Chapter 5

Lifestyle habits and health

Learning objectives

You will be able to gain proper understanding and explain:

- What makes heathy lifestyle habits.
- Healthy lifestyle habits at different stages of children's development.
- How malnutrition and overnutrition affect the human body.
- How lack of sleep and physical inactivity affect the human body.
- What relationship diet, exercise, and rest/sleep have with health, and then think about healthy lifestyle behaviors.
- What should be improved in terms of healthy lifestyle behaviors by reviewing your life on a specific day (from the previous week).
- What should be improved in terms of healthy diet and balanced nutrition by reviewing your diet on a specific day (from the previous week).

In this chapter, you will learn about the relationships between one's health and lifestyle habits (lifestyle behaviors), with a focus on diet, exercise, and rest and sleep. Specifically, we will cover topics that include children's growth/development and lifestyle habits, lifestyle habits and health, basic lifestyle habits, diet/nutrition and health, exercise and health, rest/sleep and health.

1. Children's lifestyle habits and health

1) Growth/development and lifestyle habits

Mental and physical changes in children are known to include **growth** and **development**. The former includes quantitative changes in factors such as height and weight, and the latter refers to functional (qualitative) changes. While children's growth and development vary among individuals, they may be divided into the following stages according to their nature: **neonatal** (first four weeks after birth); **infancy** (birth to 1 year); **early childhood** (preschool years); **middle childhood** (primary school years); and **adolescence** (junior high school years to young adulthood, or until one stops gaining height) (see Chapter 3 for details on the topic of children's growth and development). Here we discuss the relationship between lifestyle habits and health in the following phases: infancy and early childhood; school-age years; and adolescence.

Infancy and early childhood: This is a phase when a child will become able to do things on their own, such as eating, using the toilet, and dressing and undressing themselves, as well as learn patterns of everyday life. It is therefore important that a child should acquire habits of healthy diet, exercise, and rest/sleep. Where exercising is concerned, this is a phase when development of the nerve system occurs, which prompts a child to try a variety of different body movements, such as those that require control of body balance (i.e. standing, sitting, or spinning), those that move the body from one place to another (i.e. walking, running, or climbing), and those that involve the maneuvering of tools (i.e. throwing, kicking, or pedaling)[1].

School-age years: The first half of this phase is when a child undergoes relatively stable growth, and it is important that a child should not only establish habits of healthy diet, exercise, and rest/sleep, but also learn and gain an understanding and sense of right and wrong, language and cognitive abilities, and self-affirmation, as well as developing social skills[2]. Following infancy and early childhood, school-age years will continue to see development of the nerve system; in addition to body movements that require control of body balance, moving the body from one place to another, or which involve the maneuvering of tools, a child during this period will try body movements that test their body strength (for example, two children carrying another child, tug-of-war) or those that combine more than one basic body movement[3]. In the latter half of the school-age years, meanwhile, a child will experience significant growth of their body, and it is essential that they lead a healthy life to promote body growth. This is a period when a child's body will come to change to that of an adult's, although growth varies significantly among individual children. In terms of exercising, it is important that a child practice sustained, low-intensity exercise that helps them become better at keeping skilled movements, such as jumping rope and standing on one foot.

Adolescence: A child will undergo dramatic changes to their body such as menarche or spermarche. These are called **secondary sex characteristics**. During this phase, a child will experience certain physical issues associated with body growth and development, including **anemia** due to deficiencies of nutrients, especially iron, as a result of muscle growth and menstruation, or **dizziness** and **fatigue** due to unstable autonomic function.

In psychological and behavioral development, a child may develop sexual interest and rebel against adults. It is therefore necessary to pay attention to any sign of risky sexual activities, smoking, drinking,

