

NCGG Home Exercise Program for Older People (NCGG-HEPOP)

2020

Version 1.0

National Center for Geriatrics and Gerontology



Basic Exercise and Activities for Older People

Preface

With the advent of the COVID-19 pandemic, concerns have been raised that the number of older individuals who have become inactive in their daily lives and have reduced mental and physical functions may increase as people refrain from spending time outdoors. In addition, the provision of medical services, including rehabilitation, has become more difficult. To help older people live as healthily as possible under such circumstances, the National Center for Geriatrics and Gerontology (NCGG) has published a guide to activities at home, the Home Exercise Program for Older People (NCGG-HEPOP) 2020. The purpose of this guide is to introduce an easy-to-understand menu of exercises and activities that can be practiced at home according to each individual function, so that physical and mental functions do not inadvertently deteriorate. At the same time, this guide introduces appropriate nutrition. We hope that you will find this guide useful and that you will continue to live a healthy life.

Contents

1. Background and overview
2. HEPOP flowchart
3. Precautions and guidance for use
4. Various kinds of exercise and activity packages
5. Exercise intensity and physical activity
6. Conclusion
7. Contact us

1. Background and overview

Due to the recent COVID-19 pandemic and other circumstances, times arise when individuals have no choice but to reduce our social interaction. Avoiding the “three Cs” of closed spaces, crowded places, and close-contact settings is very important to protect life, but if a situation of remaining isolated and disconnected from society continues for a long time, the risk of various adverse effects on both body and mind is high. Particularly for older individuals, there is concern about the progression of frailty, in which a small amount of stress can lead to major deteriorations in health (Fig. 1).

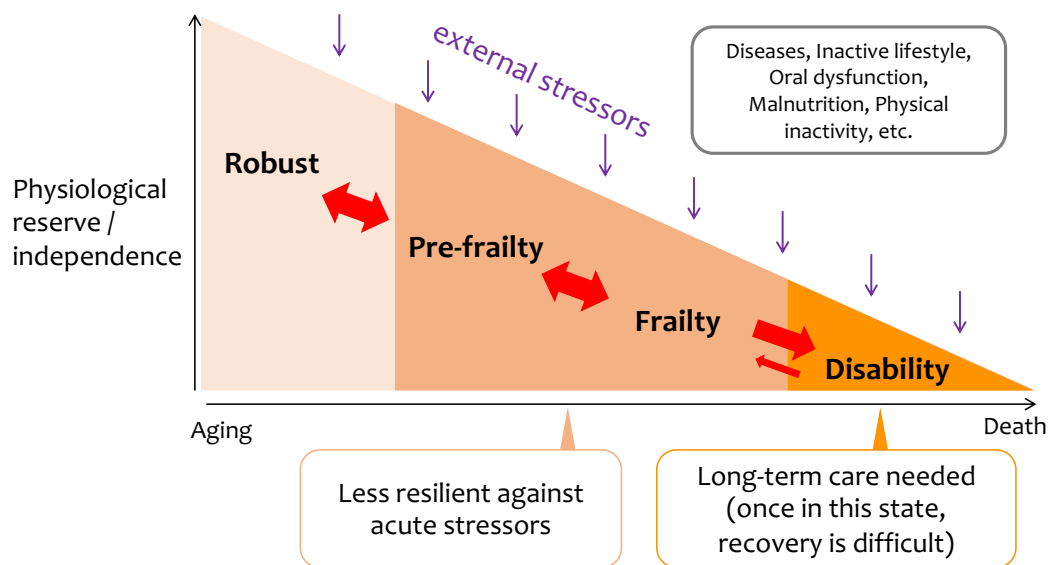


Figure 1. **Conceptual diagram of frailty**

: cited from Frailty Hand Book Hidenori Arai Edit., (LIFE SCIENCE CO., LTD. 2016 pp 3)

The risk of walking difficulties, falls and fractures, cognitive declines, and development of new diseases increases with frailty, so avoiding an inactive lifestyle and maintaining good health are important. To avoid the falling dominoes of mental and physical functions that have been maintained up to now (Fig. 2), performing as much exercise and activities as possible at home is crucial.

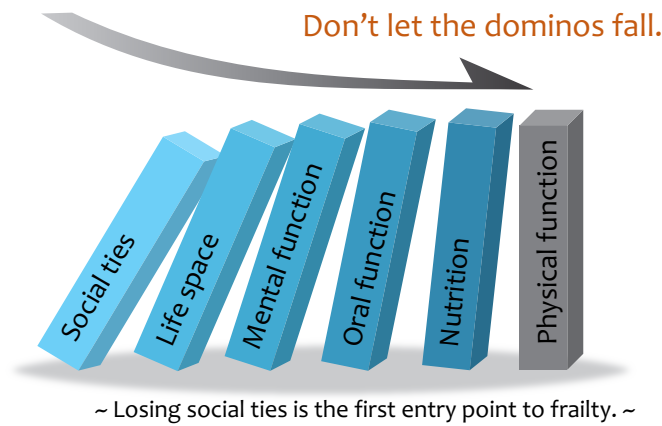


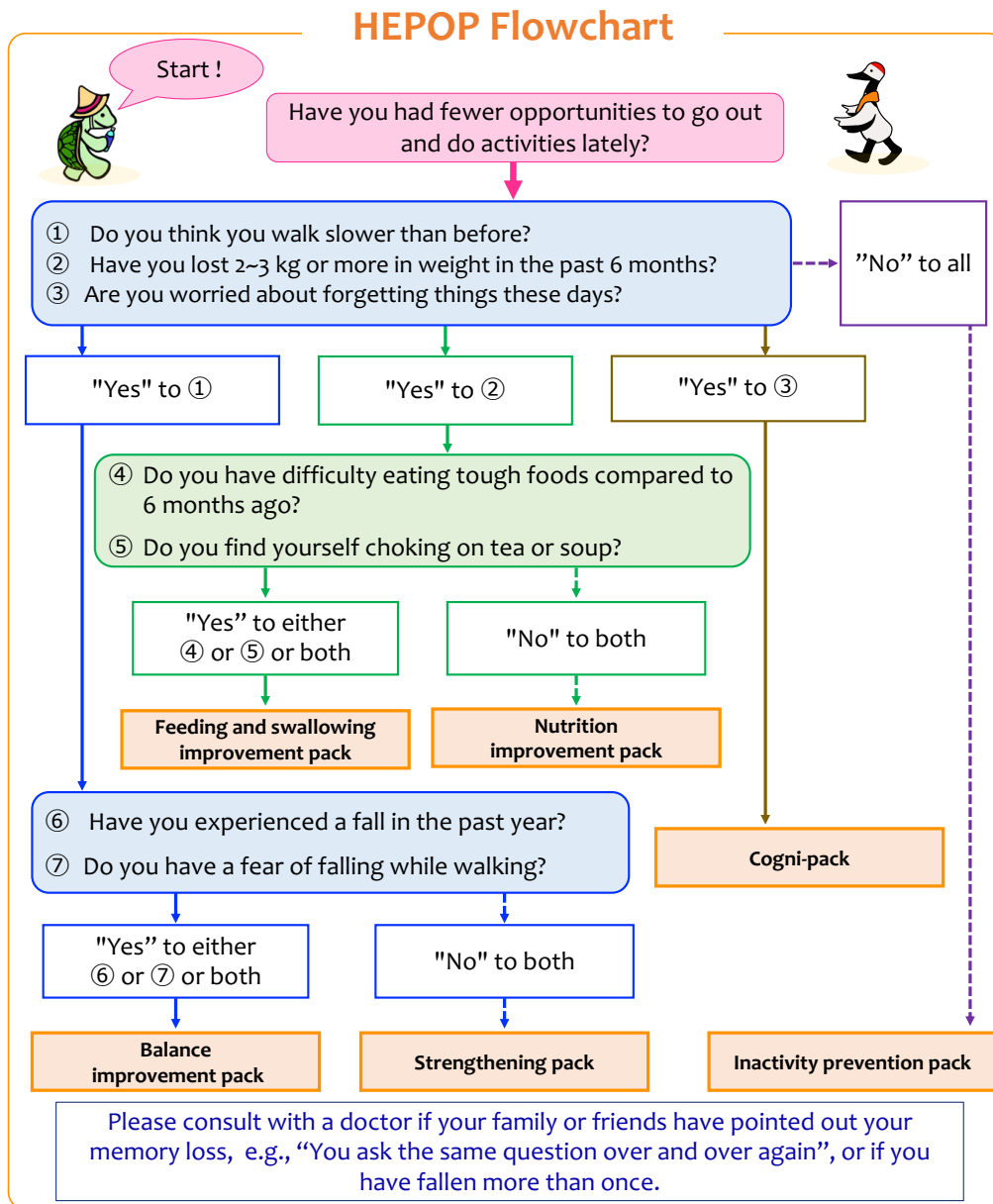
Figure 2. **The Frailty Dominos**

By courtesy of Prof. Katsuya Iijima, Institute of Gerontology, The University of Tokyo

[The HEPOP 2020 guide](#) to activities at home, basic exercise and activities for older individuals was created to support people refraining from going out or who are restricted from social activities so that they can safely engage in appropriate activities to prevent the deterioration of mental and physical functions while at home. In addition to presenting various types of exercises and activities, a flowchart can be used to determine which menus are most appropriate. We hope that this guide will help you to maintain your physical and mental functions and to continue living a safe and secure life.

2. HEPOP flowchart

First, answer Questions (1) to (3), and follow the flow indicated by the arrows to find the right exercise and activity package for you. In some cases, such as when the answer is “Yes” to both (1) and (3), more than one appropriate package may be selected for each answer.



Answer the flowchart questions once a month or so, or when your physical and mental condition changes, and choose those exercises and activities that you think are more suitable for you at that time. You do not have to worry about perfection. It is more meaningful to challenge yourself to exercise and engage in activities every day, so do not overexert yourself and perform activities at your own pace. If you have more than one package, check the contents of all the packages and start with the one you are most interested in. Before moving on to the exercise/activity menu of the package, check the

"Precautions and Instructions for Use" and "Exercise Intensity" from the next page.

3. Precautions and guidance for use

First, the following basic measures should be taken to prevent infection.

- Avoid the three “Cs” (closed spaces, crowded places, and close-contact settings).
- Try not to go to crowds or places where many people congregate.
- Use rubbing alcohol as appropriate, and gargle and wash hands thoroughly after returning from outside.
- Ventilate the home well by opening windows and doors.

The following is a list of notes about wearing a mask.

- Even when wearing a mask, rehydrate from time to time to prevent heat stroke and dehydration.
- Keep as much distance (at least 2 meters) as possible from others who are not wearing a mask.
- You do not have to wear a mask if you do not meet anyone and can maintain appropriate distance from others, but you should carry a mask for various environments.
- Information for older people on how to wear a mask and how to deal with the coronavirus can be found at the following URL:
<https://www.ncgg.go.jp/topics/20200420.html>

While taking these preventive measures, start exercising and engaging in activities by paying attention to the following points.

Notes on exercise and activities

- Exercise and activities should be carried out within a reasonable range.
- Hold a handrail or a stable stand and be careful of your surroundings to avoid falling over.
- Do not hold your breath when exercising and try to breathe naturally.
- If you feel unwell, such as feeling feverish, do not exert yourself and take a break from exercise.
- You do not have to complete all the menus, but you should move your head and body every day as much as possible.
- If you experience any pain, palpitations, shortness of breath, or other symptoms that you have not experienced before, you should stop exercising or doing any activity immediately and consult your doctor.

Pre-workout preparation

- Let's take your blood pressure.
- If you are taking antihypertensive medication: If your blood pressure is less than 100 mmHg or more than 160 mmHg, refrain from intense exercise.
- If you are not taking antihypertensive medication: If your blood pressure is less than 80 mmHg or more than 160 mmHg, refrain from intense exercise.
- Measure your pulse (resting pulse rate).
- If your pulse is less than 40 beats per minute or more than 90 beats per minute, refrain from intense exercise.
- If you are receiving treatment for cardiovascular diseases such as arrhythmia or hypertension, or if you have palpitations, consult a doctor before exercising, even if your pulse is within the acceptable range.

If you have any of the following diseases or symptoms, consult with your physician about your health condition and medications, and decide whether to use HEPOP 2020 or perform other exercises and activities under the guidance of your physician.

People who need to be careful about exercise and activity

- Patients with cardiovascular diseases such as heart failure and post-operative heart disease.
- Patients with nerve and muscle diseases.
- Person with numbness and paralysis of the hands and feet (difficulty in moving)
- Those who experience strong tremor even when standing still
- Dizziness and lightheadedness.
- Symptoms such as shortness of breath and bronchial asthma.
- Those who have undergone joint surgery, such as hip and knee joints
- Those with marked joint deformities due to rheumatoid arthritis, etc.
- Those with pain in the hands, feet, back, or shoulders.
- Systolic blood pressure of 180 mmHg or more or diastolic blood pressure of 100 mmHg or more even at rest.
- Patients who are taking antihypertensive medication and have a resting upper blood pressure of less than 80 mmHg.
- Other people whose exercise is restricted on the advice of a doctor.

4. Various exercise and activity packages

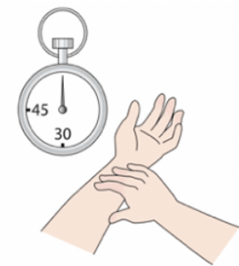
- 1) Balance Improvement Package
- 2) Strengthening Package
- 3) Feeding and Swallowing Improvement Package
- 4) Nutrition Improvement Package
- 5) Inactivity Prevention Package
- 6) Cogni-Package

5. Exercise intensity, physical activity level

There is a guideline for the time and frequency of exercise and activities, but actions should be performed within the range of "easy" to "somewhat tough" according to your physical and mental condition. We recommend more than 20 minutes of exercise or activity. Exercises and activities should be performed for at least 20 minutes and up to 1 hour consecutively.

Table 1. Target pulse rate during exercise in each age group

		65 y.o.	70 y.o.	75 y.o.	80 y.o.	85 y.o.	90 y.o.
Resting pulse rate	60 beats/min	111	109	107	106	104	102
	70 beats/min	116	114	112	111	109	107
	80 beats/min	121	119	117	116	114	112



The effect of the intensity of the exercise on the body can also be determined by the pulse (pulse rate). Adjust the time and frequency of exercise and activities based on the target pulse rate during exercise for each age group in Table 1 (e.g., if you are 70 years old and your resting pulse rate is 60 beats/minute, your target pulse rate during exercise is 109 beats/minute).

The strength of the movement (intensity) is expressed in METs. This shows how many times the energy is expended by the exercise or activity when the resting state is 1. Not only special exercises and activities, but also daily life and household chores can lead to exercise. Referring to the Mets table in Table 2, reflect on the intensity of your daily exercises and activities.

In addition to checking the intensity of your exercise, you can also use the Exercise (Ex) unit to calculate your own physical activity. Ex is a number of hours on the METs (except for activities under 3 METs). For example, 20 minutes of normal walking on level ground = 3.0 METs × 20/60 minutes = 1.0 Ex, 30 minutes of bicycling = 4.0 METs × 30/60

minutes = 2.0 Ex. We recommend a minimum of 10–23 Ex of physical activity each week to keep you healthy. As much as possible, we would like you to engage in more than 3 METs of exercise and physical activity to maintain and improve the amount of physical activity, but there are also exercises and activities that can be performed while lying or sitting down, when mental and physical functions are not so good. It is important to avoid being bedridden or sedentary as much as possible, and any kind of exercise or activity is good, so moving your body continuously every day is important.

Table 2. The 2011 Compendium of Physical Activities: METs

METs	Activities in daily life	Exercises · Sports etc.
1.8	Washing dishes - standing	Fishing- standing
2.0	Cooking or preparing food - standing or sitting	
2.3	Playing video games that promote physical movement, Grocery shopping with or without a cart, cleaning, sweeping, slow, light effort	Light effort (e.g., balance, yoga), piano, sitting
2.5	Feeding pets, watering plants, getting dressed and undressed, standing up	Carpentry, general, light effort
2.8	Walking on a firm, level surface at a slow pace (2 mph)	Upper body exercise, arm ergometer
3.0	Normal walking on level ground	Pilates, bowling
3.5	Cleaning, mopping, standing up	Walking, moderate effort tasks
4.0	Sweeping the garage, sidewalk or outside of the house	Football, table tennis, bicycling
4.3	Walking in the office at a brisk pace (3.5 mph), not carrying anything	Circuit training, golf, walking, carrying clubs
4.5	Polishing floors, standing, walking slowly	Basketball, shooting baskets, dancing
5.0	Walking, walking downstairs or standing, carrying objects weighing about 25-49lbs (11.3–22.2Kg)	Resistance (weight) training, squats
5.8	Vigorous walking/running, playing with children	Rock climbing, ascending or traversing rock, low-to-moderate difficulty
6.0		Swimming leisurely, not lap swimming
7.0		Jogging

Citation: Ainsworth BE, Haskell WL, Herrmann SD, Meckes N, Bassett Jr DR, Tudor-Locke C, Greer JL, Vezina J, Whitt-Glover MC, Leon AS. The Compendium of Physical Activities Tracking Guide. Healthy Lifestyles Research Center, College of Nursing & Health Innovation, Arizona State University. Retrieved [date] from the World Wide Web. <https://sites.google.com/site/compendiumofphysicalactivities/>

6. Conclusions

This guide focused on exercise, cognitive function, and nutrition, and introduced a variety of menus to help seniors with reduced opportunities to go out to instead undertake activities safely at home. Older people are vulnerable to infections and restrictions on social life, and it is important to be aware that frailty can easily progress, and to improve the resilience of the body and mind through appropriate sleep, nutrition, and exercise. In addition, it is important to take measures against infection, and to participate in outdoor activities to promote the activation of vitamin D in the sunshine and to regulate the rhythm of the mind and body. We hope that all of you will maintain your mental and physical health as much as possible while using this guide in your daily life, and that you will continue to play as active a role in society as you have in the past.

7. Contact information

If you have any questions about HEPOP 2020 or require more information, please contact us at the following email address: rehab@ncgg.go.jp

We are unable to respond to inquiries over the telephone. Please note that we may not be able to respond immediately to all inquiries and may need some time to reply to you.



The NCGG-HEPOP 2020 Committee



National Center for Geriatrics and Gerontology

Aiko Osawa(Chairperson), Izumi Kondo, Shosuke Satake, Shuji Kawashima, Kenichi Ozaki, Hiroyuki Shimada, Kaori Kinoshita, Naoki Itoh, Masanori Tanimoto, Ikue Ueda, Koki Kawamura, Kenichiro Maki, Masaki Kamiya, Kenji Sato, Shota Suzumura, Yukiko Kojima, Rise Murata, Mayumi Wada, Yukihiro Washimi, Hidenori Arai



Kinjo University

Shinichiro Maeshima

Balance Improvement Package



Copyright ©2020 National Center for Geriatrics and Gerontology

The “Balance Improvement Package” includes exercises and activities to help you maintain your physical function and improve your balance while you are staying at home. We recommend that you exercise safely for a total of 20 to 60 minutes per day, about three times a day, with a combination of various exercises. We have set a standard time and frequency for each exercise, but you can adjust this according to your physical condition. You can listen to the radio or your favorite music to keep up your motivation.


▼▼▼▼▼▼▼▼▼▼ Precautions for exercise ▼▼▼▼▼▼▼▼▼▼

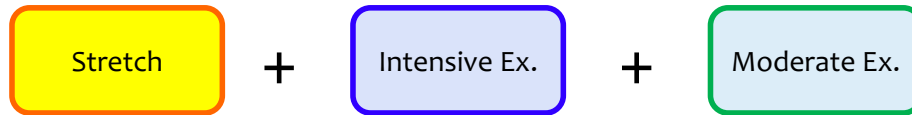
1. Stop exercising if you feel pain or stress in your body.
2. Exercise slowly while taking breaks according to your physical condition.
3. While exercising, do not hold your breath and breathe naturally.
4. If you are not feeling well, please take a rest and stop exercising.
5. Use a stable chair or desk, and do not use objects that can be easily moved, such as a chair with wheels.


