:

1. Go for a walk.
2. While walking, count down from 100 to 0.
3. You can also try to name animals, words starting with each letter or alphabet.



IMPROTANT: Try NOT to let the counting interfere with your walking!

The goal is for you to eventually be able to do both at the same time, with few or no mistakes. .



PRACTICE GOOD WALKING

Remember, walk Heel-to-toe, swing your arms, good posture!

CHANGING DIRECTION

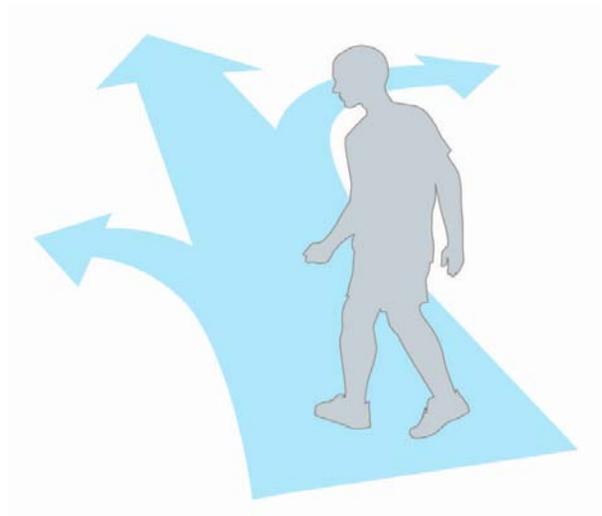
When you are walking and need to change direction, how do you do it? Select one

Changing Direction?

- Stop and turn
- Slow down and turn
- Make a long curve
- Pivot

Equally on both sides?

- Yes
- No



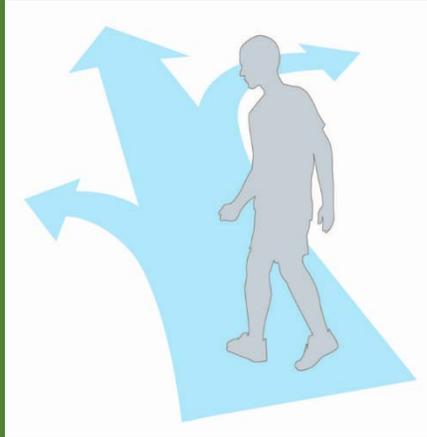
Notes

A dashed blue rectangular box containing four horizontal blue lines for writing notes.

EXERCISE PLAN

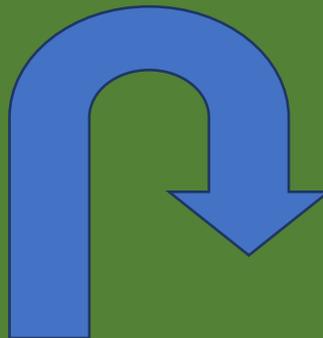
PRACTICE

At least 5 minutes a day, practice walking and **TURNING!**



PRACTICE

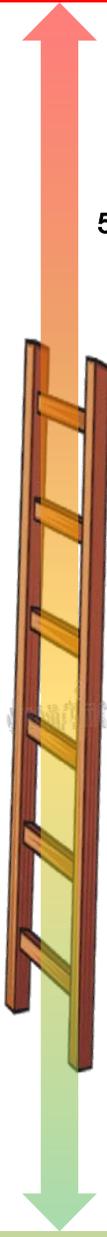
At least 5 minutes a day, practice **PIVOTING!**