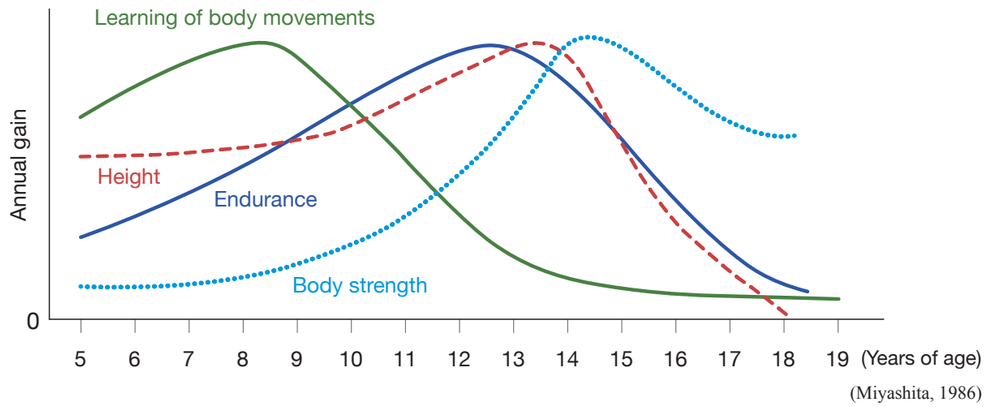
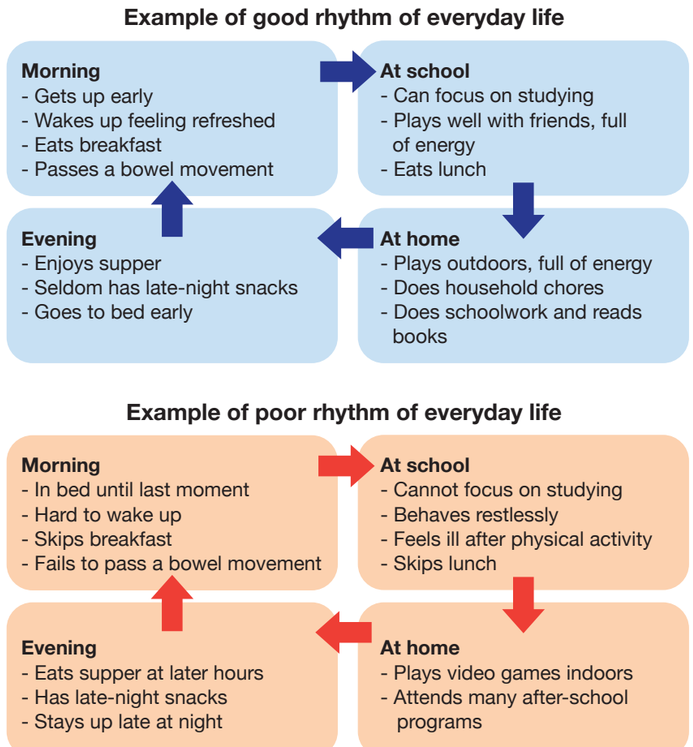


Figure 5.1 Child growth/development patterns[4]

or drug abuse. Socially, a child will need to acquire control of their social life so that they remain true to themselves and live their own way while fulfilling their social responsibilities in interactions with friends and adults in school, the local community, and at home. In terms of exercising, this is a period when the load on children increases so that they acquire abilities (endurance) and body strength to perform sustained exercise that helps them become better at skilled movements[4] (**Figure 5.1**).

2) Establishment of basic lifestyle habits

Basic lifestyle habits refer to a set of lifestyle habits with **well-balanced nutrition**, **exercise**, and **rest/sleep** that are important for the promotion of a child's growth. Sections 3, 4, and 5 below discuss diet/nutrition, exercise, and rest/sleep, respectively. They are not independent of one another, however, but are mutually interrelated. As **Figure 5.2** shows, for instance, reduced quality of sleep affects breakfast habits, skipping breakfast affects daytime activities, and physical inactivity during the day reduces quality of sleep, thus creating **a vicious cycle**.[5] Rather than focusing on one element only, it is critical to establish healthy and regular lifestyle habits in which all of the elements are well-balanced, and thus aim for **a virtuous cycle** based on good rhythm of everyday life.[5]



Adapted from Ministry of Education, Culture, Sports, Science and Technology, Learning materials on eating habits (for 5th and 6th graders)

Figure 5.2 Examples of good and poor rhythms of everyday life[5]

2. Diet/nutrition and health[6-8]

1) What it means to human health to eat[9]

Humans need to take in **nutrients** from the external world in order to maintain life activities. Humans fulfill this need by eating. Eating has the following three primary functions:

i. Supplying nutrients to sustain life and support living activities
ii. Providing a sense of security and satisfaction, bringing about psychological fulfillment
iii. Building a basic unit of social community

