

Nutrition Improvement Package



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The “Nutrition Improvement Pack” 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. Please 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

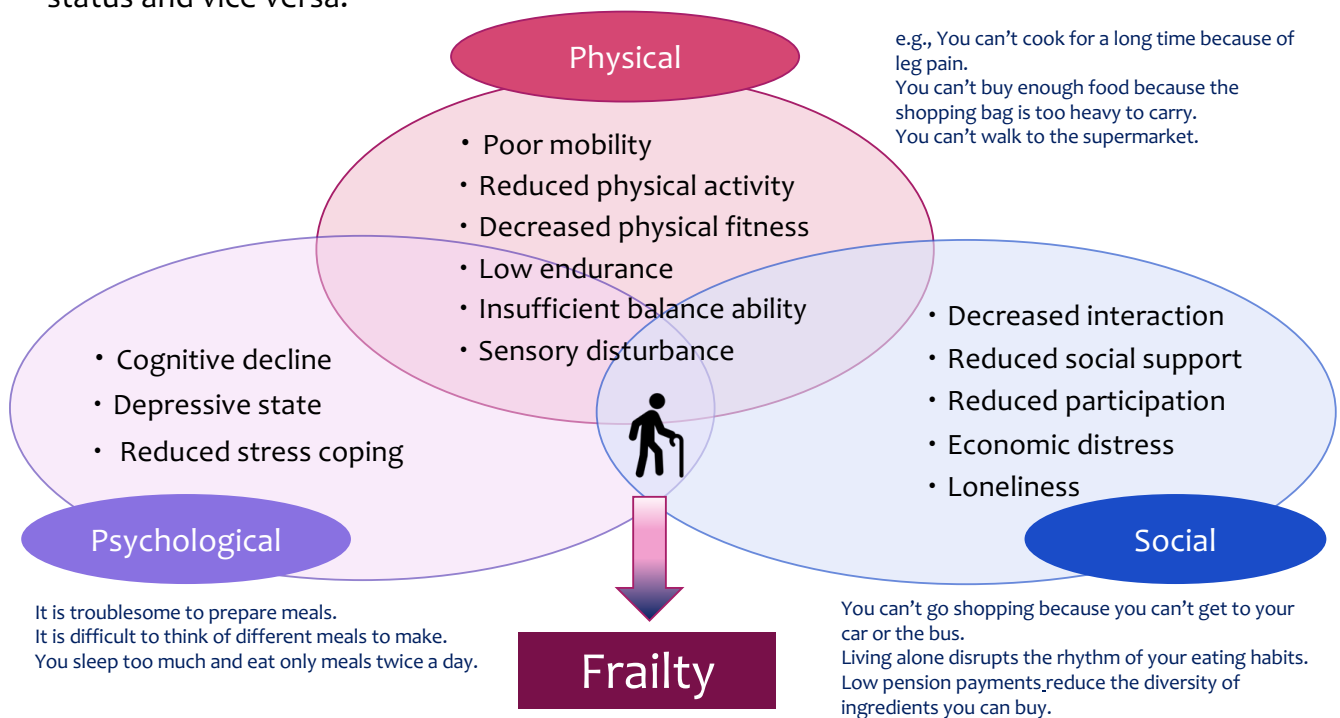
1. Get enough protein, because your muscles need it.
2. Exercise can improve your appetite. After eating a full meal, refer to the exercises in the “Inactivity prevention pack”, “Strengthening pack” and “Balance improvement pack”.
3. Prepare and cook your meals as much as you can without straining yourself.

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

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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.

