

Guide to Health Fitness

Making Physical Activity Part of Your Life!



Body Mass Index (BMI)

Currently, obesity is determined by one's BMI and waist size. BMI is calculated by dividing weight (in kilograms) by height (in square meters). For example, if a person is 160 cm tall and weighs 55 kilograms, his BMI should be $55/(1.6)^2 = 21.48$. Ideal BMI range lies between 18.5 and 24. A person with a BMI of between 24 and 27 is considered overweight, and a person with a BMI of 27 or greater is considered obese.

According to the latest national nutrition and health survey, the risk for metabolic syndrome dramatically increases when the BMI is greater than 24. 85% of adults with a BMI over 27 are afflicted with metabolic syndrome and/or related illnesses. Of those with a BMI over 24, 65% of adult females and 68% of adult males are also diagnosed with similar conditions. Among the adults with a BMI of 24 or lower, 70% of female and 68% of male do not have metabolic syndrome.

Waist size is also a determining factor for obesity. Men with waistlines over 90cm and women with waistlines over 80cm are also considered obese.

	BMI (kg/m²)	Waistline (cm)
Underweight	BMI < 18.5	
Normal	18.5 ≤ BMI < 24	
	Overweight: 24 ≤ BMI < 27	
	Slightly obese: $27 \le BMI < 30$	Male: ≥ 90
Abnormal	Moderately obese: $30 \le BMI < 35$	Female: ≥ 80
	Severely obese: BMI \geq 35	

Statistics provided by Department of Health



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I. Understanding Health Fitness

1. What is Health Fitness?

You may be familiar with the term "physical fitness", but here is a brand-new term called "health fitness". How exactly are the two differ?

The term "physical fitness" has been widely used in the field of sports. It actually consists of two categories: sports-related fitness (physical activities related to competitive sports), and health-related fitness (components of fitness targeted to the welfare of body).

The Department of Health has created the term "health fitness" to emphasize the importance of preserving the body's health-related conditions.

Sports-related fitness:

Mainly related with athletic competitions. This often requires vigorous training.

• Health-related fitness:

Related to sustaining the body's wellbeing. Basic requirements may be fulfilled through daily routine activities. This is especially important for the elderly.

2. The Meaning of Health Fitness

Health fitness refers to...

1.

Can maintain normal functioning of organs such as the heart, lungs, and muscles.

2.

Body possesses adequate immune system components to protect against diseases.

Ability to maintain enough stored energy for the body to be competent in daily chores, enjoy leisure activities, and deal with emergencies.

3. Why Improving Health Fitness is Necessary

A person's physical condition and quality of life are both closely related with his health. Maintaining health fitness is important for two reasons:

First

As one gets older, the body's fitness gradually deteriorates. A person's quality of life may be adversely affected if his/her health severely restricts his/her ability to perform daily tasks.

Sec.

Unfit individuals rarely exercise, and sedentary life style is often prone to morbid conditions such as diabetes, hypertension, obesity, heart diseases and colorectal cancer.

Therefore, by monitoring one's health fitness, an individual may not only see improvements in his/her physical state and quality of life, but also reductions of the mortality rate as well as the number of chronic disease incidents.

II. New Concepts on Exercising and Health

4. Four Factors of Health Fitness

1. Cardiopulmonary Endurance:

Cardiopulmonary endurance is the most important factor of health fitness as it represents the capability of one's heart and lungs, as well as the ability of one's muscles to utilize oxygen. Thus, cardiopulmonary endurance is important in determining one's overall fitness.

2. Muscular Strength and Endurance:

Muscle strength is the muscle's or musculature's ability to contract. The maximum strength is the maximum force exerted by one single contraction. Muscle endurance is the measurement of the muscle's stamina during repeated contractions, or the duration in which the muscle exerts a continuous force.

3. Body Flexibility

Body flexibility measures the maximum range the joints of the body can move. Aside from bone structure, muscles, tendons, ligaments, and cartilages also affect flexibility.