The function of "supplying nutrients to sustain life and support living activities" is an important one for the purpose of maintaining **homeostasis** in the body of a living person. The body of a living person has **biological clocks** that regulate the cycle of **circadian rhythms**. Maintaining one's circadian rhythm is strongly associated with maintaining their health in a favorable condition. When the body of a living person develops a memory of the timing when nutrients are supplied, regulatory functions such as hormone secretion and enzyme reaction are synchronized properly. While nutrients may be pooled within the body of a living person to a certain degree, they are basically supplied with each meal. Regular supplies of nutrients are essential for sustaining life and supporting living activities. Eating regularly everyday therefore forms a foundation of desirable lifestyle habits, which in turn helps prevent lifestyle-related diseases.

The function of "providing **a sense of security and satisfaction**, bringing about psychological fulfillment" helps one avoid a sense of danger to life and remain emotionally stable. If the body of a living person senses a state of starvation, it will trigger a variety of chemical reactions, including preferential activation of the system that supplies glucose to the brain and nerve cells. During infancy and early childhood, in particular, meals have the significance of giving children a sense of security in that they will always obtain food at regular times or when they feel hungry. Eating food that is delicious or which is something they like can also give them a sense of satisfaction or a zest for life.

The function of "forming a basic unit of a social community" is, in other words, a tool for communication to form connections between people. This is because people form human relationships that will become basic units of a community through interactions among themselves as they share a meal, giving children an opportunity to acquire social-mindedness from adults such as their food culture, table manners, and ceremonial rituals. Furthermore, the same group of people sharing the same time and place regularly will be able to check in on the safety and health of one another. It has been reported that those in middle childhood and adolescence who share family meals three or more times per week are more likely to stay in a normal weight range and have healthy dietary and eating patterns compared to those who do so less than three times per week[10].

2) Characteristics of dietary effect

The body of a living person will not fall out of form immediately after the external supply of food ceases. This is because various mechanisms come into play to maintain the homeostasis of the body. For

instance, mineral or vitamin deficiencies will not immediately cause pain or other problems; in many cases, by the time a mental or physical symptom does manifest itself, the problem will already have fairly progressed. Dietary effects have the following three characteristics:

i. Diet has gradual effects on the body of a living person
ii. Adequacy of content of meals does not become clear to them immediately in general
iii. One must take in nutrients repeatedly and indefinitely

The effects a diet has are characterized by their slow and gradual nature. While pharmaceutical products in general produce effects rapidly, food produces effects little by little, which often makes it impossible to evaluate its effects promptly. Imbalance in diet results in inadequate nutrient intake, leading to **malnutrition**. In many cases, people recognize the fact that they have an inappropriate diet only after a state of malnutrition persists for a while and they themselves or others around them notice their mental or physical changes. **Figure 5.3** illustrates what characterizes dietary effects and how they may be evaluated. In order to detect any imbalance in nutrient intakes and a poor nutrition due to improper diet at an early stage, it is important to conduct a diet survey and physical examination. If malnutrition is manifested as mental or physical symptoms, testing must be performed, including biochemical and physiological tests such as blood tests (e.g. white blood cell count and hemoglobin levels) and urine tests (e.g. urine protein, occult blood, and urine glucose level), and functional and morphological tests (e.g. height/weight measurements, athletic performance, pulmonary function test, hearing, and eyesight).

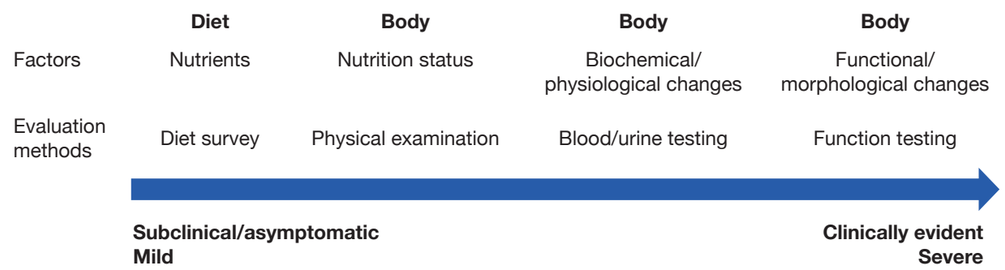


Figure 5.3 Dietary effects and methods for their evaluation

3) Healthy diet

In order to stay healthy both mentally and physically, one needs to take in energy and nutrients in a manner that is appropriate for their individual physical build, behavioral patterns, state of health, and living environment. When one "**keeps a well-balanced diet**," it means that their dietary intake of energy and nutrients closely match those they need, with very little excess or shortage.

