Physical activity for patients with hypertension

A noncommunicable disease education manual for primary health care professionals and patients

World Health Organization
Western Pacific Region

Ministry of Health and Welfare

Dr.
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The Noncommunicable Disease Education Manual for Primary Health Care Professionals and Patients results from the contributions and hard work of many people. Its development was led by Dr Hai-Rim Shin, Coordinator, and Dr Warrick Junsuk Kim, Medical Officer, of the Noncommunicable Diseases and Health Promotion unit at the WHO Regional Office for the Western Pacific (WHO/WPRO/NCD) in Manila, Philippines.

WHO graciously acknowledges the intellectual contributions of Dr Jung-jin Cho, Co-director, Community-based Primary Care Project Committee and Professor, Department of Family Medicine, Hallym University Sacred Heart Dongtan Hospital, Republic of Korea; Dr Hyejin Lee, Volunteer, WHO/WPRO/NCD (currently PhD candidate, Department of Family Medicine, Seoul National University, Republic of Korea); Ms Saki Narita, Volunteer, WHO/WPRO/NCD (currently PhD candidate, Department of Global Health Policy, Graduate School of Medicine, University of Tokyo, Japan); and Mr Byung Ki Kwon, Technical Officer, WHO/WPRO/NCD (currently Director, Division of Health Promotion, Ministry of Health and Welfare, Republic of Korea).

Many thanks to Dr Albert Domingo, Dr Sonia McCarthy, Ms Marie Clem Carlos, Dr Katrin Engelhardt, Mr Kelvin Khow Chuan Heng and Dr Roberto Andres Ruiz from the WHO Regional Office for the Western Pacific and Dr Ma. Charina Benedicto, Physician-in-Charge, Bagong Barangay Health Center & Lying-in Clinic, Pandacan, Manila, Philippines for reviewing the draft publication.

Financial support for this publication was received from the Korea Centers for Disease Control and Prevention, Republic of Korea.

No conflict of interest was declared.

This is a translation of a manual published by the Ministry of Health and Welfare and Community-based Primary Care Project Committee in the Republic of Korea. Some of the content has been adapted, with permission, to align with current WHO recommendations and policies. However, the views expressed in the manual do not necessarily reflect the policies of the World Health Organization. The source publication was developed under the leadership of Dr Jung-jin Cho (also mentioned above); Mr Hyunjun Kim, Co-director, Community-based Primary Care Project Committee and Director General, Bureau of Health Policy, Ministry of Health and Welfare, Republic of Korea; and Dr Sunghoon Jung, Deputy Director, Division of Health Policy, Ministry of Health and Welfare, Republic of Korea.

All illustrations were provided by the source publication.

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# Noncommunicable disease education manual for primary health care professionals and patients

## Part 1  Prevention and management of hypertension
- Module 1  Diagnosis and management
- Module 2  Healthy lifestyles
- Module 3  Healthy eating habits
- Module 4  Low-salt diet
- **Module 5  Physical activity**
- Module 6  Medication and management of associated diseases
- Module 7  Complication prevention

## Part 2  Prevention and management of diabetes
- Module 1  Diagnosis and management
- Module 2  Healthy lifestyles
- Module 3  Healthy eating habits 1
- Module 4  Healthy eating habits 2
- Module 5  Physical activity
- Module 6  Taking care of yourself in daily life
- Module 7  Complication prevention

## Part 3  Quit smoking
How to use this manual

This book is one of fifteen modules of the “Noncommunicable disease education manual for primary health care professionals and patients”. This manual is intended to provide health information on the prevention and control of hypertension and diabetes.

This will be used in the form of a flip chart for health professionals to educate their patients with either hypertension or diabetes.

FOR PATIENTS
On one side of the flip chart is the ‘For patients’ page. This side has simple images and key messages that are easy to understand. However, health professionals may need to provide education for patients to fully understand the content.

FOR PHYSICIANS
On the other side of the flip chart is the ‘For physicians’ page. This side includes information that the health professional can read out to the patient during counselling. Professional information is also provided for further understanding. A small image of the ‘For patients’ side is included so that the health professional is aware of what the patient is looking at.

