



# Are you breathing well ?

~Get some tips from your lifestyle!~

**Thank you for participating in the respiratory muscle strength test today!**

Respiratory muscles are skeletal muscles that work when you inhale and exhale.

The diaphragm is the main muscle that works when you inhale, and this muscle is active most of the time when you are at rest, but during exercise, the muscles around your neck and shoulder blades are also used.

When you exhale, like a balloon deflating, the elasticity of your inflated lungs returns them to their original shape, so not much muscle work is required. However, when you exhale deeply, such as during deep breathing or exercise, your abdominal muscles are the main muscles that work.

As such, breathing requires the action of many skeletal muscles, and respiratory muscles are used in conjunction with daily activities and exercise.



Inhalation and exhalation force can be measured using a machine called an oral manometer.

It is believed that whole-body muscle mass and lifestyle habits affect respiratory muscle strength, and weak respiratory muscle strength is thought to lead to decreased exercise tolerance (the ability to continue exercising), shortness of breath during exercise, and decreased coughing ability (the ability to cough).

This article explains the relationships between body shape, smoking, physical activity, sleep, and nutrition.

We hope that this measurement will serve as an opportunity for you to think about your health and "**life**."

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## Body Shape



If you become too thin, you will lose important muscles in your body.

Did you know that this also has to do with the muscles used for breathing?

Make sure to maintain a healthy weight so you can move around energetically!

○ What is an ideal weight?

■ You can easily check your ideal weight using a number called BMI (Body Mass Index).

**[Calculation: weight (kg) ÷ height (m)<sup>2</sup>]**

**BMI: 22** This is the ideal weight for those least susceptible to illness.

**BMI: Under 18.5** This is the underweight zone and requires caution.

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## Smoking



Weakened respiratory muscles increase the risk of shortness of breath and COPD.

Quitting smoking is the most effective countermeasure, and early smoking cessation will also help maintain and improve grip strength and limb muscle mass.

## ○ What effect does smoking have on muscles?

- Muscle protein synthesis is likely to be inhibited and breakdown is likely to be accelerated.

⇒ This can lead to a body that is less likely to build muscle.

- Carbon monoxide can lead to a decrease in oxygen transport function.

⇒ Reduced oxygen supply to muscles can lead to muscle weakness.

Leads to respiratory muscle weakness

## ○ Advice for smokers

- Recommended: Quitting smoking

Quitting smoking is the most effective way to prevent decline in respiratory muscle strength.

Early smoking cessation has also been shown to increase grip strength and limb skeletal muscle mass, helping to prevent frailty caused by malnutrition and physical inactivity!

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## Physical activity



Physical activity is important for maintaining motor function and respiratory muscle strength and is classified into daily activities, exercise, and sedentary behavior.

- Physical activity guidelines using METs (Metabolic Exercises)
  - 1 MET: Sitting quietly
  - 3 METs: Equivalent to normal walking
  - Adults: Goal: 60 minutes or more per day of activity equivalent to 3 METs (8,000 steps)
  - Elderly: Goal: 40 minutes or more per day of activity equivalent to 3 METs (6,000 steps)

## ○ Exercise Tips and Tricks

- Aerobic exercise: Jogging, aerobics, etc.
- Strength training: Squats, push-ups, etc.
- Flexibility/balance: Radio calisthenics, stretching, tai chi, etc.
- For seniors, aim for 60 minutes or more per week until you feel slightly short of breath or sweaty!

## ○ Risks of Sitting Too Much and Countermeasures

- Prolonged sitting can lead to a decrease in metabolism and increased risk of lifestyle-related diseases.
- For those who spend a lot of time on screens, standing up and doing light exercises once every hour can be effective.

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# Sleep



Insufficient sleep can lead to reduced efficiency in daytime activities (study/exercise/work) and accidents.

Excessive daytime sleepiness and the habit of sleeping in longer on weekends (catch-ups) are signs of chronic sleep deprivation.

If you don't feel rested even after improving your sleep environment and lifestyle, you may have an underlying sleep disorder such as insomnia or obstructive sleep apnea.

### Tips for improving sleep quality

- Get sunlight after waking up and throughout the day
- Get moderate exercise during the day
- Avoid caffeinated beverages (coffee and energy drinks) after the evening, heavy drinking in the evening, and drinking before bed
- Avoid eating dinner or a late-night snack close to bedtime

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## Nutrition



The muscles needed for breathing (respiratory muscles), like those in your arms and legs, are made from protein.

Inadequate nutrition can weaken your respiratory muscles, causing symptoms such as:

- Shortness of breath easily

- Shallow breathing

In addition, a loss of appetite or an unbalanced diet can lead to a decrease in overall muscle strength, which also affects the function of your respiratory muscles.

### Countermeasures

Aim to include at least one protein-rich food (meat, fish, soy products, dairy products, etc.) at each meal, and find ways to eat even small amounts even when you don't have an appetite.