Figure 5.4 shows major nutrients and their roles, as well as their respective primary dietary sources. Nutrients may be divided roughly into the following: **carbohydrates**, **lipids**, **proteins**, **minerals**, and **vitamins**. They are called **the five essential nutrients**. In recent years, it is recommended that **dietary fibers** (nondigestible saccharides) should also be taken in addition to these five. There are **three major roles of nutrients**: to provide energy required for physical activity; to become building components of the body; and to coordinate the chemical reactions that occur in the body. Carbohydrates, lipids, and proteins serve as the sources of energy, and proteins and minerals (i.e. **the 16 essential minerals** including calcium, iron, and sodium) form components of the body, while minerals, vitamins, and dietary fibers are required to coordinate the chemical reactions in the body.

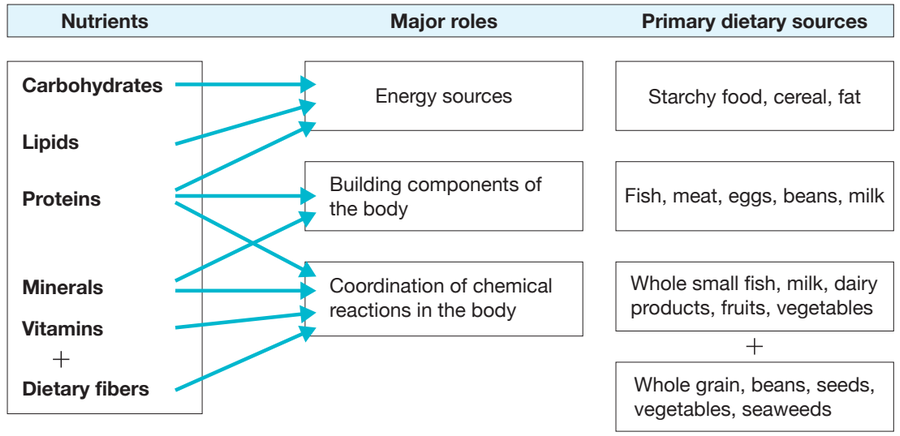


Figure 5.4. Nutrients, and their major roles and primary dietary sources

With the exception of granulated sugar and refined oils, very few food items contain a single nutrient; food contains a variety of nutrients. In order to minimize imbalance in nutrient intake, it is important to take in as many types of food as possible. In reality, however, it is difficult to have every type of food in one meal and such an attempt can even result in excessive intake. It is therefore important to focus on daily total or weekly average intake to keep a well-balanced diet. In the following, we will briefly discuss the nutritional significance of the nutrients shown in **Figure 5.4**. It is important that you gain understanding of where these nutrients exist and what roles they serve in the body of a living person.

Column: Things to consider when using dietary supplements

A large variety of dietary supplements are marketed for use to supplement inadequate intake of minerals, vitamins, and amino acids. It is important that you should review your diet rather than taking such dietary supplements without careful consideration. Some dietary supplements may contain ingredients that are different from those found in plant- or animal-based food products. It is important that you acquire correct knowledge about dietary supplements in order to stay in good health.

(1) Nutritional significance of carbohydrates

Saccharinity is also called "**available carbohydrates**," which are high in polysaccharide starch. Starch is the main source of carbohydrates in our diet and is composed of hundreds to thousands of basic carbohydrate molecules. This basic molecule is a monosaccharide, of which **glucose**, **fructose**, and

galactose are important for our body. Our body uses digestive enzymes to decompose many of the "available carbohydrates" in our diet into monosaccharides, absorbs, and then uses them as an energy source. The cells in the brain and nerve tissues, red blood cells, as well as skeletal muscles during depletion of energy, can only use glucose. Because depletion of glucose can result in a collapse of homeostasis and even death, the level in the blood (blood glucose levels) is maintained even during a fasting state. The liver and muscles store glucose temporarily in the form of glycogen, which is a polysaccharide of glucose. Glycogen in the liver is readily used as an energy source to maintain the level of blood glucose concentration. Excessive amounts of glucose are stored as triglycerides, which may be used as another source of energy in the future. When energy taken in from food is not entirely consumed and leaves an excess, triglycerides are carried in the bloodstream to become subcutaneous or visceral fats, which promote the development of arteriosclerosis.