Copyright ©2020 National Center for Geriatrics and Gerontology

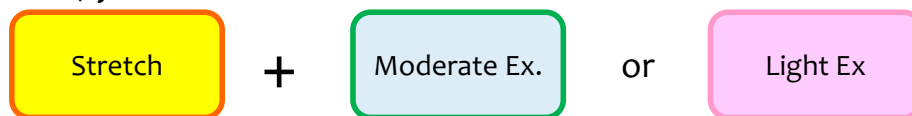
How to use the Balance Improvement Package


Select the type of exercise according to your physical condition that day. When you are in good physical condition, do active exercise. If you are not feeling well, do not exercise too much, but if possible, do some light exercise to keep active. The type and intensity of exercise are color-coded into “stretch”, “pine (intensive exercise)”, “bamboo (moderate exercise)” and “plum (light exercise)”. Select an exercise by referring to the following.

 If you are in good physical condition, you can...



 If you have pain in your knees or back, but are still able to do light exercise, you can...



 If you are not feeling well, but are still able to do very light exercise, you can...



Copyright ©2020 National Center for Geriatrics and Gerontology

List of exercises included in the Balance Improvement Package

Exercise intensity increases in the order of ● plum → ● bamboo → ● pine. Combine ● stretching with other exercises according to your physical condition that day.

No.	Stretch	Balance exercise	Muscle training	Whole-body exercise	Supine	Sitting	Standing	Exercise content
1	●					●		Stretching the upper back and chest
2	●					●		Stretching the hamstrings
3	●					●		Stretching the arms and back
4	●						●	Stretching tight calf muscles
5			●		●			Ankle exercise in a supine position
6			●		●			Knee exercise in a supine position
7			●			●		Raising the toes and heels
8			●			●		Knee straightening exercise
9			●			●		Raising the thighs
10		●	●				●	Standing heel raises
11			●		●			Bridge exercise
12			●				●	Squats
13			●	●		●		Standing up from a chair
14			●	●			●	Marching in place
15			●		●			Sit ups
16			●		●			Straight leg raises
17			●				●	Thigh stretch and lunge
18							●	Walking

Supine: exercises are done while lying on your back. Sitting: exercises are done while sitting down. Standing: exercises are done while standing up.

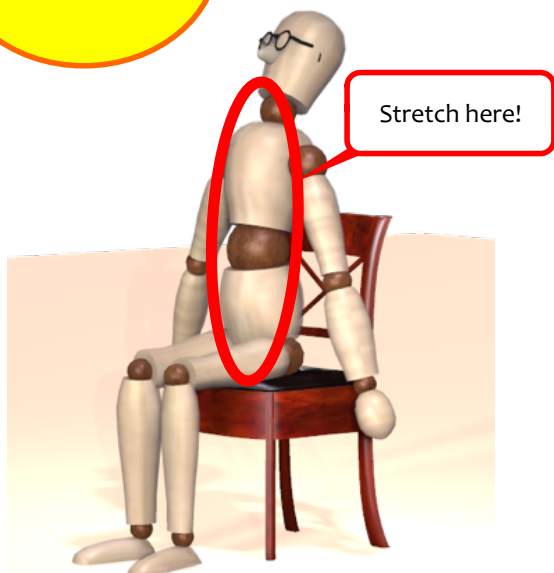
Copyright ©2020 National Center for Geriatrics and Gerontology

1

Stretching the upper back and chest

Stretch

20 sec



Here's the point!

- Open both arms outward and lift your chest.
- Stretch the muscles on the chest and upper back.
- Take a deep and smooth breath and slowly release without any pain.

If you have pain in your back or shoulders, be careful not to make it worse.

Copyright ©2020 National Center for Geriatrics and Gerontology

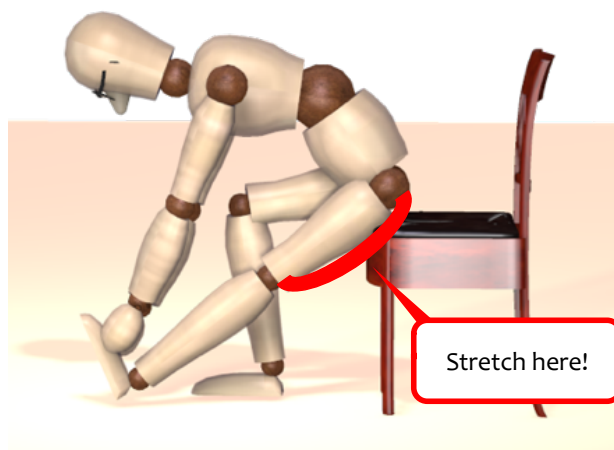
2

Stretching the hamstrings

Stretch

Left and right sides,
20 sec each

Be careful not to fall off the chair!



Here's the point!

- Be careful not to fall off the chair by sitting too close to the edge.
- With one leg extended, lean forward and stretch the back of your thighs.
- Take deep breaths without hunching and stretch slowly without any pain.

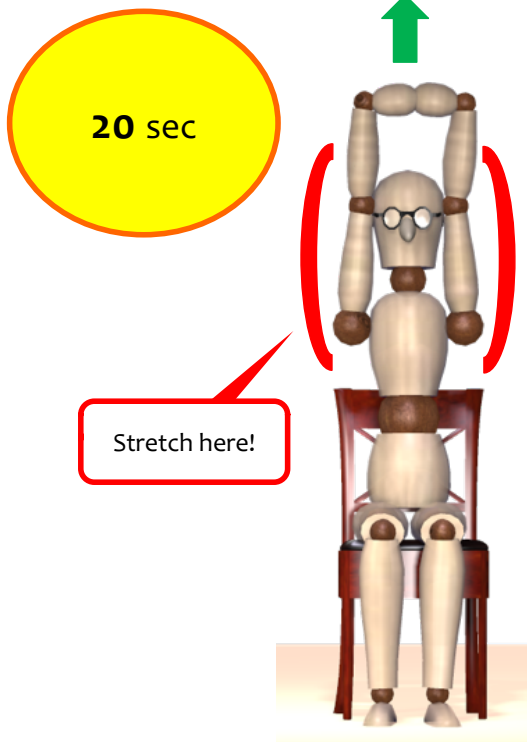
If you have pain in your back or knees, be careful not to make it worse.

Copyright ©2020 National Center for Geriatrics and Gerontology

3

Stretching the arms and back

Stretch



Here's the point!

- Clasp your hands and lift them over your head with your palms facing the ceiling.
- Gently extend your arms without bending your elbows.
- Take deep breaths without hunching and stretch slowly without any pain.

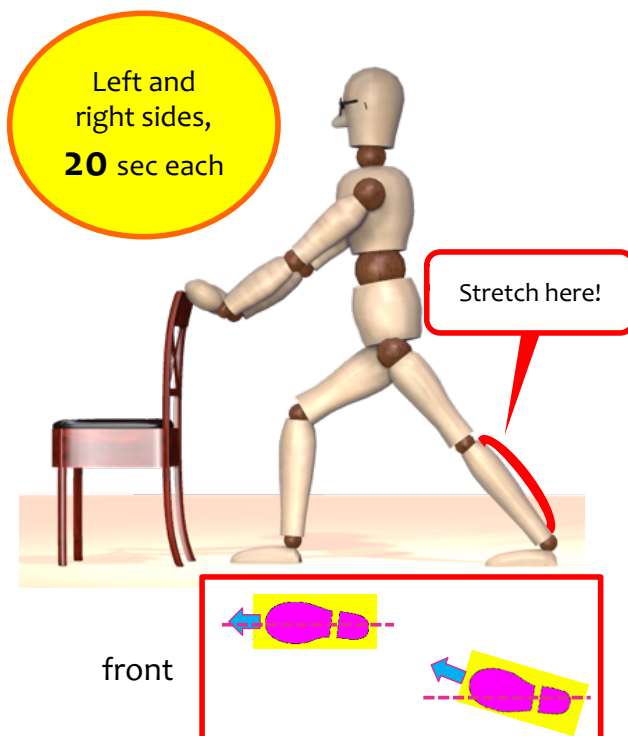
If you have pain in your shoulders or arms, be careful not to make it worse.

Copyright ©2020 National Center for Geriatrics and Gerontology

4

Stretching tight calf muscles

Stretch



Here's the point!

- Hold onto a table, chair, or handrail to keep stable.
- Put one foot in front of the other and slowly stretch the calf muscles of the back leg.
- Point your toes forward. It might be more effective to point the toes of your back leg slightly inward.
- Take deep breaths without hunching and stretch slowly without any pain.

If you have pain in the joints of your knees or feet, be careful not to make it worse.

Copyright ©2020 National Center for Geriatrics and Gerontology

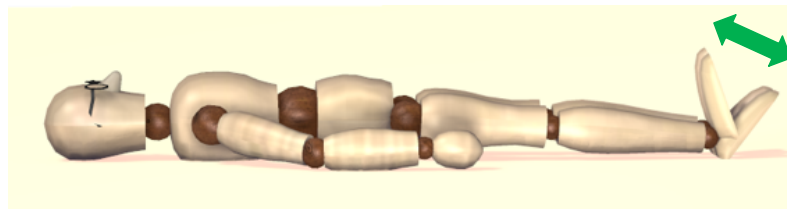
5

Ankle exercise in a supine position

Light



30-50
times



Here's the point!

- Lie on your back with your legs fully extended.
- Slowly alternate extend or flex of the ankle.
- Try to move your ankles as much as possible.

Copyright ©2020 National Center for Geriatrics and Gerontology

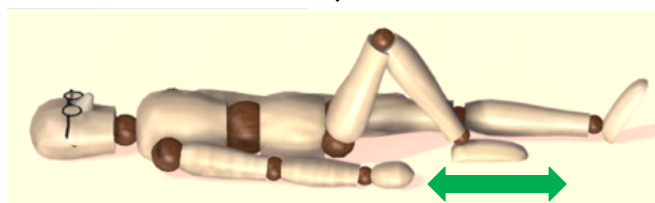
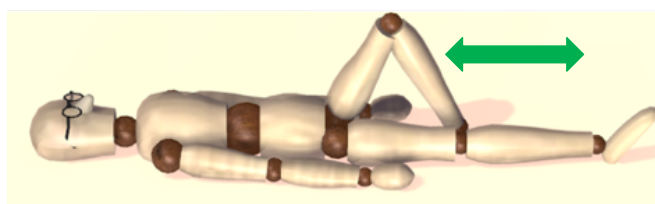
6

Knee exercise in a supine position

Light



30-50
times



Here's the point!

- Lie on your back, and alternate bending and extending your left and right legs alternately.
- The faster you go, the more intense the exercise will be.

If you have pain in your back or knees, be careful not to make it worse.

Copyright ©2020 National Center for Geriatrics and Gerontology

7

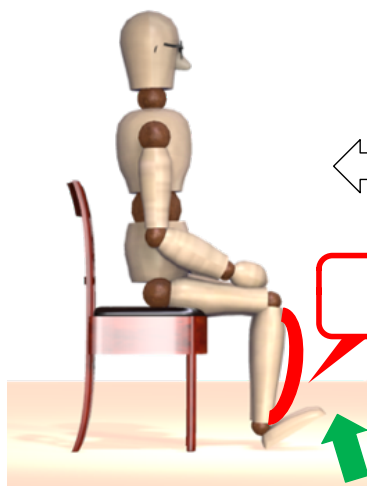
Raising the toes and heels

Light

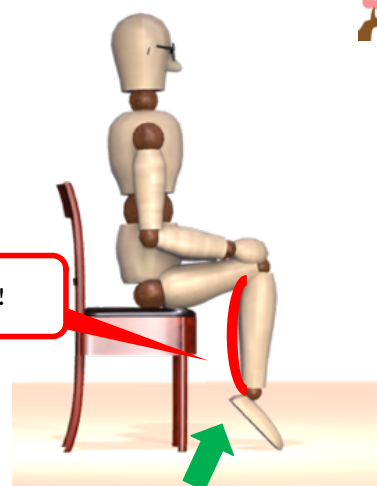


30-50
times

(1.)



(2.)



Here's the point!

- (1.) raise and lower your toes slowly.
- (2.) raise and lower your heels slowly.
- Repeat these two steps.

Copyright ©2020 National Center for Geriatrics and Gerontology

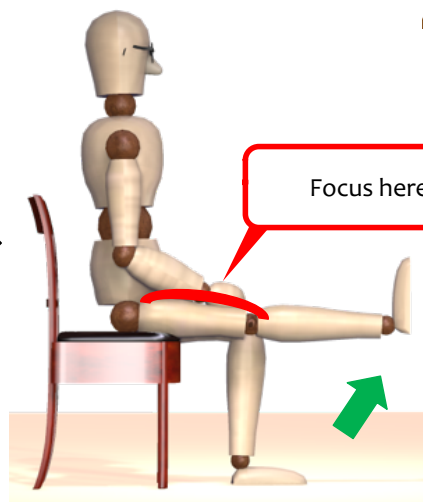
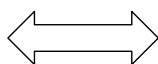
8

Knee straightening exercise

Light



30-50
times



Here's the point!

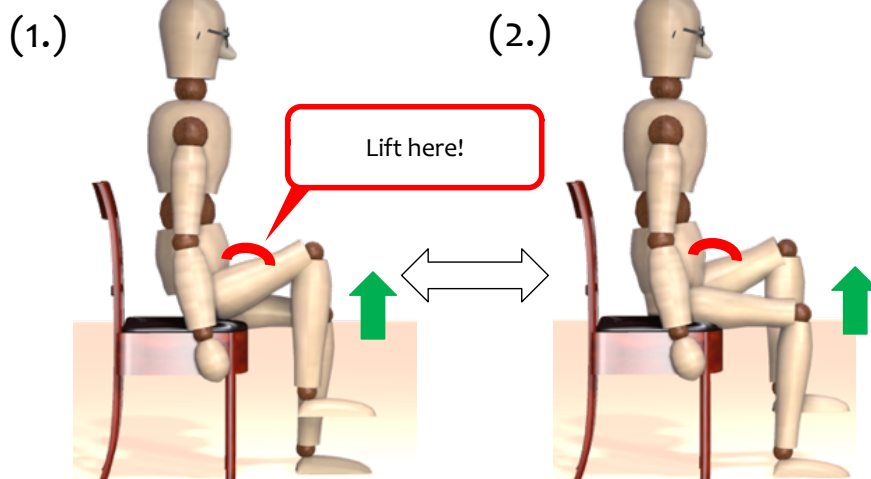
- While sitting in a chair, straighten one leg slowly and painlessly.
- Keep your knee straight for 3 seconds. It is more effective to flex your foot towards you.

Copyright ©2020 National Center for Geriatrics and Gerontology

9

Raising the thighs

Light

30-50
times

Here's the point!

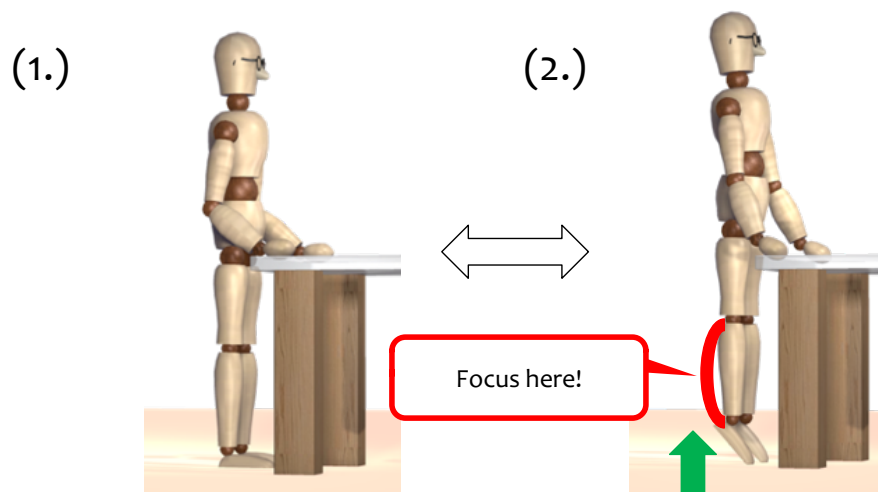
- (1.) lift one leg up while keeping the knee bent as shown by **the green arrow**, and then slowly return to the original position.
- (2.) repeat with the other leg.

Copyright ©2020 National Center for Geriatrics and Gerontology

10

Standing heel raises

Light

30-50
times

Here's the point!

- **Hold onto a table, chair, or handrail to keep stable.**
- (1.) stand with your feet shoulder width apart and take a stable stance.
- (2.) raise your heels, and then slowly lower.

Copyright ©2020 National Center for Geriatrics and Gerontology

11

Bridge exercise

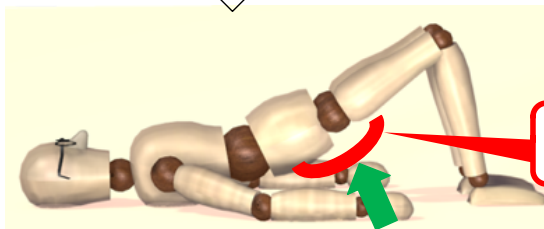
Moderate

20-30
times

(1.)



(2.)



Lift up here!



Here's the point!

- (1.) lie on your back with both knees bent and your feet flat on the floor.
- (2.) slowly raise your hips in the direction of the green arrow and then lower them slowly.

If you have pain in your back or knees, be careful not to make it worse.

Copyright ©2020 National Center for Geriatrics and Gerontology

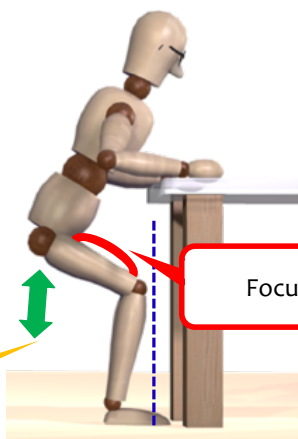
12

Squats

Moderate

20-30
times

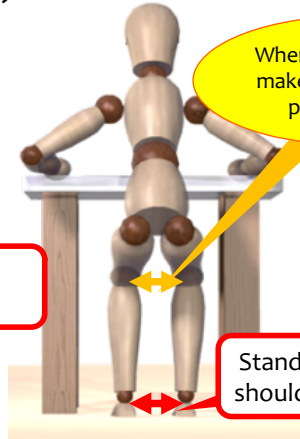
(1.) Side view



Be careful not to bend
your knees too much
and fall backwards.

Make sure your knees
don't go forward past
your toes.

(2.) Back view



When lowering down,
make sure your knees
point outward.

Stand with your feet
shoulder width apart.



Here's the point!

- Hold a table, chair, or handrail to keep you stable.
- (1.) lower your hips in the direction of the green arrow slowly. Pause and hold for 3 seconds and then slowly lift up to the original position.
- (2.) stand with your feet shoulder width apart and don't thrust your hips backward.

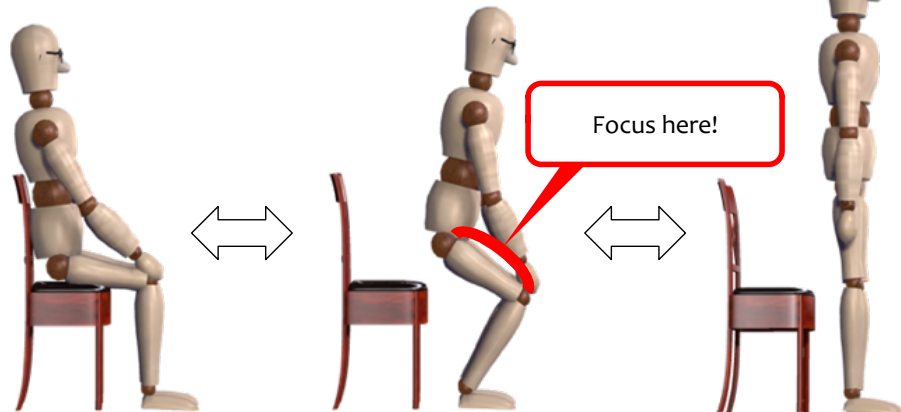
Copyright ©2020 National Center for Geriatrics and Gerontology

13

Standing up from a chair

Moderate

20-30
times



Here's the point!