This publication is intended to serve as a template to be adapted to national context. Images and graphs that have been watermarked should be replaced with images or graphs that represent the national situation. If assistance is required, or if you have any questions related to the publication, please contact the Noncommunicable Diseases and Health Promotion unit at WHO Regional Office for the Western Pacific (wproncd@who.int).
Table of contents

Module 5
Physical activity for patients with hypertension

1 Benefits of healthy lifestyles
3 Before you start physical activity (1)
5 Before you start physical activity (2)
7 Types of physical activity
9 Moderate-intensity aerobic physical activity
11 Vigorous-intensity aerobic physical activity
13 Muscle-strengthening exercises (1)
15 Muscle-strengthening exercises (2)
17 Physical activity for 65+ year old adults
19 Warm-up and cool-down exercises
21 Example of a one-day exercise schedule
23 Check before you start exercising
25 Take-home message
Benefits of healthy lifestyles

Why exercise?

• To control weight
• To reduce risk factors
  - lower blood pressure
  - reduce blood cholesterol levels
• To prevent complications
  - prevent atherosclerosis
  - prevent angina, myocardial infarction and stroke
• To improve quality of life/relieve stress
Benefits of healthy lifestyles

Patient education

• Physical activity benefits patients with hypertension or diabetes in many ways.
• It helps control weight and reduces risk factors such as high blood pressure, high blood sugar levels and high blood cholesterol levels.
• This leads to prevention of complications such as atherosclerosis, angina, myocardial infarction, and stroke.
• It also improves quality of life and relieves stress.
• Preventing death due to complications is the ultimate goal.

Professional information

• The average reduction by physical activity alone is 7.4 mmHg for systolic blood pressure (BP) and 5.8 mmHg for diastolic BP. Stroke risk is reduced by 35–40% and cardiovascular disease by 20–25% when diastolic BP is decreased by 5–6 mmHg.
• Therefore, physical activity prevents atherosclerosis, which further prevents stroke and cardiovascular diseases.

Why exercise?

• To control weight
• To reduce risk factors
  - lower blood pressure
  - reduce blood cholesterol levels
• To prevent complications
  - prevent atherosclerosis
  - prevent angina, myocardial infarction and stroke
• To improve quality of life/relieve stress

REFERENCE:
Before you start physical activity (1)

Do you have any of the following?

- Heart disease
- Bone or joint problems that could be made worse with vigorous physical activity
- Chest pain
- Dizziness
- Age of 65 years or older
- Uncontrolled hypertension
- Any other reasons why you should not do physical activity
Before you start physical activity (1)

Patient education

Do you have any of the following?

• Cardiovascular disease
• Bone or joint diseases that will be worsened by physical activity
• Pain in your chest when doing any activities
• Dizziness
• Are you aged over 65 and have not done any intense activity recently
• Uncontrollable hypertension
• Any other physical problems that prevent you from exercising

Professional information

• This list is part of Canada’s Physical Activity Readiness Questionnaire (PAR-Q), designed to identify those who have problems before starting any physical activity.
• You can find other specific details in PAR-Q, which is an updated version of PARmed-X (Physical Activity Readiness Medical Examination) available from: http://icord.org/wp-content/uploads/2015/08/PARmed-X.pdf

REFERENCE:
Before you start physical activity (2)

How do you assess cardiovascular disease risk?
Before you start physical activity (2)

Patient education

- Consult your doctor about any cardiovascular risks that may occur during exercise.
- See the WHO/ISH cardiovascular risk prediction charts for more information (www.who.int/cardiovascular_diseases/guidelines/chart_predictions/en).

REFERENCE:
Types of physical activity

**Aerobic**
- Walking
- Cycling
- Swimming

**Muscle strengthening (weight-bearing)**
- Do not lift weights that are too heavy
- Should be light enough to lift at least eight times comfortably
Types of physical activity

Patient education

- There are two kinds of physical activity: aerobic exercises which include walking, swimming and cycling; and muscle-strengthening exercises, including weight-bearing exercises, such as weightlifting.

![Aerobic activities](image)

- Walking
- Cycling
- Swimming

Professional information

- In the past, strength training was contraindicated for people with hypertension. However, many new studies have proven that strength training is safe.
- Dynamic resistance exercise (repeated weight lifting) is beneficial and safe for those with high blood pressure.
- Isometric exercise (staying in same position while straining) is also likely to be safe, but this is not yet backed by research, so it is best to tell patients to avoid it.