(2) Nutritional significance of lipids

As a source of energy that is readily stored in the body of a living person, **lipids** are stored primarily in the form of **triglyceride**. They are constituents of hormones, cell membranes, and nuclear membranes. In the form of subcutaneous fats, they serve to protect internal organs and tissues against injury and cold. They also promote absorption of fat-soluble vitamins.

(3) Nutritional significance of proteins

Proteins are an important nutrient that supports cells' life activities. The muscles, organs, skin, hair, nail, hormones, enzymes, and antibodies are built with proteins. While proteins are broken down into **amino acids** before being absorbed, proteins that are absorbed without having been broken down into amino acids can become allergens (which trigger **allergic reactions**.)

Column: Food allergy

The immune system is a biological defense mechanism that protects our body by ridding the body of invading pathogens or other substances that are harmful to the body (See Chapter 7). A food allergy occurs when the immune system mistakenly treats a certain protein in food that entered the body as an antigen and overreacts to it. Many food allergies produce immediate allergic reactions, in which the reaction occurs shortly after the intake of the offending food. They are mediated by a protein found in the living body called immunoglobulin E (IgE antibody). Typical symptoms of food allergies include hives, eczema, vomiting/stomachache/diarrhea, coughing/sneezing, and breathing difficulties. Intense allergic reactions that cause a drop in blood pressure, lowering of consciousness, or fainting are called anaphylactic shock, which can be life-threatening. It is necessary that school teachers and staff are aware of whether or not their pupils have any food allergies, and they have a form to keep tabs on them (https://schoolsequella.det.nsw.edu.au/file/d6b6621f-7036-4d2a-a84c-0cc740cbe946/1/anaphylaxis-appendix-1-khmer.pdf).This form provides a space to check as to whether a child has an EpiPen prescribed. It is preferable that teachers familiarize themselves with first aid and use of an EpiPen in the event of anaphylactic shock (https://allergy.org.au/images/stories/anaphylaxis/2018/Khmer_ASCIA_PCC_Anaphylaxis_First_Aid_2018.pdf).

(4) Nutritional significance of minerals

Minerals are divided into macrominerals and microminerals, depending on the amount needed; the former are needed in relatively large amounts, while the latter are needed in trace amounts. There are **six macrominerals**: calcium, phosphorus, sodium, potassium, chloride, and magnesium. They are required for the control of pH and osmotic pressure of body fluids as well as for nerve impulse transmission and muscle contraction. Of the six macrominerals, calcium, potassium, and magnesium are essential for the development of bones and teeth. **Microminerals**, meanwhile, include 16 types of minerals, such as iron, zinc, and iodine. They are involved primarily in metabolism. Some microminerals, including arsenic and lead, can cause harm to health and trigger poisoning symptoms when taken in large amounts, so caution is required against excessive intake.

(5) Nutritional significance of vitamins

Although not a source of energy for the living body, **vitamins** are an essential nutrient that serves significant physiological roles even with a trace amount of intake. They can be either **water-soluble** (such as vitamin C and B vitamins) or **fat-soluble** (such as vitamin A and vitamin D) (Table 5.1). Water-soluble vitamins are excreted in urine and not readily stored in the body, making them prone to deficiency. Fat-soluble vitamins, meanwhile, are stored in the liver, and may cause poisoning symptoms in case of continuous excessive intake.

Table 5.1 Types of vitamin and symptoms of their deficiencies

Types of vitamin		Deficiency symptoms
Water-soluble vitamins	Vitamin B_1 (thiamin)	Beriberi, anorexia, edema
	Vitamin B_2 (riboflavin)	Impaired growth, oral ulcer
	Vitamin B_3 (niacin)	Dermatitis, diarrhea, brain damage
	Vitamin B_6 (pyridoxine)	Impaired growth, arteriosclerosis, dementia
	Vitamin B_7 (biotin)	Hair loss, dermatitis, impaired growth
	Vitamin B_9 (folic acid)	Anemia, arteriosclerosis, dementia, fetal neural tube closure
	Vitamin B_{12} (cobalamin)	Anemia, neuropathy
	Vitamin C	Gum or skin bleeding
Fat-soluble vitamins	Vitamin A	Night blindness, impaired immunity
	Vitamin D	Impaired bone formation, osteomalacia
	Vitamin E	Infertility, miscarriage
	Vitamin K	Excessive bleeding (intracranial hemorrhage in newborns and infants), impaired bone formation