- Stand up and sit down slowly, focusing on the muscles in your thighs.
- Stretch your back when sitting or standing, and lightly bow before standing up and sitting down.

If you have pain in your knees, raise the seat height so that the pain does not get worse.

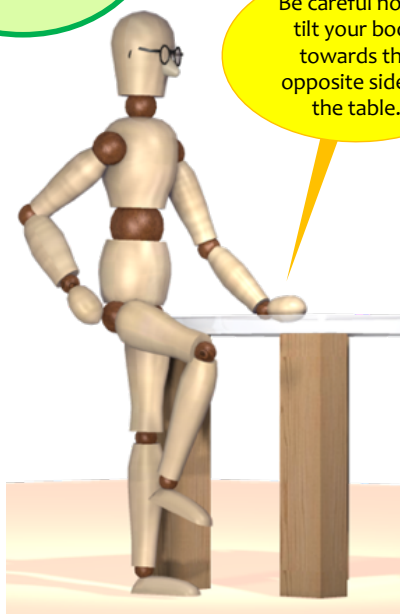
Copyright ©2020 National Center for Geriatrics and Gerontology

14

Marching in place

Moderate

3 min



Be careful not
to fall down.

Be careful not to
tilt your body
towards the
opposite side of
the table.

Here's the point!

- Lightly hold a stable table or chair.
- Straighten your back and march in place. It is more effective to lift your thighs higher.
- If your balance is stable, try moving your arms.
- Try marching in rhythm to music or singing.

Copyright ©2020 National Center for Geriatrics and Gerontology

15

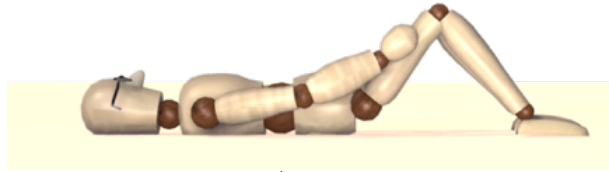
Sit ups

Intensive



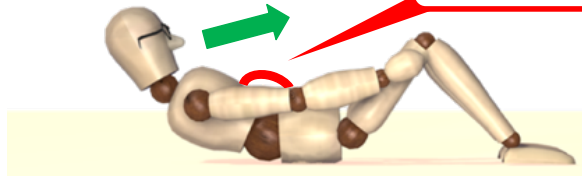
10-20
times

(1.)



Focus here!

(2.)



Here's the point!

- (1.) lie on your back and bend both knees while keeping your feet on the floor. Lift your head so that you are looking at your lower abdomen, keeping your shoulders slightly off the floor. Keep your arms extended in front of you.
- (2.) gently lift and lower back down. Don't hold your breath.

If you have pain in your neck, back or hips, be careful not to make it worse.

Copyright ©2020 National Center for Geriatrics and Gerontology

16

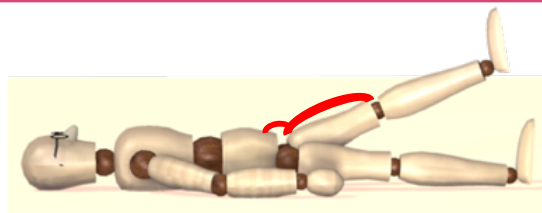
Straight leg raises

Intensive



10-20
times

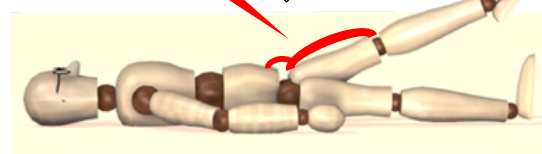
(1.)



Lift up here!



(2.)



Here's the point!

- (1.) lie flat on your back with your with legs extended. Tighten your abs and raise one leg about 30 cm off the floor while keeping it straight.
- (2.) point and flex your foot 10 times in the direction of the green arrow and then lower your leg. Repeat 10-20 times with each leg.
- If you want to make it easier: Lie flat on your back with one knee bent and one leg straight. Raise the straightened leg off the floor.

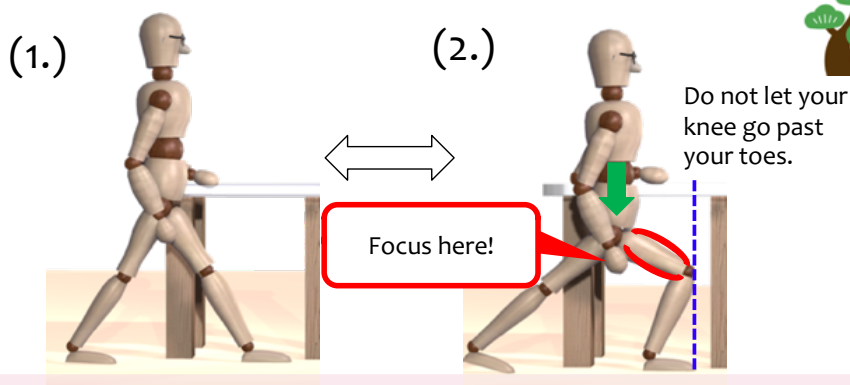
Copyright ©2020 National Center for Geriatrics and Gerontology

17

Thigh stretch and lunge

Intensive

10-20
times



Here's the point!

- Hold a table, chair, or handrail to keep you stable.
- (1.) put one foot in front of the other and stand tall.
- (2.) lower your body until the front leg forms about a right angle, with your thigh parallel to the floor. The heel of the back foot should not touch the floor. Ensure the front knee stays over the ankle and does not go past your toes. Be sure to lower straight down rather than forward.

If you have pain in your knees, be careful not to make it worse.

Copyright ©2020 National Center for Geriatrics and Gerontology

18



Walking



- Take a walk for 20 to 30 minutes on a sunny day.
- Keep yourself hydrated well before, during and after your walk.
- Walking speed should be from “just right” to “a little fast”.
- Wear comfortable shoes with stable heels.
- If you want to increase the strength of your legs, take bigger steps or march. Be careful not to fall down.



Be careful



- Avoid walking in crowded places and care for physical distancing.
- You should wear a mask. However, walking with a mask during hot weather may cause heat stroke. You may remove the mask if you are at a sufficient distance from the people around you.
- Don't forget to wash your hands and gargle when you get home.
- If you have pain in your knees or lower back, or if you are worried about falling down, use a cane or pole to walk safely at your own pace.

Copyright ©2020 National Center for Geriatrics and Gerontology

Strengthening Package



Copyright ©2020 National Center for Geriatrics and Gerontology

The “Strengthening Package” includes exercises and activities to help you maintain your physical function and improve your physical strength while you are staying at home. We recommend that you exercise safely for a total of 20 to 60 minutes per day, about three times a day, with a combination of various exercises. We have set a standard time and frequency for each exercise, but you can change it according to your physical condition. You can listen to the radio or your favorite music to keep up your motivation.

▼▼▼▼▼▼▼▼▼▼ Precautions for exercise ▼▼▼▼▼▼▼▼▼▼

1. Stop exercising if you feel pain or stress in your body.
2. Exercise slowly while taking breaks according to your physical condition.
3. While exercising, do not hold your breath and breathe naturally.
4. If you are not feeling well, take a rest and stop exercising.
5. Be careful not to fall down while exercising and don't try to do things that are difficult for you.
6. Use a stable chair or desk, and do not use objects that can be easily moved, such as a chair with wheels.

Copyright ©2020 National Center for Geriatrics and Gerontology

List of exercises included in the Strengthening Package

Combine stretching and other various exercises according to your condition. Be aware that there is a risk of falling down during balance exercises.

No.	Stretch	Balance exercise	Muscle training	Whole-body exercise	Supine	Sitting	Standing	Exercise content
1	●					●		Stretching the upper back and chest
2	●					●		Stretching the hamstrings
3	●					●		Stretching the arms and back
4	●						●	Stretching tight calf muscles
5			●			●		Raising the thighs
6			●				●	Squats
7		●	●			●		Bird dog
8		●					●	Standing training in a tandem position
9		●					●	Standing on one leg
10			●	●			●	Standing up from a chair
11				●			●	Marching in place
12				●			●	Walking

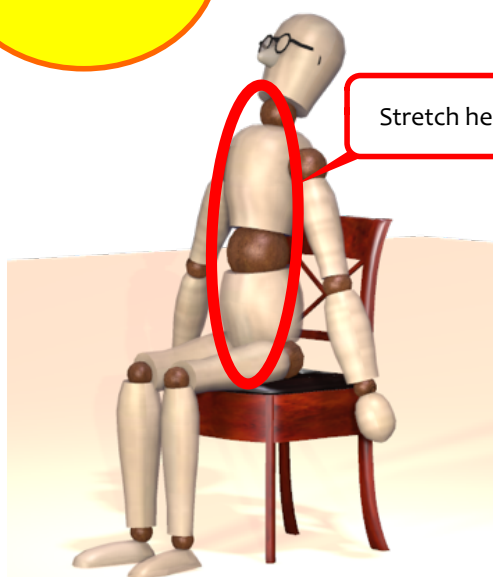
Supine: exercises are done while lying on your back. Sitting: exercises are done while sitting down. Standing: exercises are done while standing up.

Copyright ©2020 National Center for Geriatrics and Gerontology

1

Stretching the upper back and chest

20 sec



Here's the point!

- Open both arms outward and lift your chest.
- Stretch the muscles on the chest and upper back.
- Take a deep and smooth breath and slowly release without any pain.

If you have pain in your back or shoulders, be careful not to make it worse.

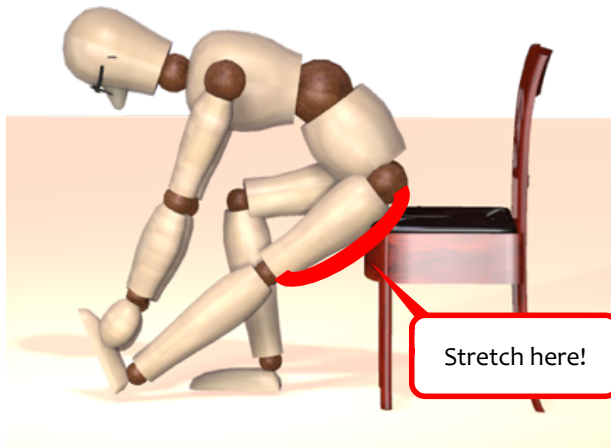
Copyright ©2020 National Center for Geriatrics and Gerontology

2

Stretching the hamstrings

Left and right sides,
20 sec each

Be careful not to fall off the chair!



Here's the point!

- Be careful not to fall off the chair by sitting too close to the edge.
- With one leg extended, lean forward and stretch the back of your thighs.
- Take deep breaths without hunching and stretch slowly without any pain.

If you have pain in your back or knees, be careful not to make it worse.

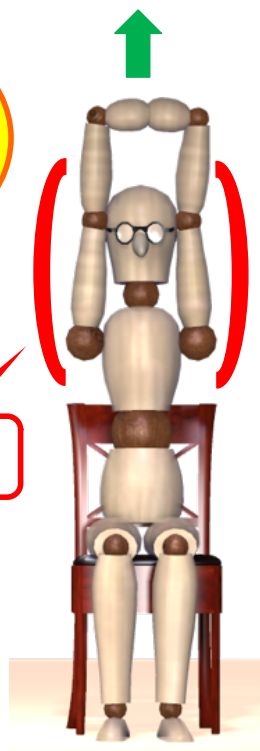
Copyright ©2020 National Center for Geriatrics and Gerontology

3

Stretching the arms and back

20 sec

Stretch here!



Here's the point!

- Clasp your hands and lift them over your head with your palms facing the ceiling.
- Gently extend your arms without bending your elbows.
- Take deep breaths without hunching and stretch slowly without any pain.

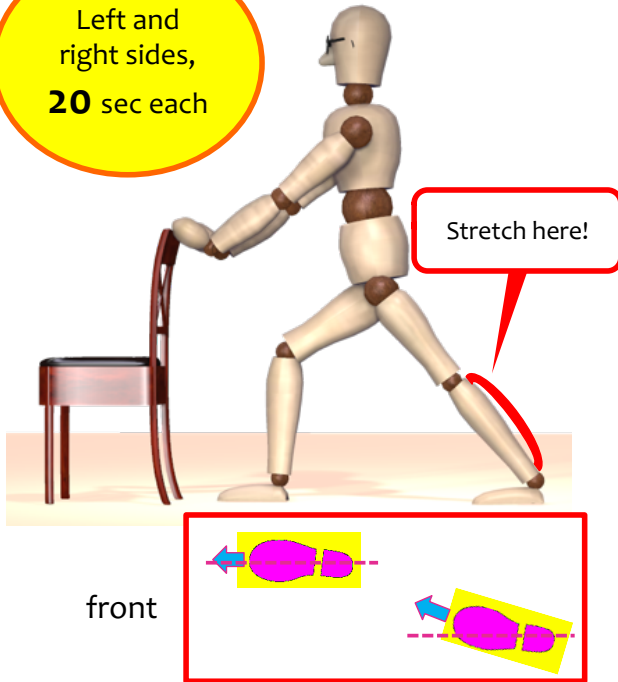
If you have pain in your shoulders or arms, be careful not to make it worse.

Copyright ©2020 National Center for Geriatrics and Gerontology

4

Stretching tight calf muscles

Left and
right sides,
20 sec each



Here's the point!

- Hold onto a table, chair, or handrail to keep stable.
- Put one foot in front of the other and slowly stretch the calf muscles of the back leg.
- Point your toes forward. It might be more effective to point the toes of your back leg slightly inward.
- Take deep breaths without hunching and stretch slowly without any pain.

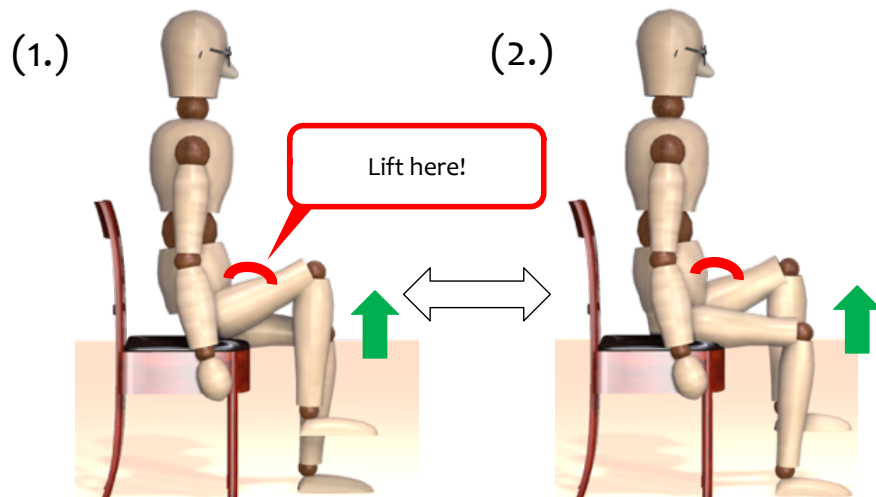
If you have pain in the joints of your knees or feet, be careful not to make it worse.

Copyright ©2020 National Center for Geriatrics and Gerontology

5

Raising the thighs

30-50
times



Here's the point!

- (1.) lift one leg up while keeping the knee bent as shown by **the green arrow**, and then slowly return to the original position.
- (2.) repeat with the other leg.

Copyright ©2020 National Center for Geriatrics and Gerontology

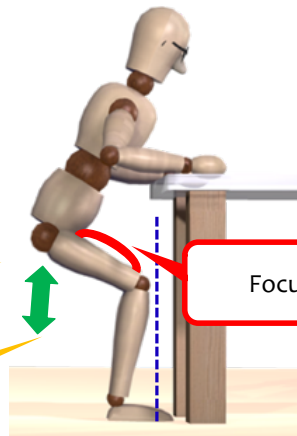
6

Squats

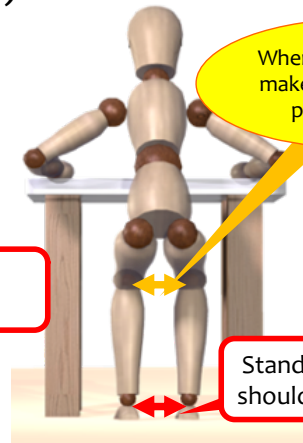
20-30
times

(1.) Side view

(2.) Back view

Be careful not to bend
your knees too much
and fall backwards.Make sure your knees
don't go forward past
your toes.

Focus here!

When lowering down,
make sure your knees
point outward.Stand with your feet
shoulder width apart.

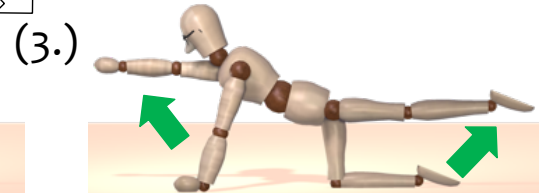
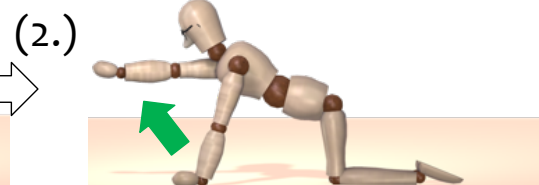
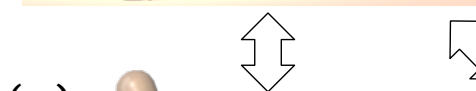
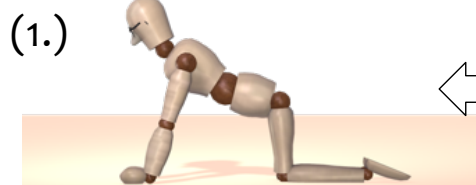
Here's the point!

- Hold a table, chair, or handrail to keep you stable.
- (1.) lower your hips in the direction of the green arrow slowly. Pause and hold for 3 seconds and then slowly lift up to the original position.
- (2.) stand with your feet shoulder width apart and don't thrust your hips backward.

Copyright ©2020 National Center for Geriatrics and Gerontology

7

Bird dog

Left and
right sides,
10 sec eachBe careful not to
lose your balance
when switching
sides!

Here's the point!

Do not do this exercise if you have pain in your wrists, shoulders, or back.

- (1.) get on all fours with your hands, knees and feet on the floor.
- (2.) slowly raise your right arm or right foot in the direction of the green arrow and hold the position for 3 seconds. Repeat on the left side.
- When you get used to it, try raising your right arm and left leg (or left arm and right leg) at the same time (3.). The intensity of this exercise is stronger.

Copyright ©2020 National Center for Geriatrics and Gerontology

8

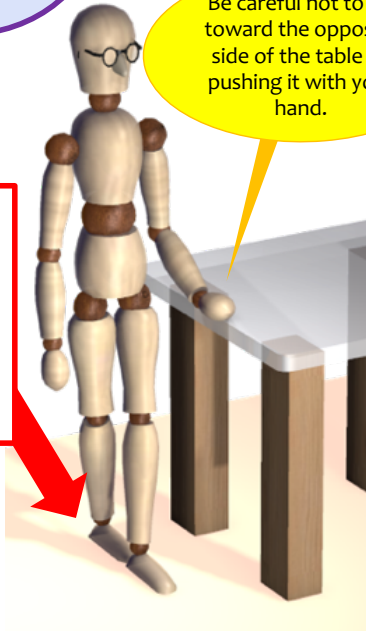
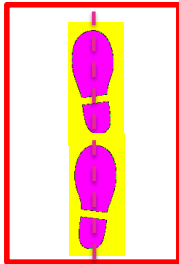
Standing training in a tandem position

30-60
sec

Be careful not
to fall down.

Be careful not to tilt
toward the opposite
side of the table by
pushing it with your
hand.

Tandem
position



Here's the point!

- Lightly hold a stable table or chair.
- If you feel like you are going to lose balance, put your strength into your legs and let your body lean against table/chair.
- Stand with the heel of one foot in line with the toe of the other foot.
- Keep that posture for 30 seconds, then switch your front and back legs. Repeat with the opposite leg.
- When you get used to it and feel stable, try keeping your hand off the table/chair.