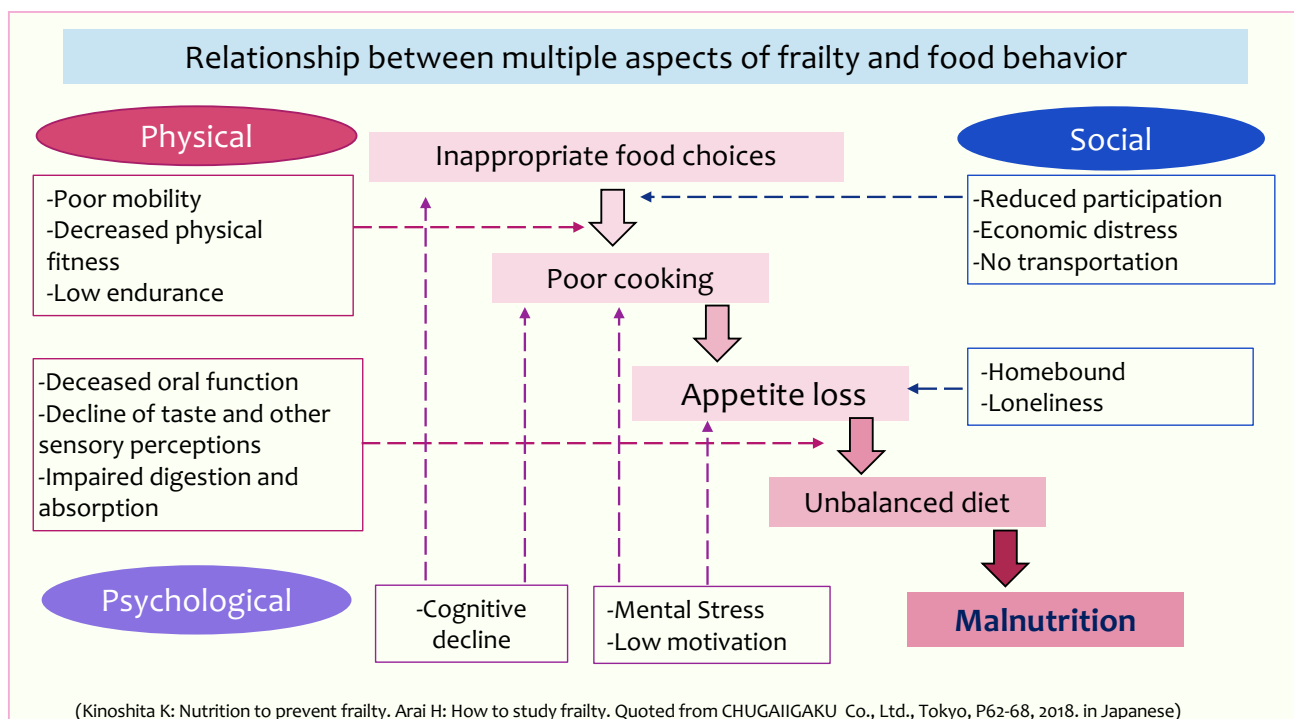


(Kinoshita K: Nutrition to prevent frailty, Arai H: How to study frailty. Quoted from CHUGAIGAKU Co., Ltd., Tokyo, P62-68, 2018. in Japanese)

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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 CHUGAIGAKU Co., Ltd., Tokyo, P62-68, 2018. in Japanese)

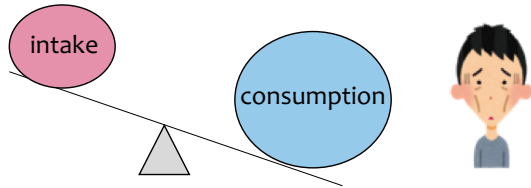
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Importance of weight control

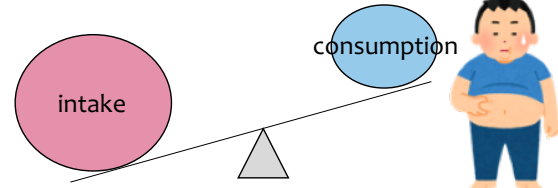
Incident frailty often occurs with malnutrition and severe obesity.

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.

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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

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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)

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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

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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/>

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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.

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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

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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>)

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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.

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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(nalta jute), 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>)

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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. Please 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.

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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	Wrap pieces of fish and meat in plastic wrap and put them in a freezer bag. It is more convenient to cut into pieces before freezing.	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.

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.

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