![Muscle strengthening (weight-bearing)](image)

- Do not lift weights that are too heavy
- Should be light enough to lift at least eight times comfortably

REFERENCES:
Moderate-intensity aerobic physical activity

- I can talk while I do them, but I cannot sing.
- I breathe harder than usual.

- At least 150 minutes/week OR
- At least 30 minutes/day, five days/week
- Do not rest for more than two consecutive days
Physical activity for patients with hypertension

Moderate-intensity aerobic physical activity

Patient education

• It is recommended to do at least 30 minutes of moderate-intensity aerobic exercise a day, 5–7 days a week.

• Alternatively, you may do 150 minutes of moderate-intensity aerobic exercise a week.

• Examples of moderate intensity aerobic physical activity are brisk walking, hand mopping and badminton, swimming or cycling for leisure purposes.

• It can talk while I do them, but I cannot sing.
• I breathe harder than usual.

• At least 150 minutes/week OR
• At least 30 minutes/day, five days/week
• Do not rest for more than two consecutive days

Professional information

• It is the recommendation of the European Society of Cardiology (ESC) to exercise five times weekly for at least 30 minutes at a time.

• However, the discipline of American College of Sports Medicine (ACSM) still recommends following WHO’s guideline which is to exercise more than 150 minutes weekly.

• It has been proven that dividing exercise time into 10 minutes chunks is also effective.

REFERENCES:
Vigorous-intensity aerobic physical activity

• I can only say a few words without stopping to catch my breath.

- Jogging/running
- Football (or equivalent)
- Martial arts (or equivalent)
- Basketball/tennis
- Digging with a shovel

• At least 75 minutes/week
Vigorous-intensity aerobic physical activity

Patient education

• These are some examples of vigorous-intensity physical activity.
• One minute of vigorous-intensity aerobic physical activity is equivalent to two minutes of moderate-intensity aerobic physical activity.

Professional information

• The simplest way to describe the intensity of physical activity is how hard it is to breathe.
• How much you sweat is not a good indicator since sweating depends on other factors, such as temperature, humidity and the individual.
• Heart rate and pulse rate can also be used, but they can be difficult to use.

• I can only say a few words without stopping to catch my breath.
• At least 75 minutes/week

REFERENCE:
Muscle-strengthening exercises (1)

Weight-bearing physical activity

- Enhances body flexibility
  - reduces injury risk
- Increases basal metabolic rate
  - helps control weight
Muscle-strengthening exercises (1)

Patient education

- Muscle-strengthening exercise enhances body flexibility, hence, reduces the risk of injury during exercise.
- It also increases basal metabolic rate, thus helping with weight control.
- Examples of muscle-strengthening exercises include dumbbell exercises, weight-lifting, sit-ups and exercise band workouts.

Weight-bearing physical activity

- Enhances body flexibility
  - reduces injury risk
- Increases basal metabolic rate
  - helps control weight

REFERENCE:
Muscle-strengthening exercises (2)

- Two to four times/week
- Involve 8–10 major muscle groups
- Do 8–12 times for each muscle group, repeat 1–3 sets

Types of muscle-strengthening exercises

- Lifting weights, dumbbell exercises, pull-up bar
- Sit-ups, pushups
- Lifting objects
- Weight training equipment in gyms
- Resistance bands
Physical activity for patients with hypertension

Muscle-strengthening exercises (2)

Patient education

• Muscle-strengthening activities should be done two to four days a week.
• If these exercises are done every day, there is a higher risk of injury, and insufficient recovery time for minor muscle injuries sustained in the course of weight-bearing exercise.

Professional information

• Do some type of muscle-strengthening exercise at least two days/week, using 8–10 major muscles.
• Repeat each move 8–12 times per set, repeat sets once or twice.
• Free weights such as dumbbells, weights, resistance bands, or medicine balls and weight-training equipment can be used.

Types of muscle-strengthening exercises

• Lifting weights, dumbbells, pull-up bar
• Sit-ups, pushups
• Lifting objects
• Weight training equipment in gyms
• Resistance bands

REFERENCES:
Physical activity for 65+ year old adults

- Follow the same guideline as for healthy adults and, if needed, adjust as abilities and conditions allow.
- In case of poor mobility, you should do exercises to enhance your balance and prevent falls three or more days per week.