Copyright ©2020 National Center for Geriatrics and Gerontology

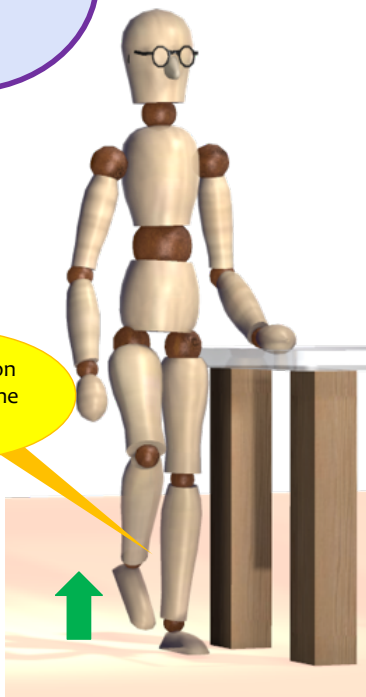
9

Standing on one leg

30-60
sec

Be careful not
to fall down.

Stay strong on
the foot on the
ground.



Here's the point!

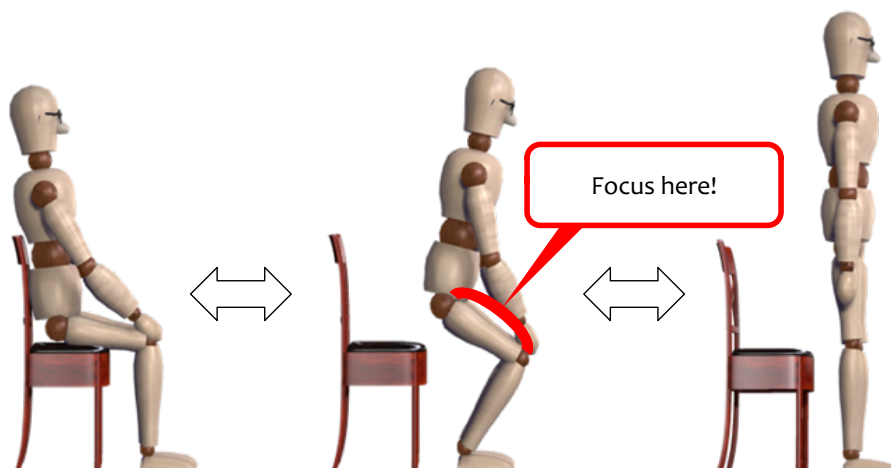
- Lightly hold a stable table or chair.
- If you feel like you are going to lose balance, put your strength into your legs and let your body lean against your desk.
- Lift one foot off the floor slightly.
- After 30 seconds, switch legs.
- When you get used to it and feel stable, try keeping your hand off the table/chair.

Copyright ©2020 National Center for Geriatrics and Gerontology

10

Standing up from a chair

30-50
times



Here's the point!

- Stand up and sit down slowly, focusing on the muscles in your thighs.
- Stretch your back when sitting or standing, and lightly bow before standing up and sitting down.

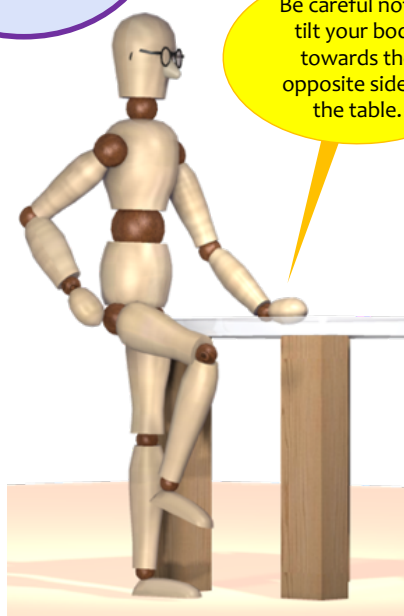
If you have pain in your knees, raise the seat height so that the pain does not get worse.

Copyright ©2020 National Center for Geriatrics and Gerontology

11

Marching in place

5 min



Be careful not
to fall down.

Be careful not to
tilt your body
towards the
opposite side of
the table.

Here's the point!

- Lightly hold a stable table or chair.
- Straighten your back and march in place. It is more effective to lift your thighs higher.
- If your balance is stable, try moving your arms.
- Try marching in rhythm to music or singing.

Copyright ©2020 National Center for Geriatrics and Gerontology



Walking



- Take a walk for 20 to 30 minutes on a sunny day.
- Keep yourself hydrated well before, during and after your walk.
- Walking speed should be from “just right” to “a little fast”.
- Wear comfortable shoes with stable heels.
- If you want to increase the strength of your legs, take bigger steps or march. Be careful not to fall down.



Be careful



- Avoid walking in crowded places and care for physical distancing.
- You should wear a mask. However, walking with a mask during hot weather may cause heat stroke. You may remove the mask if you are at a sufficient distance from the people around you.
- Don't forget to wash your hands and gargle when you get home.
- If you have pain in your knees or lower back, or if you are worried about falling down, use a cane or pole to walk safely at your own pace .

Feeding and Swallowing Improvement Package



Copyright ©2020 National Center for Geriatrics and Gerontology

The “Feeding and Swallowing Improvement Package” provides basic knowledge and exercises to maintain oral function and the ability to eat and swallow foods so that you can enjoy eating and get proper nutrition for healthy longevity.

Maintaining oral health and swallowing function not only prevents aspiration pneumonia and malnutrition, but also makes you feel more confident in conversations and brightens your facial expressions. This can lead to a more active life. Make sure to read the instructions carefully and try to maintain safe eating, swallowing and oral health.

▼▼▼▼▼▼▼▼▼▼ Precautions for exercise ▼▼▼▼▼▼▼▼▼▼

1. Consult a doctor if you experience choking on food, tea and soup or have a continuous slight fever.
2. Exercise in the range of no pain or stress in your body.
3. While exercising, do not hold your breath and breathe naturally.
4. If you are not feeling well, rest and stop exercising.
5. In addition to exercise, perform proper oral self-care such as brushing your teeth every day.

Copyright ©2020 National Center for Geriatrics and Gerontology

The importance of eating and swallowing functions

- Impaired eating and swallowing function leads to dehydration and malnutrition. It also causes serious complications such as **aspiration** and **aspiration pneumonia** in which food and liquids enter the lungs through the respiratory tract.
- The number of deaths due to aspiration pneumonia is increasing every year, with more than 38,000 deaths in 2018 in Japan (Overview of the Annual Vital Statistics Monthly Report 2018, Ministry of Health, Labour and Welfare in Japan). Even if it does not result in death, frailty will progress, and you will lose the pleasure of eating if you are unable to take food by mouth. This can lead to a decrease in motivation and activity.

Maintaining eating and swallowing function is very important for keeping physical and mental health.

Copyright ©2020 National Center for Geriatrics and Gerontology

Decline of oral function: oral frailty

Oral frailty is a combination of the words “oral” and “frailty”, and it is used to describe a wide range of problems associated with aging. A decrease in interest in maintaining the oral environment and a decrease in physical and mental strength leads to eating and swallowing dysfunction, malnutrition, and deterioration of health status. It refers to a decline in the ability to eat, resulting in malnutrition and a deterioration in health. People with oral frailty are reported to have a 2.4 times higher risk of requiring long-term care and a 2.1 times higher risk of death than those without oral frailty. Therefore, it is important to prevent and care for oral frailty at an early stage.

Citing from The Japan Dental Association manual for oral frailty management in dental practice, 2019 edition

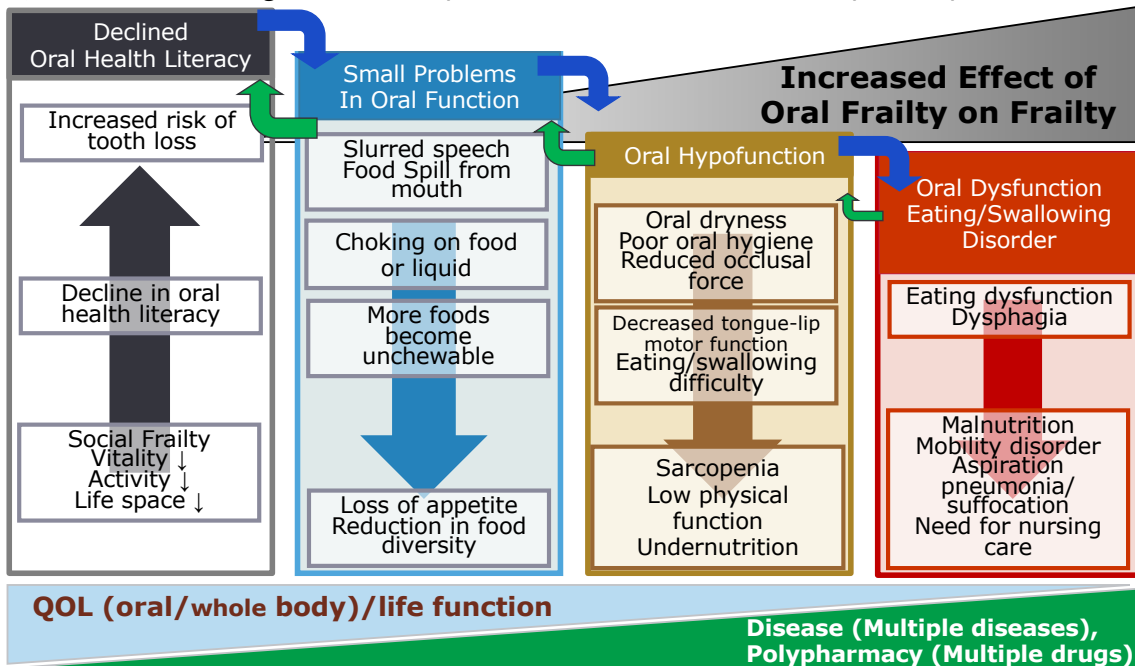
What happens if you leave oral frailty untreated?

- Decrease in the ability to speak due to bad breath and slurred speech.
- Inability to chew or taste food increases the risk of loss of appetite, malnutrition, dysphagia, and aspiration pneumonia.

Copyright ©2020 National Center for Geriatrics and Gerontology

Oral Frailty Diagram

In older people, **oral frailty** is easily to progress starting from the loss of motivation or interest in their oral health due to the declined physical activity or limited living range. Untreated problematic oral health can result in accumulation of small problems in their mouth. Consequently, those problems affects general condition such as loss of muscle mass or decreased nutritional status. In addition, eating and swallowing functions are gradually deteriorated, falling in severe complications such as suffocation or aspiration pneumonia.



Permitted for English translation from The Japan Dental Association Manual for Oral Frailty Management in Dental Practice, 2019 edition, by the Editorial Committee of the Manual for Oral Frailty Management in Dental Practice, 2019 edition, Japan Dental Association

Copyright ©2020 National Center for Geriatrics and Gerontology

Aspiration

Aspiration is the accidental entry of material such as saliva, food or drink from the oropharynx or gastrointestinal tract into the larynx and lower respiratory tract, or portions of the respiratory system from the trachea to the lungs. If you experience choking on tea or soup, aspiration is suspected.

What is happening when you experience choking?



Liquids aspiration on video fluorography

Foods and liquids that have entered the trachea after aspiration



Food aspiration on video endoscopy

If you experience choking, there is a high probability that you will have poor swallowing function and aspiration. However, no choking does not mean this can't be happening, because there is also silent aspiration. Consult your doctor if the amount of sputum increases, the sputum becomes yellow, you have prolonged fever, or you continuously lose weight.

*Accidental ingestion refers to swallowing an unintended object such as a button, battery, toy, etc., and is a different situation than aspiration.

Copyright ©2020 National Center for Geriatrics and Gerontology

Major symptoms of suspected swallowing problems

Symptoms	Checkpoint
Choking	When do you experience choking? What foods or liquids cause choking?
Cough	Do you have a cough during and after meals or at night?
Sputum	Is there yellow, viscous sputum, or is the amount of sputum increasing?
Pharyngeal sensation	Does it feel like something is stuck in your throat, or is there a feeling of food left in your throat?
Oral sensation	Does it feel like there is food left in your mouth after swallowing, or is it stuck in your mouth?
Swallowing	Is it difficult to swallow depending on the food or drink?
Voice	Do you have a wet-sounding voice after eating?
Appetite for food	Is there a decrease in food intake or do you feel dehydrated?
Body weight	Is weight loss continuing or is there rapid weight loss?
Meal contents	Are you choosing only foods that are easy to eat, or are you choosing foods with the same ingredients?
Time required for one meal	Do you eat very slowly, or does it take more than 30 minutes?
Way of eating	Do you sometimes swallow with your face up, like you are trying to pour foods or liquids into the throat, or does food overflow from your mouth?
Fatigue	Do you feel tired while eating?
Oral cavity	Do you have any plaque or bad breath, do your dentures properly fit the gums, are there any scratches in your mouth?
General condition	Do you repeatedly experience slight fever or continuous fatigue?

If you have these symptoms, consult a doctor as soon as possible.

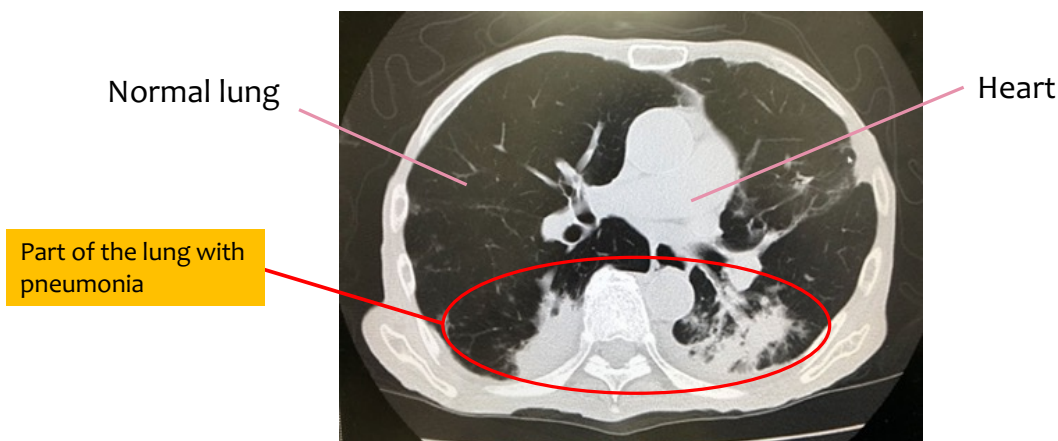
The Major Symptoms of Suspected Dysphagia: Osugi, A., Dysphagia, Feeding and Dysphagia: A Review of Rehabilitation, 3rd Edition (edited by Tsubakihara, A.), SHINDAN TO CHIRYO SHA, Tokyo, 2017. Modified from p. 183

Copyright ©2020 National Center for Geriatrics and Gerontology

Aspiration pneumonia

When aspiration occurs, bacteria in the mouth may enter the lungs from the trachea along with food and saliva, resulting in pneumonia. This is called **aspiration pneumonia**.

Aspiration pneumonia is a common pneumonia in older people and often requires hospitalization. For treatment, antibiotic medication and rehabilitation are often necessary to improve eating and swallowing function. Once aspiration pneumonia occurs, it is often impossible to eat the same meals that could be eaten before, so **prevention is very important**.



Findings of aspiration pneumonia on a chest CT scan

Copyright ©2020 National Center for Geriatrics and Gerontology

Prevent the progression of oral frailty and aspiration

- The oral environment is closely related to health. There is a relationship between oral bacteria and some internal diseases, and between chewing function and dementia.
- Dental plaque and tongue coating are bacterial masses that are a direct risk factor for dental cavities and periodontal disease. They serve as a hotbed of bacteria that cause diseases such as aspiration pneumonia and brain abscesses. It is very important to keep your mouth clean with a toothbrush or tongue brush. Regularly check your mouth in a mirror and look for any changes.

What is tongue coating ?



Thick tongue coating

- It is made of food left in the mouth, bacteria and peeled mucous membranes.
- Thick tongue coating causes abnormal taste, bad breath, and aspiration pneumonia
- It's normal to have a thin, slightly white coating on your tongue.

Tongue brushes are easy to find. Make sure to regularly clean your tongue.



Brush your teeth 4 times a day: when you get up and after each meal.

* Illustrations from irasutoya.com

Copyright ©2020 National Center for Geriatrics and Gerontology

General exercises for eating and swallowing

To improve swallowing function and prevent aspiration, prepare your mouth and body before eating. Relieving facial and neck muscle tension and moving your lips and tongue helps with saliva secretion.

Do this series of exercises 3 times a day before you eat.

If you have pain in your neck or shoulders, be careful not to make it worse.

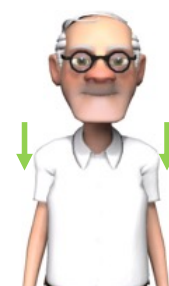
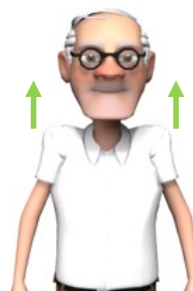
① Breathe in through your nose and exhale slowly through your mouth.



3 times



② Lift your shoulders up and down.

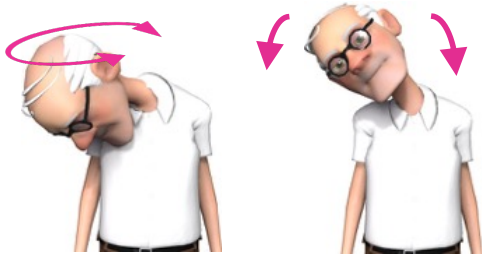


5 times

Dysphagia Team of Seirei. Pocket Manual of Dysphagia, 4th edition, Tokyo, Japan, Ishiyaku Publishers, 2018. Modified from p. 111 Movie site (Japanese): <http://www.hriha.jp/section/swallowing/gymnastics/>

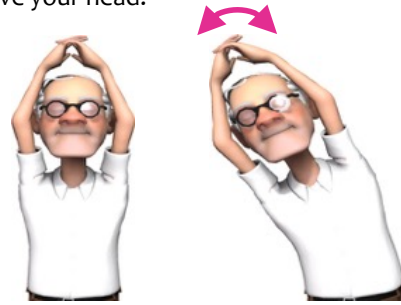
Copyright ©2020 National Center for Geriatrics and Gerontology

③ Move your head from left to right while looking slightly downward.



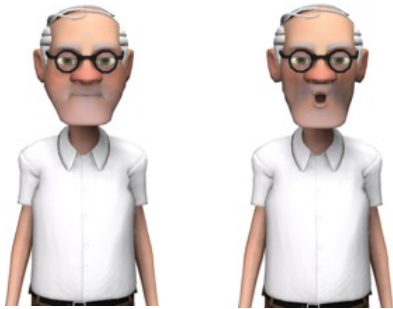
3 times each side

④ Stretch from side to side with your hands above your head.



3 times each side

⑤ Puff up your cheeks with air and then release.



3 times

⑥ Touch the corners of the left and right lips with your tongue.



3 times each side

⑦ Stick out your tongue and pull it back



5 times

Dysphagia Team of Seirei. Pocket Manual of Dysphagia, 4th edition, Tokyo, Japan, Ishiyaku Publishers, 2018. Modified from p. 111 Movie site (Japanese): <http://www.hriha.jp/section/swallowing/gymnastics/>

Copyright ©2020 National Center for Geriatrics and Gerontology

Training with balloons

This exercise prevents liquid and food from flowing back into the nose when swallowing. It is also expected to improve respiratory function to prevent aspiration.



If you don't have a balloon, breathe in through your nose and exhale as if you were blowing out a candle 50 cm away.

Do both: (1) exhale quietly for 5 seconds, (2) exhale quickly in 1 second.

Repeat 3 times each, alternating between exercises

Do not do this exercise if you have high blood pressure.

Yoko Inamoto. Preventing Aspiration Pneumonia on its own, Tokyo, Japan, NIHONBUNGEISHA, 2017. modified from p. 87

Copyright ©2020 National Center for Geriatrics and Gerontology

Forehead pushing exercises

This exercise strengthens the neck muscles required for swallowing and helps reduce food residue in the throat.