WALKING SPEED, EFFORT, AND ENDURANCE

How fast do you walk? Very slow Stroll Normal Fairly Brisk Fast

Difficult item



Easy item

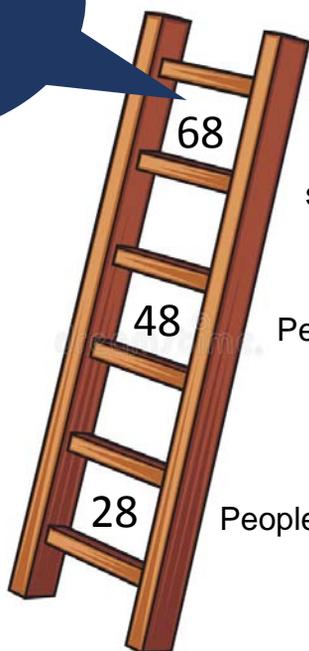
Activities	Extreme Difficulty or Unable to Perform Activity	Quite a Bit of Difficulty	Moderate Difficulty	A Little Bit of Difficulty	No Difficulty
Hopping.	0	1	2	3	4
Making sharp turns while running fast.	0	1	2	3	4
Running on uneven ground.	0	1	2	3	4
Walking a mile.	0	1	2	3	4
5 Running on even ground.	0	1	2	3	4
Squatting.	0	1	2	3	4
Standing for 1 hour.	0	1	2	3	4
Going up/down 10 stairs (about 1 flight of stairs)	0	1	2	3	4
Performing heavy activities around your home.	0	1	2	3	4
Your usual hobbies, re creational or sporting activities.	0	1	2	3	4
Any of your usual work, housework, or school activities.	0	1	2	3	4
Walking 2 blocks.	0	1	2	3	4
Lifting an object, like a bag of groceries	0	1	2	3	4
Getting into or out of a car.	0	1	2	3	4
Getting into or out of the bath.	0	1	2	3	4
Walking between rooms.	0	1	2	3	4
Performing light activities around your home.	0	1	2	3	4
Putting on your shoes or socks.	0	1	2	3	4
Sitting for 1 hour.	0	1	2	3	4
Rolling over in bed.	0	1	2	3	4

more WALKING SPEED, EFFORT, AND ENDURANCE

We asked 677 seniors whether the thought they walked BEST and this is how they scored on the questions from the page before!



How do you
measure up?



People who walk BEST
scored 68/80

People who somewhat walk BEST scored 48/80

People who do not walk BEST scored 28/80

Find your place on the
measure on the page before
and work to move up the
ladder.

more *WALKING SPEED, EFFORT, AND ENDURANCE*

How long was the longest walk you took today?

< 1 minute

1-2 minutes

2-5 minutes

longer than 5 minutes

How much effort does it take for you to walk upstairs or up a hill? Please indicate your answer by checking off one of the boxes.

RPE Scale	Rate of Perceived Exertion	
10	Max Effort Activity Feels almost impossible to keep going. Completely out of breath, unable to talk. Cannot maintain for more than a very short time.	<input type="radio"/>
9	Very Hard Activity Very difficult to maintain exercise intensity. Can barely breath and speak only a few words.	<input type="radio"/>
7-8	Vigorous Activity Borderline uncomfortable. Short of breath, can speak sentence.	<input type="radio"/>
4-6	Moderate Activity Breathing heavily, can hold short conversation. Still somewhat comfortable, but becoming noticeably more challenging.	<input type="radio"/>
2-3	Light Activity Feels like you can maintain for hours. Easy to breathe and carry a conversation.	<input type="radio"/>
1	Very Light Activity Hardly any exertion, but more than sleeping, watching TV, etc.	<input type="radio"/>

Notes

TEST YOURSELF

Please answer each of the following!

Activities	Extreme Difficulty or Unable to Perform Activity	Quite a Bit of Difficulty	Moderate Difficulty	A Little Bit of Difficulty	No Difficulty
Hopping.	0	1	2	3	4
Making sharp turns while running fast.	0	1	2	3	4
Running on uneven ground.	0	1	2	3	4
Walking a mile.	0	1	2	3	4
5 Running on even ground.	0	1	2	3	4
Squatting.	0	1	2	3	4
Standing for 1 hour.	0	1	2	3	4
Going up/down 10 stairs (about 1 flight of stairs)	0	1	2	3	4
Performing heavy activities around your home.	0	1	2	3	4
Your usual hobbies, re creational or sporting activities.	0	1	2	3	4
Any of your usual work, housework, or school activities.	0	1	2	3	4
Walking 2 blocks.	0	1	2	3	4
Lifting an object, like a bag of groceries	0	1	2	3	4
Getting into or out of a car.	0	1	2	3	4
Getting into or out of the bath.	0	1	2	3	4
Walking between rooms.	0	1	2	3	4
Performing light activities around your home.	0	1	2	3	4
Putting on your shoes or socks.	0	1	2	3	4
Sitting for 1 hour.	0	1	2	3	4
Rolling over in bed.	0	1	2	3	4

KEEP TRACK

Evidence shows that WALKING is the best way to stay healthy.

Most smart phones that you carry with you every day have the capacity to track how many steps you take per day. It will give you a continuous record of how you are doing.

You can also just use a simple pedometer available in many stores for under \$10.

Here is a guide for you to decide HOW MANY STEPS are enough.