**Balance enhancement**
Standing on one foot, standing on heels, standing with eyes closed, or standing on a sloped surface

**Fall prevention**
Lower extremity and flexibility exercises
Physical activity for 65+ year old adults

Patient education

- If you are fit enough, do physical activities just as a healthy adult would. Include exercises that enhance body balance and prevent falls, three times a week.
- Examples of balance exercises are standing on one foot, standing on heels, standing with eyes closed, or standing on a sloped surface.
- Lower extremity and flexibility exercises are needed to prevent falls.
- Adjust to your current physical status.

- Follow the same guideline as for healthy adults and, if needed, adjust as abilities and conditions allow
- In case of poor mobility, you should do exercises to enhance your balance and prevent falls three or more days per week.

**Balance enhancement**
Standing on one foot, standing on heels, standing with eyes closed, or standing on a sloped surface

**Fall prevention**
Lower extremity and flexibility exercises

REFERENCE:
Physical activity for patients with hypertension

Warm-up and cool-down exercises

- Reduce the intensity of main exercise
- Include stretches
Warm-up and cool-down exercises

Patient education

- Warm-up and cool-down exercises are done before and after the main exercise, at half the intensity of the main exercise.
- Stretching should be included to enhance body flexibility and to prevent injury.

- Reduce the intensity of main exercise
- Include stretches

REFERENCES:
### Example of a one-day exercise schedule

<table>
<thead>
<tr>
<th></th>
<th>Time</th>
<th>Type</th>
<th>Intensity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Warm up</strong></td>
<td>5–20 minutes</td>
<td>Walking, stretching</td>
<td>Light to moderate</td>
</tr>
<tr>
<td><strong>Main exercise</strong></td>
<td>20–40 minutes</td>
<td>Aerobic exercise</td>
<td>Moderate to vigorous</td>
</tr>
<tr>
<td></td>
<td>20–30 minutes</td>
<td>Muscle-strengthening exercise</td>
<td></td>
</tr>
<tr>
<td><strong>Cool down</strong></td>
<td>10 minutes</td>
<td>Stretching muscles that were used</td>
<td>Light to moderate</td>
</tr>
</tbody>
</table>
Example of a one-day exercise schedule

Patient education

• This table shows a good example of an exercise schedule.

• Exercise time and intensity may vary depending on what type of physical activity you choose to do.

• First of all, you will start with a 5–20 minute light warm up, such as stretching or walking slowly.

• For the main exercise, a combination of aerobic and muscle-strengthening exercises are recommended.

• Between 20–40 minutes of aerobic exercise followed by 20–30 minutes of muscle strengthening is ideal.

• To end your exercise schedule, stretch the muscles you used for about 10 minutes.

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</tbody>
</table>

REFERENCES:
National Institutes of Health, and National Heart, Lung, and Blood Institute (United States). Your guide to lowering blood pressure. NIH publication, 2003, 03-5232.
Check before you start exercising

Absolute contraindications
- Heart disease: pathologic arrhythmia
- Acute infectious disease: high fever, pain

Relative contraindications
- Other heart disease
- Blood pressure over 180/110 mmHg
- Severe physical or mental disability
Check before you start exercising

Patient education

- If you have a history of heart disease that is contraindicated for exercise, or if you have uncontrolled hypertension or diabetes, consult with your doctor before starting any kind of physical activity.
- If you have a high fever or severe muscle pain, check with your doctor to ensure you are fit to work out.

Absolute contraindications
- Heart disease: pathologic arrhythmia
- Acute infectious disease: high fever, pain

Relative contraindications
- Other heart disease
- Blood pressure over 180/110 mmHg
- Severe physical or mental disability

Professional information

The patient must not exercise if they have absolute contraindications as follows:

- recent significant change in resting ECG suggesting significant ischaemia;
- recent myocardial infarction or other acute cardiac event/unstable angina;
- uncontrolled cardiac dysrhythmia causing symptoms or haemodynamic compromise, symptomatic severe aortic stenosis;
- uncontrolled symptomatic heart failure;
- acute pulmonary embolus or pulmonary infarction;
- acute myocarditis or pericarditis;
- suspected or known dissecting aneurysm; and
- acute systematic infection accompanied with fever, body aches, or swollen lymph glands.

REFERENCE:
Take-home message

Physical activity benefits patients with hypertension in many ways.

However, stop exercising immediately if you experience any of the following and consult your doctor:
- Chest pain
- Dizziness
- Fatigue