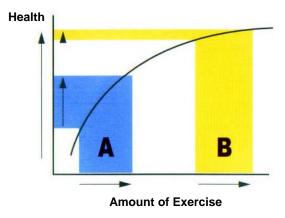
4. Body Fat Percentage

A person may be considered obese when the body fat percentage is too high in relation to its body weight. As the standard of living increases, activities that requiring extensive movements lessens. As a result, calorie intakes often exceed what the body needs, resulting in a growing obese population.

1. Exercising and Health – Half the Effort, Double the Result

Let's learn the new concept about exercise and health. One minute of movement enhances your lifespan by two minutes.

In fact, one can become healthy with only a moderate amount of exercise. People who rarely exercise can gain health benefits once they start doing any form of exercise (see picture 1). In other words, through movement, you greatly improve both stamina and health -- you yield more results with very little effort. Why not give it a try?



Picture 1: The relationship between health and amount of exercise

Group A are folks who rarely exercise (comprised of the majority of the population), and Group B are folks who often exercise. If the two groups increase their exercising by the same amount (the horizontal arrows), Group A's improvement in health is very significant (the vertical arrow above). Group B's improvement in health is not as significant. Therefore, people who rarely exercise can greatly improve their health by just exercising a little.

2. Moderate Exercise Can Keep You Healthy

In recent years, being healthy has become the main goal of exercising. Therefore, it is not necessary to engage in vigorous or intense exercises; but rather, integrating simple workouts into everyone's daily routine is highly encouraged. Exercise is a form of lifestyle. You can have sufficient exercise by just taking a stroll, walking up the stairs, and doing chores. You don't even have to go to a gym.

3. It's Never too Late to Start Exercise

Why exercise? The reasons are as follows:

- 1. Exercising is more important after middle-aged than when young. An athlete who rarely exercises past his/her prime has the same probability of coronary heart disease as a person who has never exercised in his/her life.
- 2. Unless you continue to workout, physical trainings during one's young cannot guarantee your state of health beyond your peak years. When you start aging, regular exercises can greatly improve your overall health and decrease your mortality rate, even if one rarely exercises when he was young.
- 3. For the elderly, even some light exercises (such as walking) can be very beneficial to their health.

4. Make Exercising Part of Your Life

You can accumulate the amount of exercise you do. Let's learn about the new concepts on making exercise part of our life.

Traditional Thinking:

• Only intense exercise continuously done for 30 minutes or more will have an effect on health.

New Thinking:

- According to recent research, the amount of exercise can be accumulated. Exercising three times a day for 10 minutes each time has the same effect as a continuous 30-minute physical session.
- For busy folks, accumulating 30 minutes of exercise a day is not a difficult task. Activities such as taking a stroll, walking up the stairs, and doing daily chores all count as exercise.
- Those who are too preoccupied during the weekdays may welcome the idea of reserving weekends or holidays for recreational sports like playing ball or hiking.

A 2-Minute Brisk Walk Can Improve Your Health

If you cannot find the time to take a 10 to 15-minute stroll, you can try a 2-minute brisk walk. You should be able to find many opportunities for it, such as when you are on the way to lunch or work.

Time your walk, and walk as fast as you can. After two minutes, stop, or just walk at your regular pace. See how far you have gone. You can try it anywhere—your office or on the street. You will soon find out that under the same time span, the distance measured will gradually increase. At the same time, you will feel more energetic.

1. How Physical Fitness Relates to Health

1. Being Fit Means a Longer Life

The main reason why exercise prolongs lifespan is that one can decrease the likelihood of heart disease, heart failure, and stroke. It may also reduce the possibility of diabetes, colorectal cancer, and other chronic diseases, although to a lesser extent

2. Being Fit Means Delayed Onset of Chronic Diseases

People's lifespan have gradually increased due to better nutrition, medicine, and hygiene. However, if an individual becomes afflicted with chronic diseases during his/her old age, then prolonged life would be less meaningful. Exercises not only can increase your lifespan, but also delay the onset of chronic diseases. Typically, when a person is diagnosed with a chronic disease, it takes some time before serious medical complications develop. If you can somehow delay its onset, your quality of life during old age can be greatly improved.