Place your hand on your forehead and apply slight resistance while slowly and strongly moving your head down to look at your navel.

- 1) Count to 5.
- 2) Relax your hands and rest for 5 seconds.



Repeat 3 to 5 times

Do not do this exercise if you have high blood pressure or cervical disease.
If you experience neck pain or dizziness, stop exercising.

Dysphagia Team of Seirei. Pocket Manual of Dysphagia, 4th edition, Tokyo, Japan, Ishiyaku Publishers, 2018. Modified from p. 119

Copyright ©2020 National Center for Geriatrics and Gerontology

Vocal exercises

Clear pronunciation enhances chewing and swallowing function.
Speaking fast and smoothly, and singing aloud is also vocal exercise.

Examples

- Little Linda lamb licks her lovely lips.
- Red leather, yellow leather, red leather, yellow leather, red leather, yellow leather.
- I scream, you scream, we all scream for ice cream!
- Certified certificates from certified certificate certifiers.
- Fred's friend found five funny frogs from France.
- Red lorry, yellow lorry, red lorry, yellow lorry, red lorry, yellow lorry.
- He threw three free throws.
- Selfish shellfish.
- Vincent vowed vengeance very vehemently.

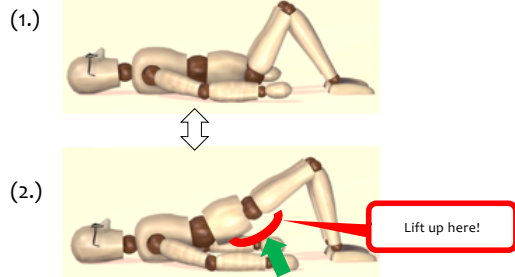


Copyright ©2020 National Center for Geriatrics and Gerontology

Trunk exercise

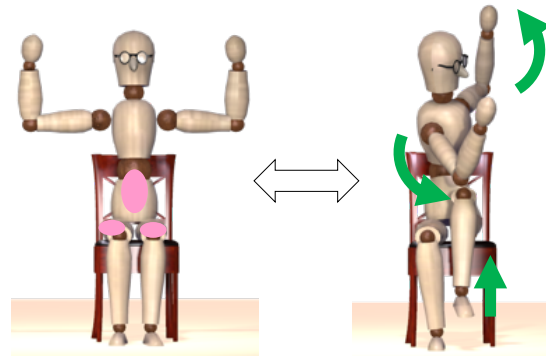
The trunk is a core part of the body, and training the trunk improves the posture during meals and improves the ability to expel accidentally swallowed food and sputum from the trachea.

Bridge exercise



- Lie on your back and bend both knees with your feet flat on the floor.
- Slowly raise your hips in the direction of the arrow and slowly lower.

Twist exercise



- Lift your left knee and twist your body so that your right elbow and left knee touch.
- Repeat on the other side.

* For more exercises, refer to the Balance Improvement Package and Inactivity Prevention Pack.

Copyright ©2020 National Center for Geriatrics and Gerontology

How to use thickeners

If you experiences choking on liquids, using thickeners is an effective way to prevent aspiration.

Concentration of thickening agent

- French dressing-like
- Sauce-like
- Ketchup-like



* Illustrations from irasutoya.com

*The strength (concentration) of thickening differs depending on the liquid to be thickened and the type of thickening agent. We often start with a concentration of 0.5% (0.5 g of thickener for 100 ml of liquid). Consult your doctor to determine the appropriate concentration of thickener and check the package of the thickener you choose.



How to use a thickening agent

Add the thickener a little at a time, stirring the liquid quickly with a spoon.

*If you thicken with potato starch, you will need to cook the liquid.

Thickened liquids can be stored at room temperature for several hours and in the refrigerator for about a day. However, once it comes into contact with the mouth, bacteria will propagate, so avoid storing liquids for a long time. Also note that the concentration will gradually increase the longer it is stored. It is possible to thicken soups as well.

Copyright ©2020 National Center for Geriatrics and Gerontology

Cooking to prevent aspiration and suffocation

- If you find something hard to swallow, cut it into small pieces, put a small amount in your mouth, and chew well before swallowing.
- It is easy to swallow safely if you thicken the liquid, but if you experience strong choking, refrain from eating the following foods.

Foods that are easy to aspirate and suffocate on

Strong stickiness: rice cakes, dumplings, snacks, etc.

Dry foods: bread, sponge cake, hard-boiled egg, steamed sweet potato, baked fish, etc.

Foods that stick easily to the throat: seaweed, etc.

Fruits and vegetables with high juice content: orange, grape, watermelon, melon, tomato, etc.

Liquids: water, tea, soup, milk, boiled food with a lot of broth, etc.

Sour foods: foods with vinegar, citrus fruits, etc.

Tough foods: mushrooms, kamaboko, konnyaku, burdock, butterbur, etc.

How to make your food easier to eat

- Boil tough foods well to make them soft.
- Cut meat and vegetables in the direction of the grain or fibers .
- Eat with foods that are easy to swallow such as tofu or yogurt.



Nutrition Improvement Package



Copyright ©2020 National Center for Geriatrics and Gerontology

The “Nutrition Improvement Package” includes knowledge about malnutrition, advice on food and meal ingredients to improve nutrition, and creating a diet to maintain physical function. Sufficient nutrition, proper exercise and sleep keep your body healthy and boost your immunity. It is important to keep up a daily routine for proper nutrition so that it becomes a habit and is easy to do. Practice little by little. Eat balanced meals three times a day, keep your body healthy from the inside, and keep your body and mind active.

▼▼▼▼▼▼▼▼▼▼ Keys for Improving Nutrition ▼▼▼▼▼▼▼▼▼▼

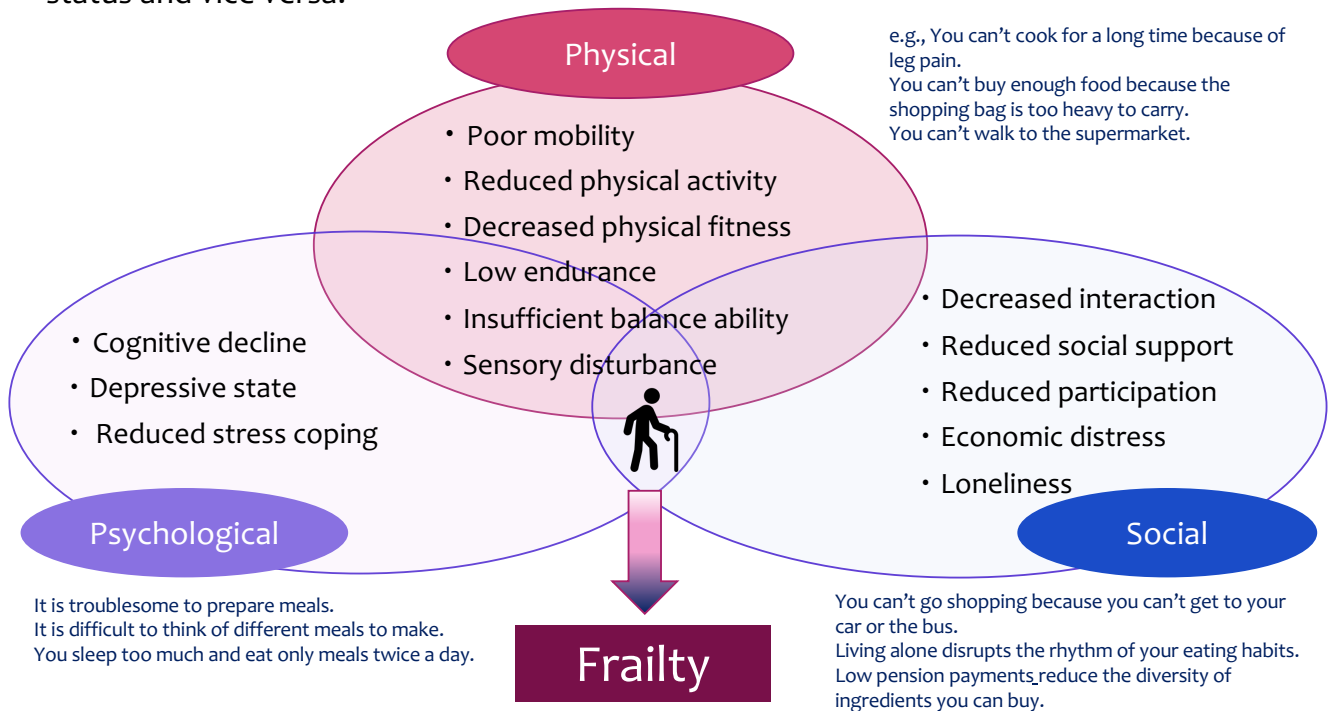
1. Get enough protein, because your muscles need it.
2. Exercise can improve your appetite. After eating a full meal, refer to the exercises in the “Inactivity prevention package”, “Strengthening package” and “Balance improvement package”.
3. Prepare and cook your meals as much as you can without straining yourself.

* All the illustrations used in this package are from "Irasutoya (irasutoya.com)".

Copyright ©2020 National Center for Geriatrics and Gerontology

Three important factors for healthy longevity

Healthy longevity is supported by physical, psychological, and social aspects, and impairment can result in frailty. All these aspects affect dietary behavior and nutritional status and vice versa.

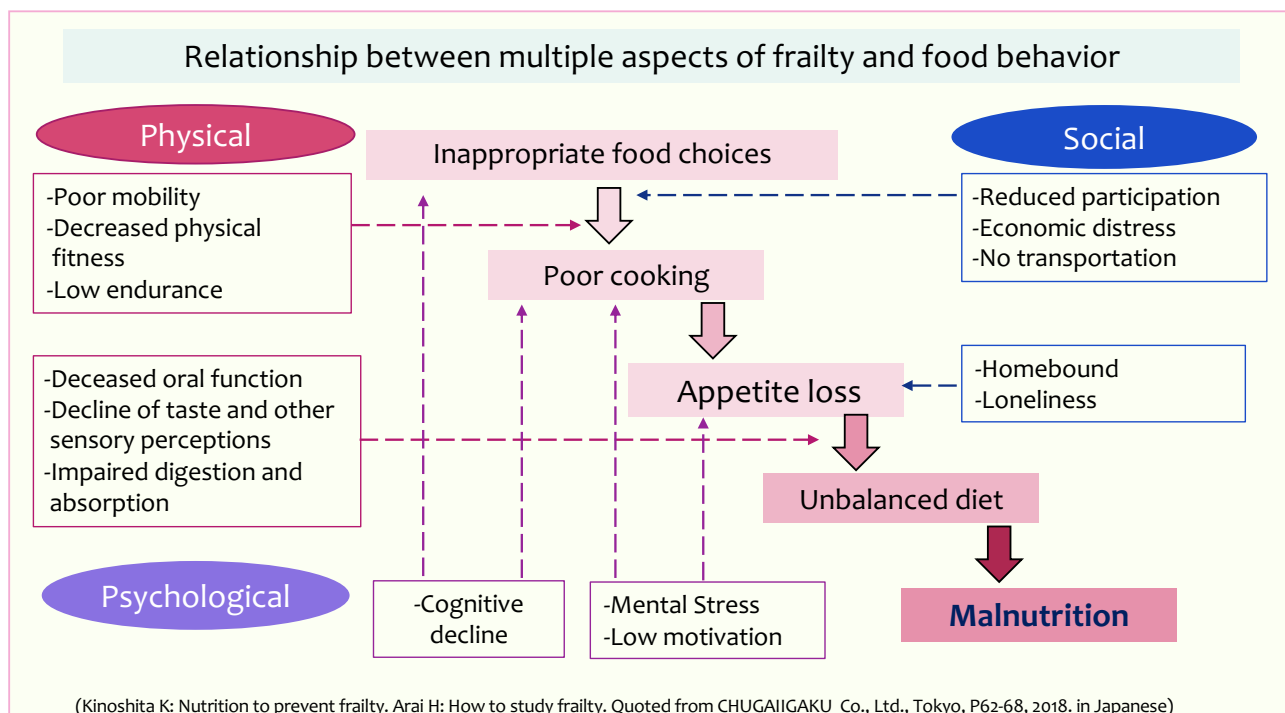


(Kinoshita K: Nutrition to prevent frailty, Arai H: How to study frailty. Quoted from CHUGAIIGAKU Co., Ltd., Tokyo, P62-68, 2018. in Japanese)

Copyright ©2020 National Center for Geriatrics and Gerontology

Three aspects of frailty and malnutrition

If you continue to refrain from going out, which leads to a decline in your physical and cognitive functions, you will find it difficult to shop and cook. You may end up eating what you have at home or eat less often, leading to malnutrition.



(Kinoshita K: Nutrition to prevent frailty. Arai H: How to study frailty. Quoted from CHUGAIIGAKU Co., Ltd., Tokyo, P62-68, 2018. in Japanese)

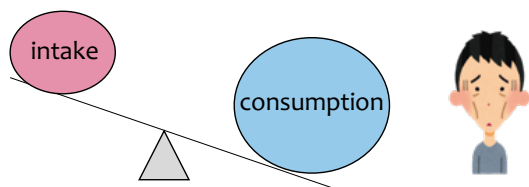
Copyright ©2020 National Center for Geriatrics and Gerontology

Importance of weight control

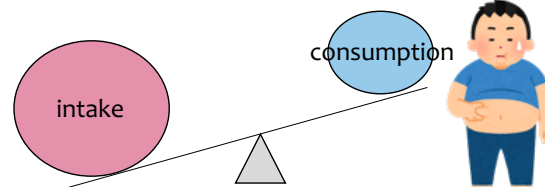
Incident frailty often occurs with malnutrition and severe obesity.

Energy intake, energy consumption and weight change

Weight loss → intake < consumption



Weight gain → intake > consumption



Balancing the amount of intake and consumption is evaluated by the body mass index (BMI).

$$\text{BMI} = \text{Weight (kg)} \div \text{Height in meters squared (m}^2\text{)}$$

Target BMI for those over 65 is 21.5-24.9.

(Ministry of Health, Labour and Welfare. Japanese Dietary Intake Standards 2020 Edition)

BMI < 21.5 → High risk of malnutrition.

BMI = 25-30 → Discuss with your doctor because it is not clear if you should diet.

BMI > 30 → In principle, you should lose weight, but discuss with your doctor.

Copyright ©2020 National Center for Geriatrics and Gerontology

Estimated energy requirement (1)

Estimated Energy = ① Basal metabolic rate × ② Physical activity level

① **Basal metabolic rate** is the metabolic rate at rest, e.g., when you are hungry in a comfortable room early in the morning.

Reference weight is the average weight of the same age group in Japanese.

Basal metabolic rate = Basal metabolism reference value (kcal/kg body weight/day) × Reference weight (kg)

	Basal metabolism reference value (kcal/kg body weight/day)	Reference weight (kg)	Basal metabolic rate (kcal/day)
Male			
age 65-74	21.6	65.0	1400
age over 75	21.5	59.6	1280
Female			
age 65-74	20.7	52.1	1080
age over 75	20.7	48.8	1010

Estimated energy requirements: Ministry of Health, Labour and Welfare. Excerpts from Japanese Dietary Intake Standards 2020

Copyright ©2020 National Center for Geriatrics and Gerontology

Estimated energy requirement (2)

② Physical activity level

Level 1: Most daily activities are static and performed from a seated position.

Level 2: Main work activity is sedentary, but short distance walks in the workplace and some tasks in a standing position. Also includes commuting, shopping, housework and engaging in mild sport activities.

Level 3: Main work requires a lot of movement or standing, or an active exercise habit in leisure time, such as playing sports.

Physical activity level	Level 1	Level 2	Level 3
Age 65-74	1.45	1.70	1.95
Over 75	1.40	1.65	—

Physical activity level: Ministry of Health, Labour and Welfare. Excerpted from the Japanese dietary intake standard 2020 edition

Let's calculate your estimated energy requirement!

Estimated energy requirement = ① Basic Metabolism × ② Physical activity level

Example: A 70-year-old woman spends most of her time at home watching TV, except for doing household chores

Estimated energy requirement = 1080 (kcal) × 1.70 = 1836 (kcal)

Copyright ©2020 National Center for Geriatrics and Gerontology

Key nutritional points to prevent frailty and maintain good health

- Do not skip meals and eat three proper meals a day.
- It is desirable to get **1.0 g/kg body weight/day or more of protein** (e.g. 60 g/day for body weight 60 kg or more), and distribute intake evenly over meals.
- You need to have a balanced diet that includes other ingredients, and not stick to a protein-biased diet.
- Protein intake within 1 hour after exercise will increase protein synthesis in skeletal muscle.
- When you exercise, add the energy consumed to the estimated energy requirement.

Energy consumption (kcal)
= Exercise intensity (METs) × Exercise time (hour) × Body weight (Kg)

*For exercise intensity (METs), please refer to the table of physical activity and exercise intensity (METs) on the next page.

Modified from Kinoshita K, Prevention and Intervention Strategies for Physical Deterioration from the Viewpoint of Nutrition. Textbook for Certified Instructor of Sarcopenia and Frailty, edited by the Japanese Association on Sarcopenia and Frailty, Shinkoh Igaku Shuppan CO., Ltd., Tokyo, 2020

Copyright ©2020 National Center for Geriatrics and Gerontology

2011 Compendium of Physical Activities: METs

METs	Activities in daily life	Exercises • Sports etc.
1.8	Washing dishes - standing	Fishing- standing
2.0	Cooking or preparing food - standing or sitting	
2.3	Playing video games that promote physical movement, Grocery shopping with or without a cart, cleaning, sweeping, slow, light effort	Light effort (e.g., balance, yoga), piano, sitting
2.5	Feeding pets, watering plants, getting dressed and undressed, standing up	Carpentry, general, light effort
2.8	Walking on a firm, level surface at a slow pace (2 mph)	Upper body exercise, arm ergometer
3.0	Normal walking on level ground	Pilates, bowling
3.5	Cleaning, mopping, standing up	Walking, moderate effort tasks
4.0	Sweeping the garage, sidewalk or outside of the house	Football, table tennis, bicycling
4.3	Walking in the office at a brisk pace (3.5 mph), not carrying anything	Circuit training, golf, walking, carrying clubs
4.5	Polishing floors, standing, walking slowly	Basketball, shooting baskets, dancing
5.0	Walking, walking downstairs or standing, carrying objects weighing about 25-49lbs (11.3-22.2Kg)	Resistance (weight) training, squats
5.8	Vigorous walking/running, playing with children	Rock climbing, ascending or traversing rock, low-to-moderate difficulty
6.0		Swimming leisurely, not lap swimming
7.0		Jogging

Citation: Ainsworth BE, Haskell WL, Herrmann SD, Meckes N, Bassett Jr DR, Tudor-Locke C, Greer JL, Vezina J, Whitt-Glover MC, Leon AS. The Compendium of Physical Activities Tracking Guide. Healthy Lifestyles Research Center, College of Nursing & Health Innovation, Arizona State University. Retrieved [date] from the World Wide Web. <https://sites.google.com/site/compendiumofphysicalactivities/>

Copyright ©2020 National Center for Geriatrics and Gerontology

Improve nutritional balance with meals that include staple foods, and main/side dishes

The Japanese-style diet, "Ichiju Sansai (one soup and three dishes)" has been around since ancient times, and is a nutritious and well-balanced diet. However, the salt content tends to be high, so try to limit soup to 1 cup a day.



3 meals a day including a staple food, main dish and side dishes, 1-2 cups of milk per day, and one serving of fruit (fist-size) per day are recommended for nutritional balance.

Copyright ©2020 National Center for Geriatrics and Gerontology

Staple foods (grains) x 1 dish/per meal



Main nutrients: Carbohydrates
Role: Energy supply

It is recommended that about half of your daily energy should come from grains as the staple food (foods rich in carbohydrates).

Reference amount by required energy (per meal)

Required energy (kcal)	Steamed rice (g)	Bread (g)
1400	130	80
1600	150	90
1800	180	110
2000	200	120
2200	230	140
2400	250	150

Copyright ©2020 National Center for Geriatrics and Gerontology

Main dish (meat, fish, eggs, soybeans) x 1 dish/per meal



Main nutrients: protein, lipids
Role: maintain and strengthen skeletal muscle

- Recommended amount per day = **1.0 g/kg body weight/day or more** (e.g. 60 g or more per day for a person with body weight of 60 kg)
- It is ideal to distribute consumption evenly over three daily meals (e.g. 20 g at each meal for a person who needs 60 g)

*The protein mass of each food is shown in (g).



Squeezed tofu
80 g (6 g)



Raw tofu
100 g (5 g)



1 pack of Natto
35 g (6 g)



Half a fried tofu
240 g (18 g)



One egg
(6 g)



White fish
60 g (12 g)



Oily fish
(e.g., mackerel)
60 g (12 g)



Lean meat of oily fish
(e.g., tuna, swordfish)
60 g (18 g)



Chicken
60 g (12 g)



Beef
60 g (12 g)



Pork
60 g (12 g)

Cited: Nutrition to prevent frailty, modified from the Healthy Longevity Classroom Text (<https://www.ncgg.go.jp/cgss/department/frail/frail.html>)

Copyright ©2020 National Center for Geriatrics and Gerontology

Side dish (vegetables/mushrooms/seaweed), 2 dishes per meal



Main nutrients: vitamins, minerals, dietary fiber
Role: conditioning your body

- The standard amount for 1 day is 3 cups (350 g), about the amount you can fit in both hands.
- When cooked, the volume is reduced by half.
- The ideal ratio is 1 part green-yellow vegetables to 2 parts light-colored vegetables.



1 part green-yellow vegetables*

Japanese mustard spinach, spinach, carrot, tomato, etc.



2 parts light-colored vegetables

Chinese cabbage, cabbage, lettuce, onion, eggplant, radish, cucumber, etc.

*Vegetables rich in β -carotene as defined by Ministry of Health, Labour and Welfare, Japan.

Copyright ©2020 National Center for Geriatrics and Gerontology

Importance of vitamins

- Vitamin C promotes iron absorption and collagen synthesis.
- Vitamin D promotes calcium absorption and calcification to create strong bones. Sun exposure is necessary for the activation of vitamin D. Let the area on the back of both hands be exposed to sunlight for 15 minutes or in the shade for about 30 minutes.

(Health effects of ultraviolet rays: quoted from Ministry of the Environment www.env.go.jp/chemi/uv/uv_pdf/02.pdf).

- Vitamin E maintains cell membrane function and has antioxidant effects.
- Folic acid is involved in erythrocyte diffusion and protein synthesis.

Foods rich in **vitamin C**: peppers, Japanese lime, parsley, green tea leaves, seaweed, etc.

Foods rich in **vitamin D**: salmon, saury, sardines, dried sardines, mushrooms, etc.

Foods rich in **vitamin E**: brown rice, eel, canned tuna, nuts, etc.

Foods rich in **folic acid**: moroheiya, parsley, broccoli, spinach, etc.

Cited: Nutrition to prevent frailty, modified from the Healthy Longevity Classroom Text (<https://www.ncgg.go.jp/cgss/department/frail/frail.html>)

Copyright ©2020 National Center for Geriatrics and Gerontology

Ideas when you do not have an appetite and cannot eat enough

If you cannot eat enough or have difficulty eating enough food to meet your energy requirements, we recommend using oral nutritional supplements.

Some dietary supplements are available over-the-counter and others have to be prescribed by a doctor. Consult with your family doctor before starting any supplements.

Points to consider when purchasing over-the-counter supplements





- Energy of 180 kcal or more
- Supplements that contain protein
(It is preferable to take these with about 10 g of protein)

Even if the energy is more than 180 kcal, it may not contain protein.

Copyright ©2020 National Center for Geriatrics and Gerontology

Ideas for when going out or shopping less frequently

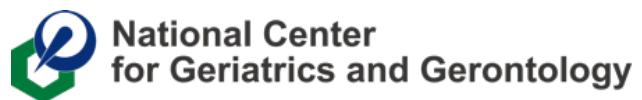
When the amount of activity and the frequency of shopping decrease, the appetite tends to decrease and food consumption tends to be biased. Try to prevent imbalanced nutrition by using food stored in the pantry and frozen food.

	Main dishes	Side dishes
Main nutrients	Protein	Vitamins, minerals, dietary fiber
Main food group	Meat, fish, egg, soybean	Vegetables, mushrooms, seaweed
Useful pantry foods	<ul style="list-style-type: none"> • Canned fish and meat • Boiled soybeans • Dried tofu, soy milk • Dairy products, etc. 	<ul style="list-style-type: none"> • Dried seaweed, mushrooms, and vegetables • Bottled vegetables, etc. 
How to freeze for preservation	<p>Wrap pieces of fish and meat in plastic wrap and put them in a freezer bag.</p> <p>It is more convenient to cut into pieces before freezing.</p>	<p>Cut mushrooms and put them directly into freezer bags. Leaf vegetables can be boiled lightly and drained, and root vegetables can be peeled and cut before freezing.</p>

Be careful not to consume too much salt in canned and processed foods. Ideas for using canned foods: drain the liquid from canned foods, and mix them with other ingredients when cooking.

Copyright ©2020 National Center for Geriatrics and Gerontology

Inactivity Prevention Package



Copyright ©2020 National Center for Geriatrics and Gerontology

The “Inactivity Prevention Package” includes exercises and activities to help you maintain your physical function and your health while you are staying at home. We recommend that you exercise safely for a total of 40 to 60 minutes per day, about three times a day, with a combination of various exercises. We have set a standard time and frequency for each exercise, but you can change them according to your physical condition. [You are recommended to exercise at the same time every day in order to establish an exercise habit.](#) You can listen to the radio or your favorite music to keep up your motivation. Think of the muscles to be trained, as explained in the upper right corner of each page.

▼▼▼▼▼▼▼▼▼▼ Precautions for exercise ▼▼▼▼▼▼▼▼▼▼

1. Stop exercising if you feel pain or stress in your body.
2. Exercise slowly while taking breaks according to your physical condition.
3. While exercising, do not hold your breath and breathe naturally.
4. If you are not feeling well, take a rest and stop exercising.
5. Use a stable chair or desk, and do not use objects that can be easily moved, such as a chair with wheels.

Copyright ©2020 National Center for Geriatrics and Gerontology

List of exercises in the Inactivity Prevention Package

You can combine stretching and other exercises according to your condition. Be aware that there is a risk of falling down during balance exercises.

No.	Stretch	Balance exercise	Muscle training	Whole-body exercise	Supine	Sitting	Standing	Exercise content
1	●					●		Stretching the hamstrings and calves
2	●					●		Stretching the quadriceps and front of the hip
3			●	●		●	●	Shoulder exercises
4			●			●		Twist exercises
5			●			●		Knee straightening exercises
6			●			●		Raising the thighs
7	●						●	Stretching the tight calf muscles
8			●				●	Knee flexion exercises
9			●				●	Hip abduction exercise
10			●	●			●	Standing heel raises
11			●				●	Hip extension exercises
12		●	●				●	Drawing circles with the feet
13	●						●	Full body stretch
14			●				●	Squats
15			●	●			●	Monkey-walking

Supine: exercises are done while lying on your back. Sitting: exercises are done while sitting down. Standing: exercises are done while standing up.

Copyright ©2020 National Center for Geriatrics and Gerontology

1. Stretching the hamstrings and calves

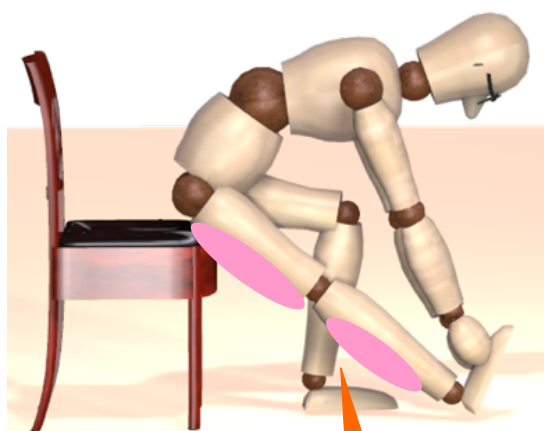
◆ Hamstrings and triceps surae muscle

Be careful not to fall off the chair!

30 sec

Procedure

1. Sit towards the edge of a chair, but be careful not to fall off the chair.
2. With one leg extended, lean forward and stretch the back of your thighs.
3. Keep your chest open and tilt your upper body forward.
4. Repeat with the other leg.



Point your toe toward the ceiling.

If possible, try not to bend the knee of the straight leg!

If you have pain in your back, lower back, or knees, be careful not to make it worse.

Copyright ©2020 National Center for Geriatrics and Gerontology

2. Stretching the quadriceps and front of the hip

◆ Hip flexor and quadriceps

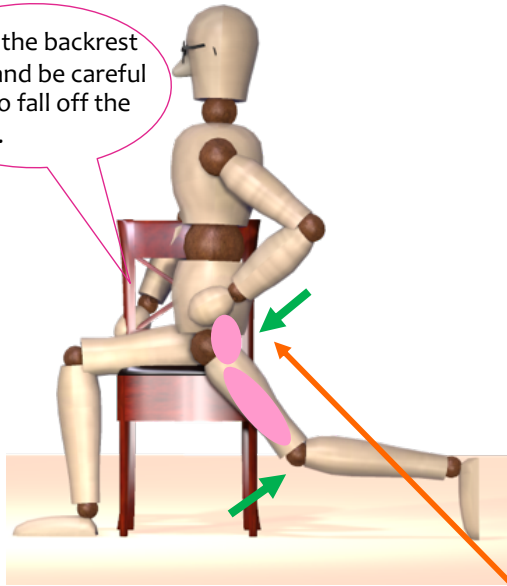
Do not perform this if you have had hip surgery

30 sec

Procedures

1. Sit sideways in a chair with your legs parallel to the backrest.
2. Place the foot of the front leg on the floor behind you.
3. Open your chest, push your hips forward, and stretch the thigh of the extended leg.
4. Repeat with the other leg.

Hold the backrest and be careful not to fall off the chair.



Put your hands on your hips and push forward.

If you have pain in your back, lower back, or knees, be careful not to make it worse.

Copyright ©2020 National Center for Geriatrics and Gerontology

3. Shoulder exercises

◆ Shoulder and back muscles

10 times

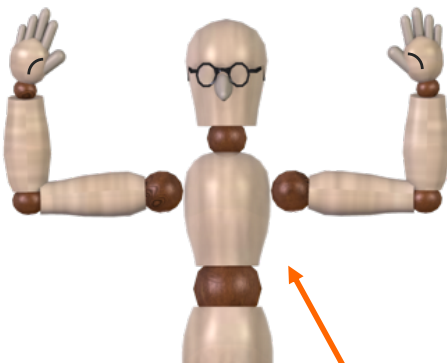
*

3-5 times/day

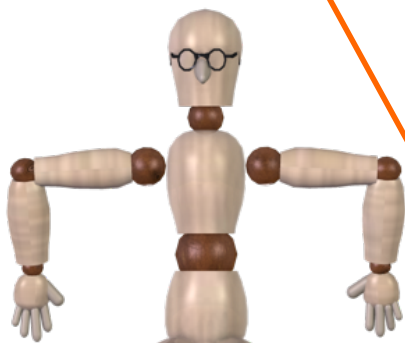
Procedures

1. Open your chest and both shoulders and raise your elbows to shoulder level with your fingertips facing up.
2. Keeping both sides open, lower your hands without moving your shoulders and point your fingers at the ground.
3. Repeat (1.) and (2.) slowly.

(1.)
Turn your palms forward.



(2.)
Turn your palm to the back.



Let's open your chest.

If you have pain in your shoulders, elbows, or arms, be careful not to make it worse.

Copyright ©2020 National Center for Geriatrics and Gerontology

4. Twist exercise

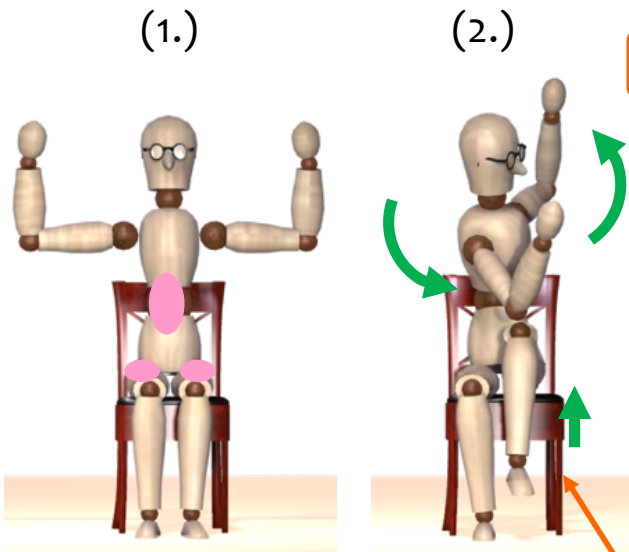
◆ Abdominal muscles and hip flexors

10 times

*

3-5 times/day

Procedures



1. Open your chest and both shoulders and raise your elbows to shoulder level with your fingertips facing up, as shown in figure (1).
2. Lift your left knee and twist your body so that your right elbow and left knee touch.
3. Repeat with the other leg.

Lift your knee as high as possible and stay upright without bending at the hips.

If you have pain in your back or knees, be careful not to make it worse.

Copyright ©2020 National Center for Geriatrics and Gerontology

5. Knee straightening exercises

◆ Quadriceps

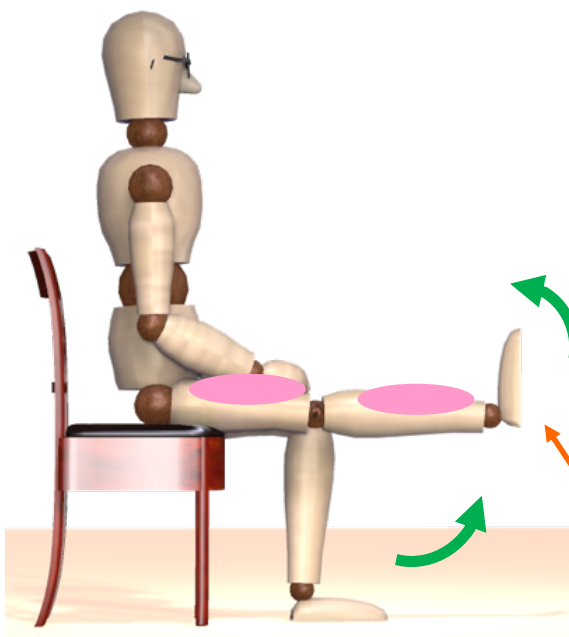
Be careful not to fall off the chair!

50 times

*

3 times/day

Procedures



1. Sit towards the edge of a chair.
2. Extend one leg slowly and painlessly.
3. Slowly return to the original position.
4. Repeat the other leg.

Flex your foot after and try to keep your leg straight.

Copyright ©2020 National Center for Geriatrics and Gerontology

6. Raising the thighs

◆ Hip flexor

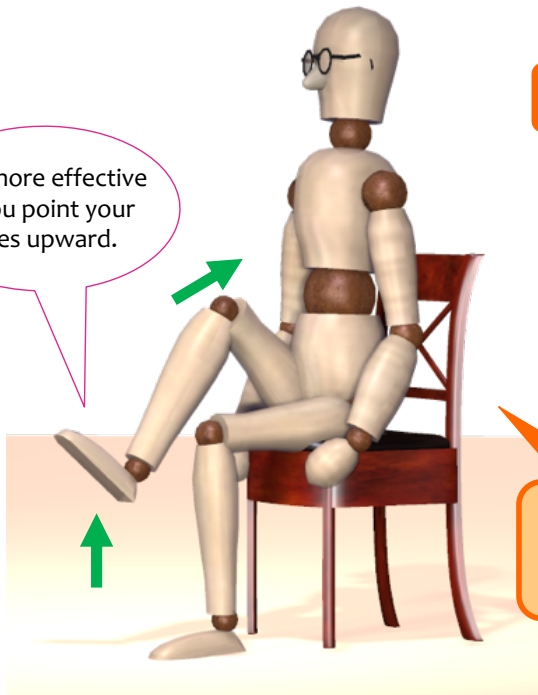
50 times
*
3 times/day

Procedures

1. While sitting in a chair, lift one knee while keeping it bent, and slowly return to the original position.
2. Repeat with the other leg.

Keep your posture as upright as possible and don't bend your trunk!

It is more effective if you point your toes upward.



Copyright ©2020 National Center for Geriatrics and Gerontology

7. Stretching tight calf muscles

◆ Triceps surae muscle

Lightly hold a stable table or chair.

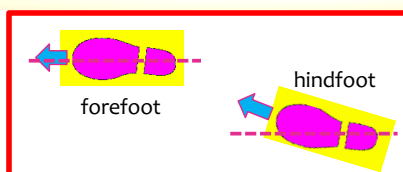
30 sec

Procedures

1. Stand tall with one foot in front of the other and open your chest.
2. Bend the knee of the front leg slightly with the toes of both feet facing forward. Straighten the back leg and gently press the heel of the back leg to the floor.
3. Repeat on the other side.

It is more effective to point the toes of the back leg slightly inward.

Front



Do not overextend your legs or press your heels too hard against the floor.

Copyright ©2020 National Center for Geriatrics and Gerontology

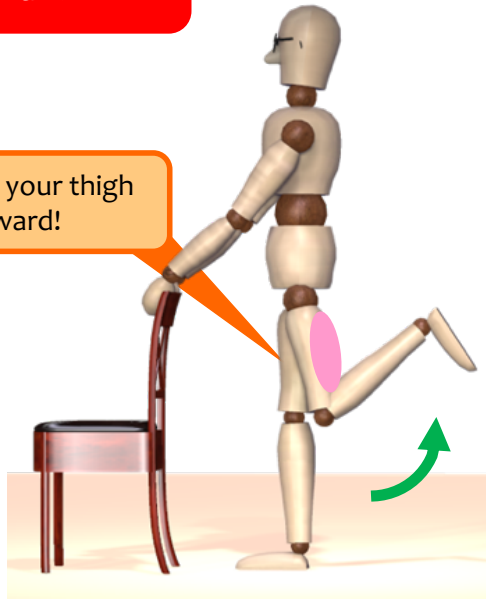
8. Knee flexion exercises

◆ Hamstrings

Lightly hold a stable table or chair.

30 times
*
3 times/day

Don't put your thigh forward!



Procedures

1. Slowly lift one foot upwards and backwards while keeping the knee bent.
2. Slowly return to the original position.
3. Repeat with the other leg.

If you have pain in your knee, be careful not to make it worse.

Copyright ©2020 National Center for Geriatrics and Gerontology

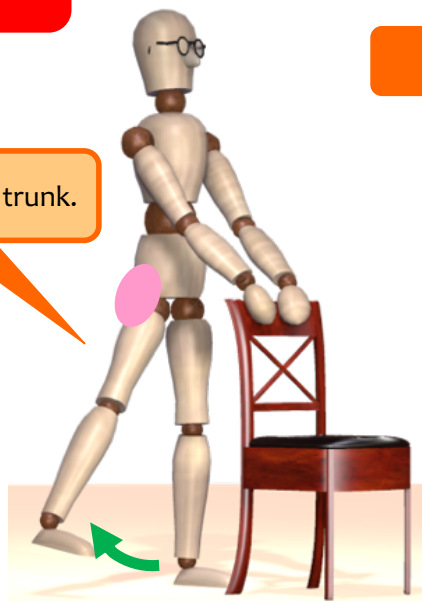
9. Hip abduction exercise

◆ Gluteus medius

Lightly hold a stable table or chair.

30 times
*
3 times/day

Try not to move the trunk.



Procedures

1. Stand with the toes of both feet facing forward.
2. Raise one foot slowly to the side.
3. Slowly return to the original position.
4. Repeat with the other leg.

Use a stable table or chair.