3. Being Fit Means Fewer Chances of Chronic Diseases

Many chronic diseases are hereditary, and therefore cannot be prevented completely. However, it is possible to decrease the chances of getting them by exercising.

4. Being Fit Means Higher Quality of Life

A decent physique is a prerequisite for not only exercises, but also for daily chores. You need to have adequate fitness to climb stairs or do heavy lifting. With the increasing number of elders and the dwindling percentage of capable work force, adults must work harder to care for the young and old, and to save up for retirement; exercises will help maintain a healthy, active lifestyle and can ward off such collective pressure.

5. Being Fit Means Less Medical Costs

Poor physical conditions not only affect personal health, but also consume more medical resources. Therefore, it is advised that you participate in a suitable exercise for yourself. This long-term goal is worth every bit of the effort.

2. How to Improve Health Fitness

We all know that doing exercises can improve your fitness and health, as well as delaying or preventing chronic diseases. The frequency, duration, and intensity affect the efficiency of exercise. You may refer to the following chart for the appropriate exercise, frequency and duration, and the type of exercise to improve various fitness factors.

(1) Recommended activities to improving health fitness:

Fitness Factor Type of Exercise		Frequency	Duration	
Cardiopulmonary endurance	Aerobic exercises such as jogging, brisk walking, swimming, cycling, dancing, rope jumping, ball games, traditional fitness trainingetc	At least three times a week	At least 20 minutes each time	
Muscular strength and endurance	Weight lifting, sit-ups, chin-ups, push-ups	At least two times a week	At least one to three sets each time	
Flexibility Stretching, traditional fitness exercise, gymnastics		At least three time a week	20-30 seconds of muscle extension each time	
Body composition Aerobics and weight lifting		At least three times a week	At least 20 minutes each time, one to three sets minimum	

You can classify each exercise according to MET (metabolism equivalent). People who are middle-aged or above are suitable for exercises at **three** to **five**METs. Refer to the following chart for MET levels:

(2) Intensity of Daily Activities

METs	Intensity Level	Types of Exercises	
1	Sitting down	Eating, reading, working at a desk, watching TV, driving on the highway	
2	Very light	Working in office, driving in the city, daily life activity, working at assembly line, strolling along the park	
3	Light with normal breathing	Floor mopping, strolling, shopping, bowling, floor sweeping, gardening, playing table tennis, Waidangong, Qigong in standing stance	
4	Moderate with heavier breathing	Walking, hiking, washing cars manually, Tai Chi	
4.5	Moderate	Baseball, gymnastics, volleyball	
5	Intense	Jogging, brisk walking (8km/hr), playing golf (while carrying bag), cycling (+16km/hr), strenuous gardening, walking while carrying luggage	
6	Very Intense	High speed mid to long distance running, competitive sports	
7+	Extremely Intense	Short distance sprint, running uphill, intense ball games	

1. Why Some People Don't Exercise

Only 1/3 of the population exercises regularly; 1/3 sometimes workout, and 1/3 rarely exercises. It is possible that the lack of exercise is due to a person's lifestyle, but it's more often that people just find plenty of excuses not to exercise, such as:

I do not have time:	In fact, you don't need to continuously exercise for 30 minutes. You can get enough exercise in daily activities (refer to page 13). This is not a good excuse.
I am afraid of getting injured:	It is highly unlikely to get injured if you engage in moderate exercises. On the contrary, you can reduce your chances of injury by improving your muscle strength, flexibility, and balance through exercise.
I am too tired:	Exercising can strengthen your heart and muscles. Once your brain gets more oxygen, you will feel more energetic, allowing you to deal with pressure more effectively.