Copyright ©2020 National Center for Geriatrics and Gerontology

10. Standing heel raises

◆ Triceps surae

Lightly hold a stable table or chair.

50 times
*
3 times/day

Procedures

1. Slowly stretch your body by standing on your tiptoes.
2. Keep your heels up for 3 seconds. Then lower slowly.



Support your body with your toes.

Use a stable table or chair.

Copyright ©2020 National Center for Geriatrics and Gerontology

11. Hip extension exercises

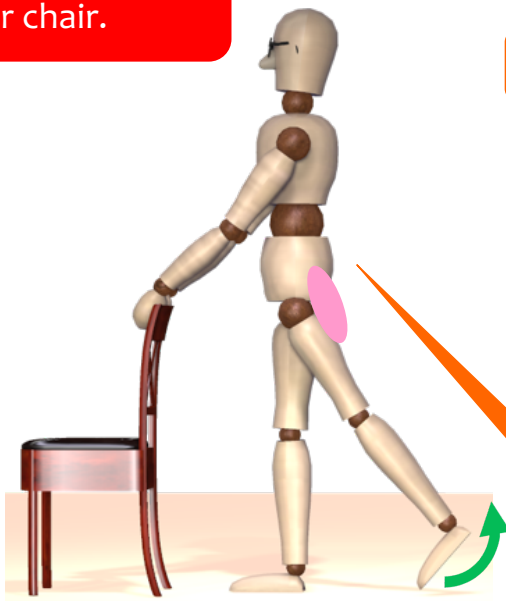
◆ Gluteus maximus

Lightly hold a stable table or chair.

50 times
*
3 times/day

Procedures

1. Lift one leg backwards while keeping it straight.
2. Slowly return the original position.
3. Repeat with the other leg.



Stand tall and be careful not to bend backward.

If you have pain in your hip or back, be careful not to make it worse.

Copyright ©2020 National Center for Geriatrics and Gerontology

12. Drawing circles with the feet

◆ Balance exercise

Lightly hold a stable table or chair.

10 times
*
3 times/day

Keep your leg straight.



Procedures

1. Move your leg as if to draw a circle with your toes on the floor.
2. Repeat with the other leg.

Try to draw as large a circle as possible.

Copyright ©2020 National Center for Geriatrics and Gerontology

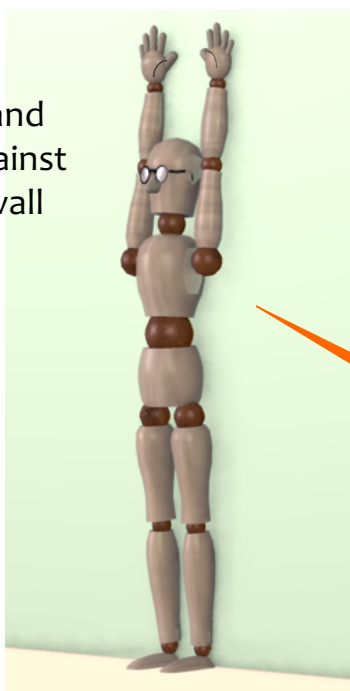
13. Full body stretch

◆ Back muscles

Do not do this exercise if you have a past history of compression fractures of the spine.

30 sec

Stand against a wall



Procedures

1. Stand up straight and put your entire back against the wall.
2. Lift your hands above your head and stretch your back.

Stand tall and be careful not to bend backward.

If you have pain in your shoulders, back or spine, be careful not to make it worse.

Copyright ©2020 National Center for Geriatrics and Gerontology

14. Squats

◆ Gluteus maximus and quadriceps

Be careful not to fall backwards.

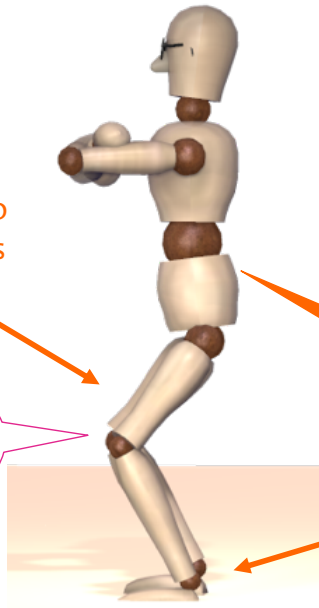
50 times
*
3 times/day

Procedures

1. Stand with the toes of both feet facing forward.
2. Lower your hips and then slowly return to the original position.

Be careful not to bend your knees too much.

Don't let your knees go past your toes.



Stand tall and keep your back straight.

Stand with your feet shoulder width apart.

If you have knee or hip pain, be careful not to make it worse.

Copyright ©2020 National Center for Geriatrics and Gerontology

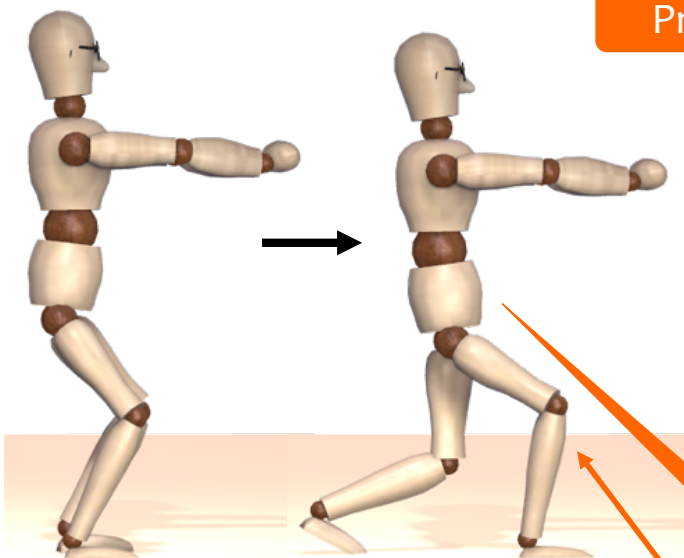
15. Monkey-walking

◆ Walking exercise

3 min
*
10 times

Procedures

1. Squat slightly and keep your knees bent.
2. Clasp your hands and lift your arms up in front of you.
3. Walk slowly while dropping your hips and keeping your knees bent.
4. Once you get used to it, try taking bigger strides.



Do not bend your body forward.

Keep your knees bent while walking.

If you have pain in your knees, be careful not to make it worse.

Copyright ©2020 National Center for Geriatrics and Gerontology

Cogni-Package



Copyright ©2020 National Center for Geriatrics and Gerontology

“Cogni-Package” includes a lot of tasks that allow you to use your brain and body at the same time, especially if you are not exercising your mind recently and are worried about becoming forgetful. We have prepared multiple tasks to help. Do not choose the same task each time, but **do different tasks every day**. Working on these tasks with your family might increase your motivation and keep you active. Cognitive tasks are a bit difficult, but don’t worry if you can’t do everything. Brain activity is promoted by smiling and enjoying yourself while trying to solve challenging problems. Keep your brain and body healthy by making an effort to use both in your daily life.



Precautions for activities



1. Stop exercising if you feel pain or stress in your body.
2. Be careful not to fall down while exercising and choose tasks that match your abilities.
3. Use a stable chair or desk, and do not use objects that can be easily moved, such as a chair with wheels.
4. You may choose any of the cognitive tasks you like.
5. If possible, try making small changes to make the tasks different. For example, name “fruits” instead of “animals” or name words that begin with “h” instead of “a”.

Copyright ©2020 National Center for Geriatrics and Gerontology

List of exercises included in the Cogni-Package

Combine various cognitive and physical exercises according to your condition. Be aware of the risk of falling down during balance exercises.

No.	Stretch	Balance ex	Muscle training	Whole-body exercise	Cognitive task	Sitting	Standing	Exercise content
1	●				Calculation	●		Stretching the hamstrings
2	●				Word fluency	●		Stretching the hamstrings
3			●		Memory	●		Raising the thighs
4			●		Attention	●		Raising the toes and heels
5	●				Calculation		●	Stretching tight calf muscles
6	●				Word fluency		●	Stretching tight calf muscles
7	●				Memory	●		Stretching the trunk muscles
8	●				Attention	●		Stretching the trunk muscles
9-12			●		Calculation Word fluency Memory Attention		●	Thigh stretch and lunge
13		●			Word fluency		●	Standing training in a tandem position
14,15			●		Attention	●		Marching while sitting
16,17			●	●	Attention Inhibition		●	Marching in place
18-21					Attention Inhibition	●		Using each exercise for a different task at the same time
22				●			●	Walking

Sitting: exercises are done while sitting down. Standing: exercises are done while standing up.

Copyright ©2020 National Center for Geriatrics and Gerontology

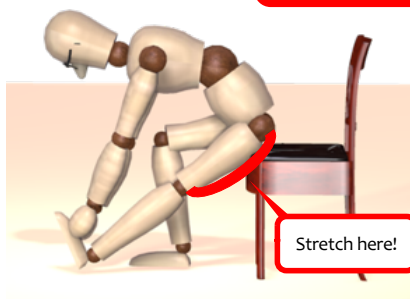
1

Stretching the hamstrings + Cognitive task

Here's the point!

Let's do a **cognitive task** and exercise at the same time.
Continue the tasks for 60 seconds.

Exercise task



Be careful not to fall off the chair!

- Be careful not to fall off the chair by sitting too close to the edge.
- With one leg extended, lean forward and stretch the back of your thighs.
- Take deep breaths without hunching and stretch slowly without any pain.

Cognitive task

Calculation

- Count every second number from 0 (0, 2, 4...).
- Count every third number from 0 (0, 3, 6...).
- Count backwards from 90 (90, 89, 88...). When you get used to it, subtract 2 (90, 88, 86...) or 3 (90, 87, 84...).

Copyright ©2020 National Center for Geriatrics and Gerontology

2

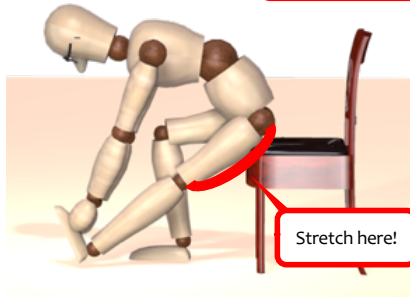
Stretching the hamstrings + Cognitive task

Here's the point!

Let's do a **cognitive task** and exercise at the same time.
Continue the tasks for 60 seconds.

Exercise task

Be careful not to fall off the chair!



- Be careful not to fall off the chair by sitting too close to the edge.
- With one leg extended, lean forward and stretch the back of your thighs.
- Take deep breaths without hunching and stretch slowly without any pain.

Cognitive task

Word fluency

Say as many of the following words as you can.

- Name tools used for housework
- Words that begin with "H"
- Things associated with "spring" (cherry blossoms, allergies...).
- Things related to "water" (soap, bath, Venice...)

Copyright ©2020 National Center for Geriatrics and Gerontology

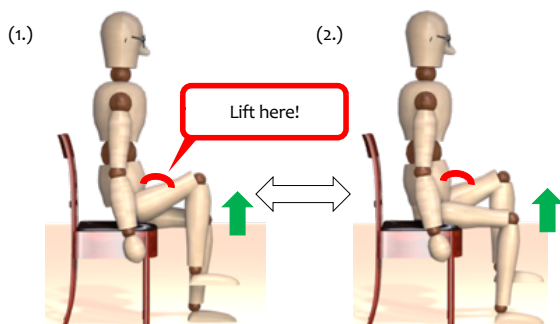
3

Raising the thighs + Cognitive task

Here's the point!

Let's do a **cognitive task** and exercise at the same time.
Continue the tasks for 60 seconds.

Exercise task



- (1.) lift one leg up while keeping the knee bent as shown by **the green arrow**, and then slowly return to the original position.
- (2.) repeat with the other leg.

Cognitive task

Memory

Recall and say:

- What you have in the refrigerator.
- What you see when you take a walk outside.
- The names of states/provinces/prefectures in your country.
- What you had for dinner yesterday.

Copyright ©2020 National Center for Geriatrics and Gerontology

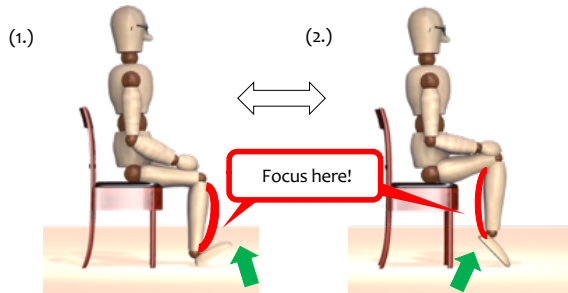
4

Raising the toes and heels + Cognitive task

Here's the point!

Let's do a **cognitive task** and exercise at the same time.
Continue the tasks for 60 seconds.

Exercise task



- (1.) raise and lower your toes slowly.
- (2.) raise and lower your heels slowly.
- Repeat these two steps.

Cognitive task

Attention

Answer while looking around the room.

- How many round objects are there?
- How many red objects are there?
- How many green objects are there?
- When you get used to the task, perform different exercises, such as raising your right heel and your left toes up at the same time.

Copyright ©2020 National Center for Geriatrics and Gerontology

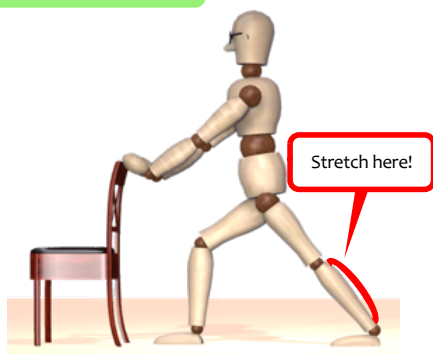
5

Stretching tight calf muscles + Cognitive task

Here's the point!

Let's do a **cognitive task** and exercise at the same time.
Continue the tasks for 60 seconds.

Exercise task



- Hold a table or chair to keep stable.
- Point the toes of both feet toward the front. It is more effective to point the toes of your back leg slightly inward.
- Slowly stretch the calf muscles. Be gentle and don't force the stretch.

Cognitive task

Calculation

- Let's start with 2 and double the number one by one (2, 4, 8...).
- Count every third number from 32 (32, 35, 38 ...).
- Count backwards from 200 (199, 198, 197...). When you get used to it, subtract 2 or 3.

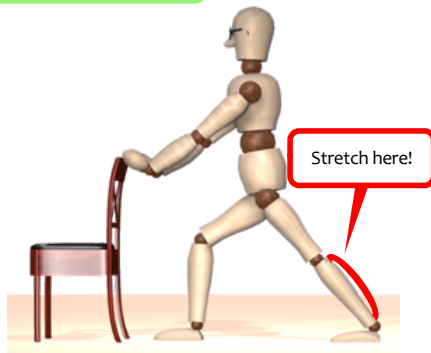
Copyright ©2020 National Center for Geriatrics and Gerontology

6 Stretching tight calf muscles + Cognitive task

Here's the point!

Let's do a **cognitive task** and exercise at the same time.
Continue the tasks for 60 seconds.

Exercise task



- Hold a table or chair to keep stable.
- Point the toes of both feet toward the front. It is more effective to point the toes of your back leg slightly inward.
- Slowly stretch the calf muscles. Be gentle and don't force the stretch.

Cognitive task

Word fluency

Say as many words in a specific category as you can for 60 seconds.

➤ Carpentry tools (saw, hammer, etc.)

➤ Five-letter words (panda, right, etc.)

➤ Words associated with "summer" (fireworks, swimming, etc.).

➤ Flowers (tulip, rose, etc.).

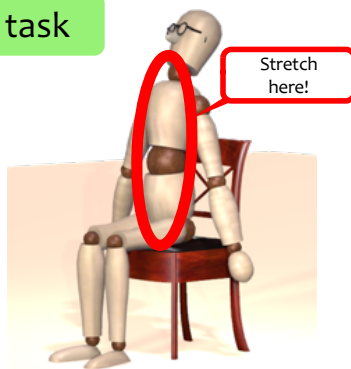
Copyright ©2020 National Center for Geriatrics and Gerontology

7 Stretching the trunk muscles + Cognitive task

Here's the point!

Let's do a **cognitive task** and exercise at the same time.
Continue the tasks for 60 seconds.

Exercise task



- Open both arms outward and lift your chest.
- Stretch the muscles on the chest and upper back.
- Take a deep and smooth breath and slowly release without any pain.

Cognitive task

Memory

Recall and say:

➤ Recent news.

➤ How to get to the nearest station from your house.

➤ The name of the city, town and village in the prefecture you live in.

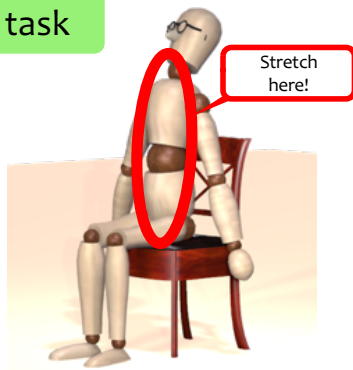
Copyright ©2020 National Center for Geriatrics and Gerontology

8 Stretching the trunk muscles + Cognitive task

Here's the point!

Let's do a **cognitive task** and exercise at the same time.
Continue the tasks for 60 seconds.

Exercise task



- Open both arms outward and lift your chest.
- Stretch the muscles on the chest and upper back.
- Take a deep and smooth breath and slowly release without any pain.

Cognitive task

Attention

Answer while looking around the room.

- How many squares are there?
- How many blue things?
- What is the heaviest thing?
- What is the oldest thing?

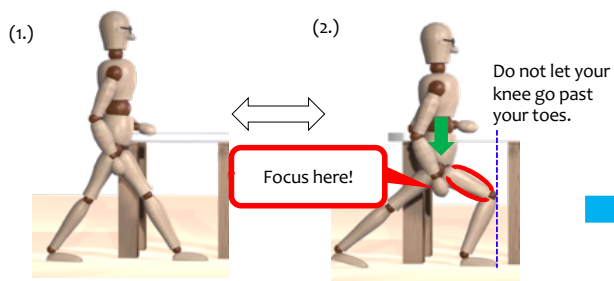
Copyright ©2020 National Center for Geriatrics and Gerontology

9 Thigh stretch + Cognitive task

Here's the point!

Let's do a **cognitive task** and exercise at the same time.
Continue the tasks for 60 seconds.

Exercise task



- Hold a table, chair, or handrail to keep stable.
- (1.) put one foot in front of the other and stand tall.
- (2.) lower your body until the front leg forms about a right angle, thigh parallel to the floor. The heel of the back foot should not touch the floor. Ensure the front knee remains over the ankle and be sure to lower straight down rather than forward.

Cognitive task

Calculation

- Count in multiples of six starting at 2 (2, 8, 14...).
- Divide even numbers by 2 in order until they are no longer divisible (24, 12, 6, 3).
- Count backwards from 300. When you get used to it, subtract 2 or 3.

Copyright ©2020 National Center for Geriatrics and Gerontology

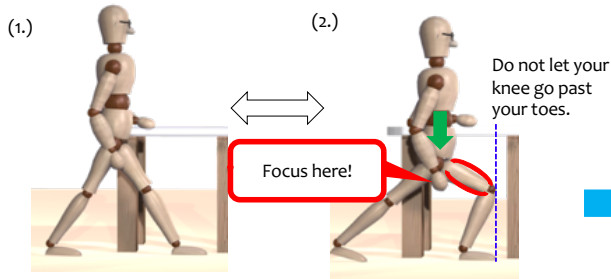
10

Thigh stretch + Cognitive task

Here's the point!

Let's do a **cognitive task** and exercise at the same time.
Continue the tasks for 60 seconds.

Exercise task



- Hold a table, chair, or handrail to keep stable.
- (1.) put one foot in front of the other and stand tall.
- (2.) lower your body until the front leg forms about a right angle, thigh parallel to the floor. The heel of the back foot should not touch the floor. Ensure the front knee remains over the ankle and be sure to lower straight down rather than forward.

Cognitive task

Word fluency

Say as many words in a specific category as you can for 60 seconds.

- Name seasonings (salt, sugar, etc.)
- Countries (Portugal, Germany, Peru, etc.)
- Words associated with “autumn” (leaves, October, etc.)
- Three-letter words (dog, cat, etc.)

Copyright ©2020 National Center for Geriatrics and Gerontology

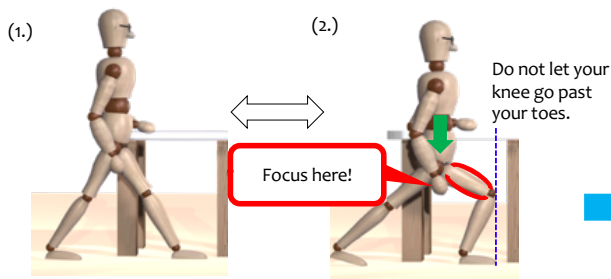
11

Thigh stretch + Cognitive task

Here's the point!

Let's do a **cognitive task** and exercise at the same time.
Continue the tasks for 60 seconds.

Exercise task



- Hold a table, chair, or handrail to keep stable.
- (1.) put one foot in front of the other and stand tall.
- (2.) lower your body until the front leg forms about a right angle, thigh parallel to the floor. The heel of the back leg should not touch the floor. Ensure the front knee remains over the ankle and be sure to lower straight down rather than forward.

Cognitive task

Memory

Recall and say:

- What you did yesterday
- The most delicious dish you have ever eaten
- Your favorite song and the name of the singer singing (Sukiyaki, Kyu Sakamoto, etc.)

Copyright ©2020 National Center for Geriatrics and Gerontology

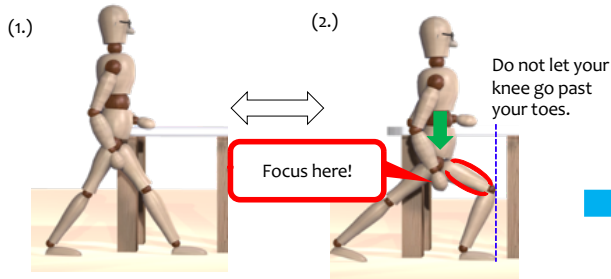
12

Thigh stretch + Cognitive task

Here's the point!

Let's do a **cognitive task** and exercise at the same time.
Continue the tasks for 60 seconds.

Exercise task



- Hold a table, chair, or handrail to keep stable.
- (1.) put one foot in front of the other and stand tall.
- (2.) lower your body until the front leg forms about a right angle, thigh parallel to the floor. The heel of back foot should not touch the floor. Ensure the front knee remains over the ankle and be sure to lower straight down rather than forward.

Cognitive task

Attention

Answer while looking around the room.

- Is there anything you should clean up?
- Are there things that make you feel nostalgic in the room?
- Are there scratches on any of the walls?

Copyright ©2020 National Center for Geriatrics and Gerontology

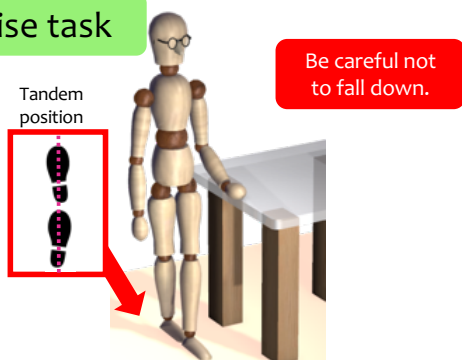
13

Standing training in a tandem position + Cognitive task

Here's the point!

Let's do a **cognitive task** and exercise at the same time.
Continue the tasks for 60 seconds.

Exercise task



- Lightly hold a stable table or chair.
- If you feel like you are going to lose balance, put your strength into your legs and let your body lean against the table/chair.
- Stand with the heel of one foot in line with the toe of the other foot.
- Keep that posture for 20 seconds, then switch your front and back legs. Repeat with the opposite leg.

Cognitive task

Word fluency

Say as many words in a specific category as you can for 60 seconds.

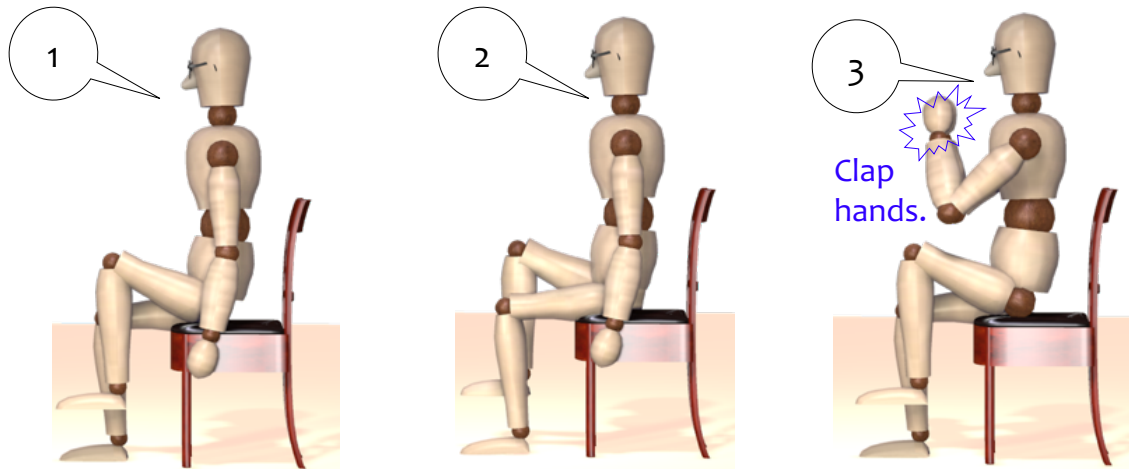
- Colors (red, blue...)
- Four-letter words (song, dish, etc.)
- Words associated with "winter" (snow, cold, etc.).
- Musical instruments (piano, violin, etc.)

Copyright ©2020 National Center for Geriatrics and Gerontology

14

Marching while sitting + Cognitive task

Step and clap your hands on multiples of 3.



Here's the point!

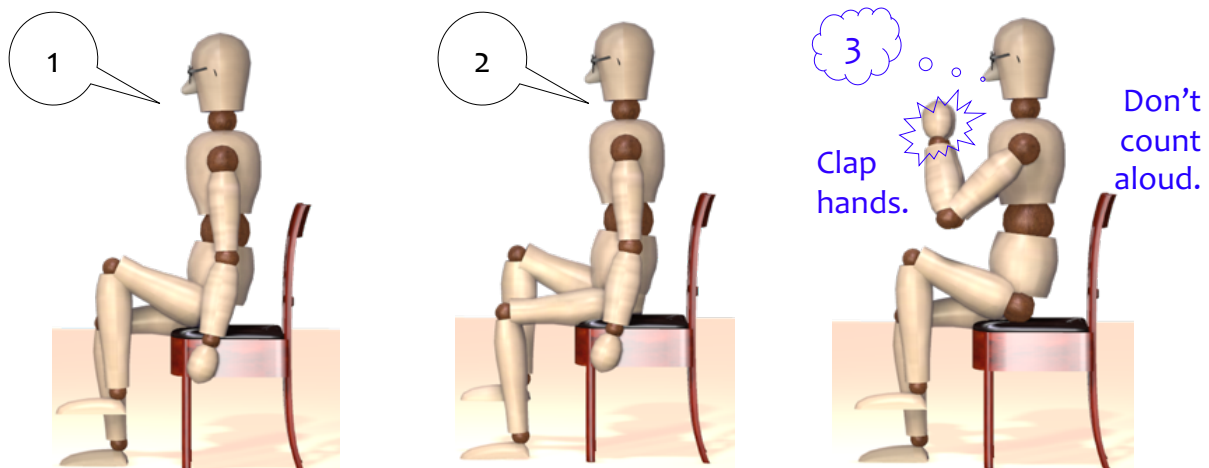
- Step to the rhythm of your counting and clap your hands on multiples of 3 (3, 6, 9...). Continue to "30".
- When you get used to it, shake your hands instead of clapping, or use multiples of 4 or 5 instead of 3.

Copyright ©2020 National Center for Geriatrics and Gerontology

15

Marching while sitting + Cognitive task

Step and clap your hands on multiples of 3 while counting the number of steps, but **stop counting aloud** at that time.



Here's the point!

- Step to the rhythm of your counting and clap your hands on multiples of 3 (3, 6, 9...) but don't say the number aloud when you clap. Continue to "30".
- When you get used to it, shake your hands instead of clapping, or use multiples of 4 or 5 instead of 3.

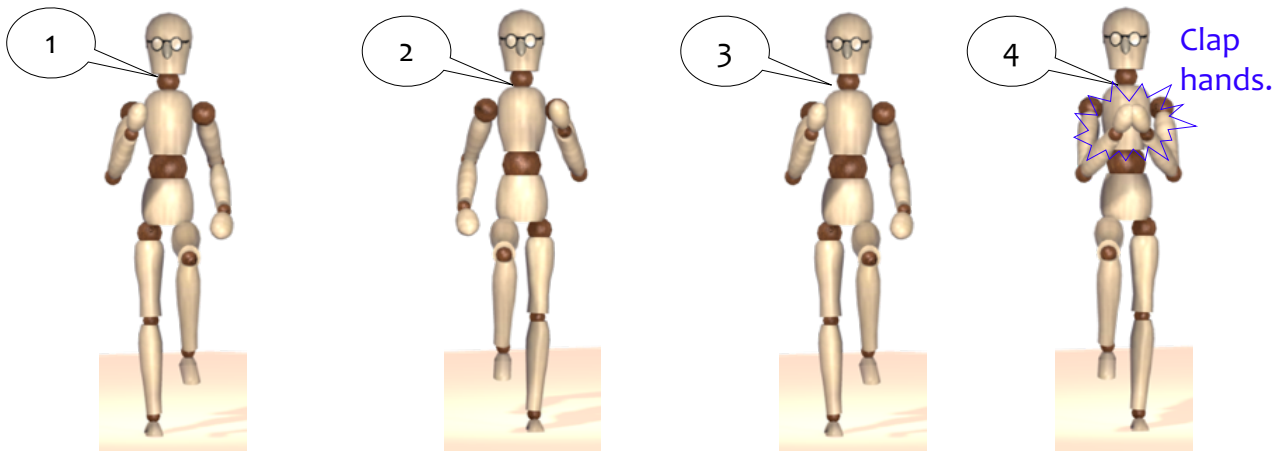
Copyright ©2020 National Center for Geriatrics and Gerontology

16

Marching in place + Cognitive task

Do not do this exercise if your walking speed is getting slow or if you have ever fallen down.

Step and clap your hands on multiples of 4 while counting the number of steps



Here's the point!

- Step to the rhythm of your counting and clap your hands on multiples of 4. Continue to "30".
- When you get used to it, try clapping your hands on multiples of 3 or 5.

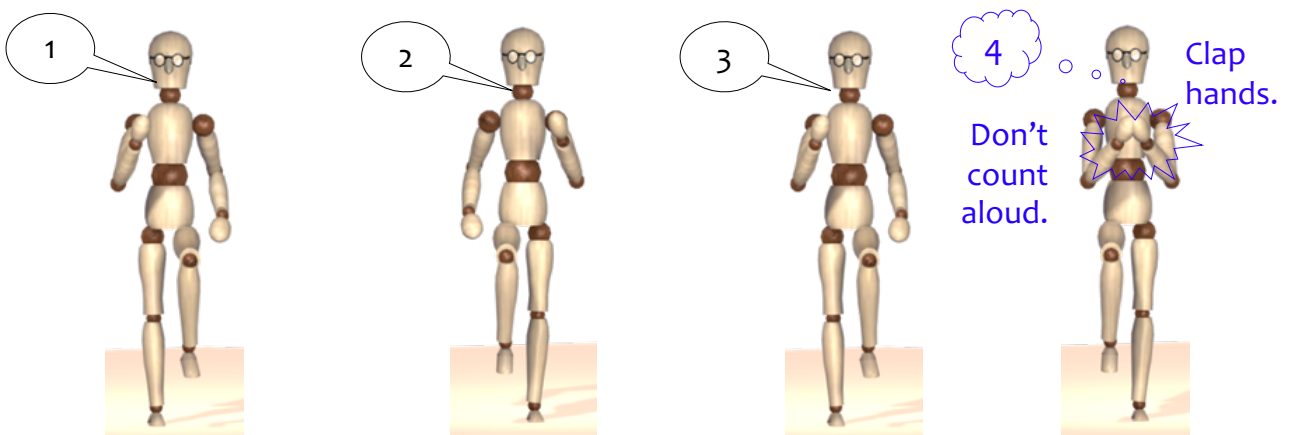
Copyright ©2020 National Center for Geriatrics and Gerontology

17

Marching in place + Cognitive task

Do not do this exercise if your walking speed is getting slow or if you have ever fallen down.

Step and clapping your hands on multiples of 4 while counting the number of steps, but **stop counting aloud** at that time.



Here's the point!

- Step to the rhythm of your counting and clap your hands on multiples of 4, but don't say the number aloud. Continue to "30".
- When you get used to it, try clapping your hands in multiples of 3 or 5.

Copyright ©2020 National Center for Geriatrics and Gerontology

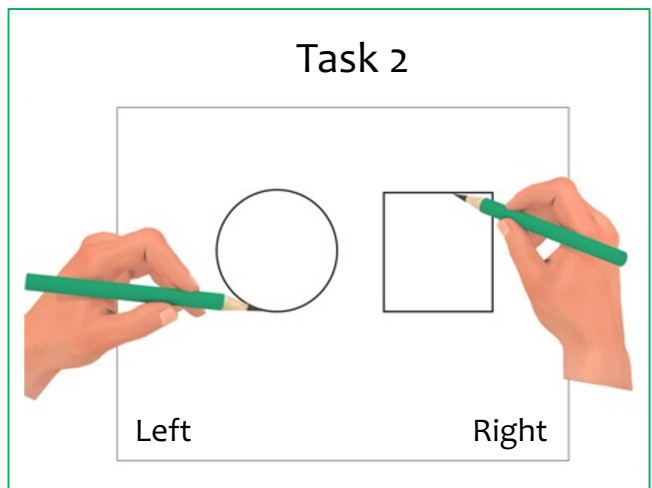
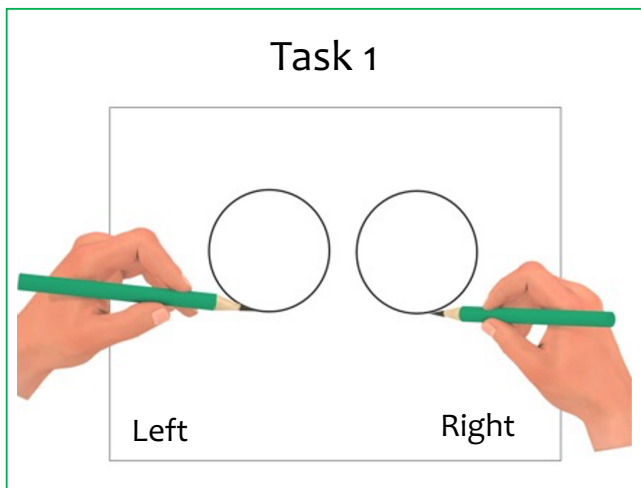
18

Using each hand for a different task at the same time

Let's draw shapes.

Task 1: Draw the same shape (circle, triangle, square, etc.) with both the right and left hands.

Task 2: Draw different shapes at the same time (circle for right hand, square for left hand etc.).



Copyright ©2020 National Center for Geriatrics and Gerontology

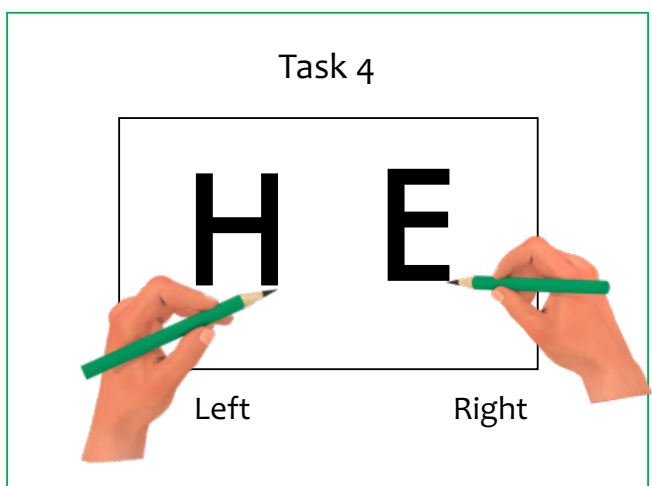
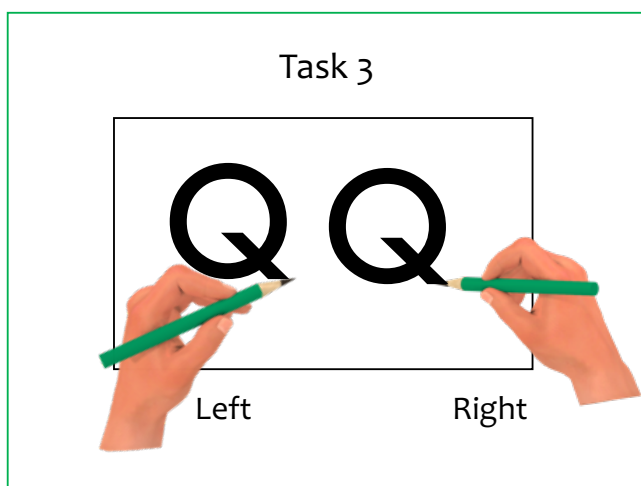
19

Using each hand for a different task at the same time

Let's write letters.

Task 3: Write the same letter with both the left and right hands.

Task 4: Write different letters at the same time (E for right hand, H for left hand etc.).



Copyright ©2020 National Center for Geriatrics and Gerontology

20

Using each hand for a different task at the same time

Let's move the right and left hands differently.

Task 5: Repeat rock, scissors, paper on the right hand and rock and paper on the left hand.

Task 5

Right hand: Rock → Paper → Scissors → Rock → Paper → Scissors → ... Repeat rock, paper, and scissors.

Left hand: Rock → Paper → Rock → Paper → Rock → Paper → ... Repeat Rock and Paper.

Task 6: When you can do this task, you can switch between the right and left hand tasks. Repeat rock and paper on the right hand and rock, paper, and scissors on left hand.

Copyright ©2020 National Center for Geriatrics and Gerontology

21

Using each hand for a different task at the same time

Let's move the right and left hands differently.

Task 7: Repeat rock, scissors, paper in order with the left hand. Try to move your right hand so that it always "wins" over your left hand.

Task 8: When you can do this task, try to move your right hand so that it always "loses" over your left hand.

Task 7

Left hand: Rock → Scissors → Paper → ... Repeat

Right hand (wins): Paper → Rock → Scissors → ... Repeat

Task 8

Left hand: Rock → Scissors → Paper → ... Repeat

Right Hand (loses): Scissors → Paper → Rock → ... Repeat

* When you can do all of these tasks, try switching the right and left hand tasks.

Copyright ©2020 National Center for Geriatrics and Gerontology



Walking



- Take a walk for 20 to 30 minutes on a sunny day.
- Keep yourself hydrated well before, during and after your walk.
- Walking speed should be from “just right” to “a little fast”.
- Wear comfortable shoes with stable heels.
- If you want to increase the strength of your legs, take bigger steps or march. Be careful not to fall down.



Be careful



- Avoid walking in crowded places and care for physical distancing.
- You should wear a mask. However, walking with a mask during hot weather may cause heat stroke. You may remove the mask if you are at a sufficient distance from the people around you.
- Don't forget to wash your hands and gargle when you get home.
- If you have pain in your knees or lower back, or if you are worried about falling down, use a cane or pole to walk safely at your own pace .

Copyright ©2020 National Center for Geriatrics and Gerontology

In this Cogni-Package, we introduced dual tasks such as doing an exercise and a cognitive task at the same time to stimulate both the brain and body. The National Center for Geriatrics and Gerontology has also developed a physical exercise and cognitive program called “Cognicise” to prevent dementia.



See the URL below for details on “Cognicise”.

<https://www.ncgg.go.jp/kenshu/kenshu/27-4.html>

Copyright ©2020 National Center for Geriatrics and Gerontology