I don't like to exercise:	Recent research revealed that even light exercises like walking is just as beneficial to health as intense exercises if you maintain the habit.
I am too old:	The benefits of exercise are determined by the relative amount of exercise, not by intensity level. For example, the relative amount of exercise of a young man's jogging is equal to a middle-aged person's brisk walking, and to an older person's strolling. In other words, a small amount of exercise for an older person is just as beneficial.
I am too fat:	A person who is overweight should start with light exercises such as walking, and continue with some muscle-strengthening training. Research has revealed that an overweight person with good fitness has a lower fatality rate than a slim but weak person.

2. Tips on How to Increase the Amount of Exercise

There are actually a lot of opportunities for you to exercise in your daily life. Learning how to utilize your time is important. It is easy to accumulate 30 minutes of exercise if you always walk and take the stairs.

The followings are a few examples:

- Get off the bus one stop earlier and walk the rest of the way.
- Find a parking spot which is further away. Do not waste time in finding a closer spot.
- Take the stairs if your destination is less than 5 floors, or get off the elevator earlier to use the stairs.
- If you need to discuss matters with your colleague within the office, walk to him/her instead of using the phone.
- Eat out if you did not bring a lunch pack. Do not call for delivery.
- If time allows, wash your car yourself instead of going to an automatic car washer.
- When you go to a supermarket, walk around the store and check where everything is before you purchasing. You can exercise and save time at the same time.
- Take a stroll in the park with your family in the evening instead of watching TV.
- Take out the garbage yourself.

Since modern living and working spaces are getting limited, exercising seems more difficult. However, if you know how, you can still do some muscle strengthening exercises in a confined space. You can have a sufficient amount of exercise once you make it a habit.

- If your office chair has armrests, you can try lifting yourself by extending your elbows while sitting down and holding onto the armrest. While doing this exercise, you can place your feet firmly on the ground and use your knees to help with the lifting. Repeat for ten times.
- Rather than sitting while watching TV or talking on the phone, adopt a horse stance and sway your body from side to side for three minutes.
- While sitting in a recline position (as in an airplane), you can straighten your knees, and alternately contract your inner thigh muscles (isometric contraction). It has the same effect as the previous exercise.
- You can practice standing on your toes while standing up in order to train your calf muscles.
- Raise your arms horizontally, put your palms together and squeeze hard for five seconds, then release. Repeat ten times.
- Before or after taking a bath, do ten push-ups while holding onto the edge of the bathtub. You can increase the number of push-ups after your muscle strength has improved.
- While sitting and talking over the phone or watching TV, put one foot flat on the other chair, incline forward slowly, tauten (stretching) the lateral muscle at the back of your thigh for more than ten seconds and change to the other foot. Repeat the exercise a few times.

The following are some recommended activities to help you increase the amount of exercise. Feel free to invent some moves on your own. A few light exercises can make you healthy for life!

Situation	Exercise		
While washing your face or hair	you may squat instead of bending down. You can reduce the pressure on your hips and train the muscle strength of your lower limbs.		
While brushing your teeth	you may squat and move your body from side to side.		
While in a traffic jam	you may stretch your shoulder and neck muscles, contract the lower limb muscles, and train your lateral grasp strength (Keep a hand gripper in your car)		
While in a meeting	you may do isometric exercise on your lower limb, and do the body lifting exercise with the armrest.		
If you want to ride a motorcycle for a short trip	ride a bicycle or walk instead.		
While talking on the phone or photocopying	you may squat, and move your body from side to side.		
While on the computer	you may alternately extend your knees 10 times.		
While watching TV	you may lift dumbbells, do push-ups, sit-ups, or ride on a stationary bike.		
While walking your dog	keep your dog on a leash and don't release it.		

3. Using Exercise Equipment Effectively

Keep doing the same exercise over and over again is boring. Therefore, you should try to diversify. Brisk walks, hiking, climbing stairs, push-ups, and sit-ups are all great exercises, but if you know how to use exercise equipments, you can add variety and fun to your exercises. The following are some of the ways you can achieve that goal with common household items:

- Don't have a dumbbell? Use a half-gallon milk bottle half-filled with sand or water instead. When your strength improves, you may increase the amount of sand or water.
- Don't have sandbags? Fill a thick plastic bag with sand, and put the bag into an old sock. Once you secure the opening, you will have your sandbag.
- Fold the elastic band used in tying things up on the motorcycle twice, after securing, you can use it to train your upper limb muscles strength. You can also use the inner tube of a bicycle tire to train your lower limb (such as knee extension movements while sitting by tying your ankle to the leg of a chair).
- Rope skipping is an excellent endurance exercise. It is better if the rope is heavier, such as thick cotton rope. Common nylon ropes are too light, and may tangle up with your legs easily.
- Prepare a stable wooden box that is 30 to 40 cm in height and do the stair climbing exercises with it. This exercise has the same effect as actually climbing the stairs.

1. Preparation

Exercising regularly can improve your health and can increase your vitality as well as life quality. For most people, it is safe to engage in exercises. However, patients with chronic diseases and the elderly should consult their doctors before start exercising, try to learn the right concepts of exercising and find out if you are suitable to exercise through simple evaluation.

(1) The correct concepts on exercising:

- a. To be more effective, exercise regularly with perseverance.
- b. Make sure of your exercise motive, and do the exercises accordingly.
- c. Physiological and psychological factors such as nutrition, sleep, illness or stress can affect your exercises. Know your limits.
- d. Use your pulse rate as an indicator to monitor your exercise intensity. You should learn how to measure your own pulse rate in order to adjust the exercise intensity.
- e. Do your exercise using correct equipment, proper personal protection devices, and at an appropriate location.
- f. Take note of exercise-related information, and then practice with earnest to get maximum benefit.

(2) Exercise Plan and Self-Evaluation.

Before exercising, evaluate your own fitness—Can you actually exercise?

- a. Yes□ No□ Has your doctor ever told you that because of your heart condition, you can only carry out the exercises that he recommends?
- b. Yes \(\subseteq \text{No} \subseteq \) Do you often experience a pain or tightening in your left chest during or after exercising? Has the pain ever extended to the left side of your neck or shoulder?
- c. Yes□ No□ Did you experience any chest pain during the last month?
- d. Yes□ No□ Have you ever fell or have fainting spell due to dizziness?
- e. Yes \(\subseteq \text{No} \subseteq \) Have you ever experienced heavy breathing after a moderate exercise?
- f. Yes \(\subseteq \text{No} \subseteq \) Has your doctor ever recommended you to take medicine for hypertension or heart disease?
- g. Yes \(\subseteq \text{No} \subseteq \) Do you have any bony or joint problems that get worsen after exercises?
- h. Yes No Do you have any medical or physical concerns that require special attention during exercises (such as insulindependent diabetes)?
- i. Yes□ No□ Are you at least 10 kg overweight?
- j. Yes□ No□ Are you a male over 40 or a female over 50 whom never exercised before but will soon start to engage in intense exercises?
- If you answered "Yes" to any of the above, you should consult your doctor before engaging in any form of exercise. When necessary, you should have a fitness evaluation or other examination to ensure your safety.
- If you have a cold or a fever, start exercising only after recovery.
- Consult your doctor if you are pregnant and want to increase the amount of exercise.

Before you see	your family p	hysician, f	fill in the	following	information	for
reference:						

Pre-exercise Health Condition Form				
Part 1: Personal Information	Date:			
Name: Gender:kg Weight:kg Smoking? No□ Yes□, I smoke _ Exercise regularly? No□ Yes□ (cigarettes a day.			
Part 2: Medical History				
1. Have you ever had any of the follow □None □Hypertension □Diabete □Others: □ □ 2. How are you dealing with the above □ Ignore it. □ by 3. Are you currently under any medicate □ No □ Yes, I am taking	es Heart disease e diseases?			

2. Injury Prevention and Treatment

Regular exercise is good for you. However, you still need to have the right concepts and preparation to avoid unnecessary injuries. These include:

(1) How to avoid exercise-related injuries?

a. Warm up and stretch for 5 to 10 minutes before exercising.

- Warming-up can facilitate blood circulation, gradually increasing body temperature and muscle extensibility.
- Doing stretches can increase joint flexibility and muscle extensibility.
- You may just do simple stretches before exercises. However, for more intense workouts, moderate stretching exercises are even more important.

b. 10-15 minutes of cool-down after exercising

- You should spend some time to cool down after exercising (walking or stretching), allowing your body to recover to a rest state.
- A gradual reduction of exercise intensity is helpful in removing the metabolic waste produced during the activity. It also helps with venous-return. Such are all helpful in reducing soreness and fatigue after exercise.

c. Proper equipments and protective gears

- Shoes are the most important equipment. Different exercises require different shoes. For example, jogging or brisk walking require running shoes.
- You should also wear protective device for your head, teeth, eyes, knees, and elbows as situation dictates.

(2) How to treat sports-related injuries?

a. Watch out for exercise fatigue

• If you feel fatigue or lose interest, it is possible that you have increased the intensity of exercise too much or too fast. You should then decrease the level and duration of exercise to recuperate. Another important warning sign is pain or uncomfortable feelings. It is possible that you are exercising too much or it may even be an indication that you are already injured.

b. Take a break if you are not feeling well

• Rest can effectively reduce the uncomfortable feelings brought upon by exercises, and can also prevent further injury. You should see a doctor immediately if you are injured.

c. The 4 principles on acute injury treatment: Rest, icing, compression, and elevation

• If you suffer a contusion, joint or tendon sprain, or muscle tendon strain, you should stop exercising immediately and rest. You should also apply ice pack on the injured area. After that, you should compress the injured area with bandages and elevate it.

^{*} Tips on icing: Do not apply ice pack for more than 20 minutes to avoid frostbite. Instead, apply ice pack in intervals.

Daily Calorie Consumption for Taiwanese people

Activity	Male (cal/kg/min)	Female (cal/kg/min)	
Resting	15.5~18	14~18.5	
Surfing the Internet	0~37	17~23	
Reading paper or watching TV	14~26	15~20	
Playing computer game/typing	20	19	
Cleaning furniture	66	58	
Sweeping the floor	32~49	34~43	
Mop the floor	45~67	30~49	
Washing a car	53~61	40~65	
Driving a car	17~29	21~29	
Cycling	57~86	47~75	
Playing tennis	132~203	127~160	
Yuanji dance	74~117	55~85	
Hiking	67~87	46~101	
Tai Chi	47~102	34~85	
Walking up and down stairs	57~89	48~91	
Taking a stroll (approx. 4 km/hr)	52~70 × weight (in kg) × minutes		
Brisk walking (approx. 6 km/hr)	70~85 × weight (in kg) × minutes		
Jogging (approx. 8 km/hr)	110∼155 × weight (in kg) × minutes		
Fast running (approx. 12 km/hr)	180~220 × weight (in kg) × minutes		
Swimming (moderate speed)	105~140 × weight (in kg) × minutes		

Example: A 60kg person who walked briskly for 30 minutes should burn

around 126-153 Kcal.

Calculation: 70-85 (cal/kg/min) x 60 kg x 30 min = 126,000-153,000

Since everyone's fitness and metabolic rates are different, this calorie consumption chart should be used for reference only.

Statistics provided by the collaborative research of the Bureau of Health Promotion, Department of Health, Executive Yuan

One minute of exercise, two minutes of extra life gain.

Exercising is so easy! Be healthy and have fun!



Isn't exercising like this so easy?

If you can accumulate 30 minutes of exercises everyday, you can have a healthy life.

Let's get up and exercise!



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