(6) Nutritional significance of dietary fibers (nondigestible saccharides)

Dietary fibers are a type of carbohydrate. They are also called nondigestible saccharides because they are not broken down by digestive enzymes. They are fermented by intestinal bacteria, and work to regulate the functions of the intestines and maintain gastrointestinal function. One needs to take in dietary fibers to maintain and improve health.

(7) Recommended dietary allowances of nutrients

In Cambodia, the Government discussed the recommended dietary allowances (RDA) for children aged between 6 and 17 years in collaboration with FIDR, and established the RDA for different nutrients using a reference body weight for each age group of school-aged children[11]. In addition, the Food-Based Dietary Guidelines (FBDG) were proposed; the recommended food intakes are visually illustrated for six food types in the **Cambodian Food Pyramid** (Figure 5.5). The definition of 6 food types and standard of serving (Table 5.2) provides the standard of serving and the portion size of serving for each of the six food types, while the following seven key messages are proposed for the healthy growth of children (Figure 5.6)[11]. In school health education, it is necessary to actively teach and disseminate these messages by using a handbook based on these guidelines.

Figure 5.5 Cambodian food pyramid[11]

Table 5.2 Definition of 6 food types and standard of serving

Food type	Standard of serving	Portion size of serving
Cereals and Starchy foods	1 serving is 40 g of carbohydrate	1 small bowl ore 10 spoons of cooked rice (140 g) 2 changvay (set) of Khmer noodle (165 g) 1/2 of corn (65 g) 1 loaf of baguette (70 g) 2 1/2 pieces of sandwich bread (80 g)
Vegetables	1 serving is 30 g	2 spoons of green vegetable (30 g) 3 pieces of pumpkin (30 g) 1/2 or 4 pieces of cucumber (30 g)
Fruits	1 serving is 100 g	4 pieces of water melon (100 g) 3 pieces of guava (100 g) 4 pieces of papaya (100 g) 1 1/2 of banana (100 g) 4 pieces of ripe mango (100 g)
Protein-rich foods	1 serving is 6 g of protein	2 spoons of chopped or slice meat (20 g) 4 pieces of fish meat (30 g) 1 chicken egg (50 g) 3 spoons of mungbean (60 g)
Calcium-rich foods	1 serving is 100 mg of calcium	2 spoons of small fish (40 g) 7 small dried fish (10 g) 1 cup of yoghurt (100 g) 1/2 glass of milk (100 ml) 5/9 pieces of tofu (60 g)
Fat and oils	1 teaspoon of butter (5 g) 1 teaspoon of oil/fat (5 g) Try to choose vegetable oil rather than animal fat. Fat is also contained in other food types. Limit your fat intake by 2-3 teaspoons (10-15 g) per day only.	

i. Eat food from all food types with a well-balanced diet* everyday
ii. Consume calcium rich-food such as whole small fish, milk, and milk products.
iii. Eat protein-rich food such as fish, meat, eggs, or beans at least 2 or 3 times a day.
iv. Eat plenty of fruits and vegetables regularly.
v. Eat cereal and starchy food such as rice, noodles, breads, and its alternatives in an adequate amount.
vi. Reduce food high in salt, sugar, and fat.
vii. Measure your body weight and height regularly and track your growth.

*Balanced diet is to eat from all types in proper amounts and in line with physical activity.

Figure 5.6 Seven key messages[11]

4) Habit of choosing foods with safety and security assured

We take in nutrients required for the maintenance of homeostasis in the living body in the form of food. For this reason, we need to take in a wide variety of food. The intake of contaminated or spoiled food may modify the homeostasis of the body and lead to diseases. It is therefore important that we gain knowledge of **food safety and sanitation**, and acquire **the habit of choosing safe food**. Such a habit not only maintains and improves our health but also promotes environmental health and safety (see Chapter 4).

Food safety and sanitation must be evaluated in a careful and wide-reaching manner, from each process of food production/harvesting, processing, distribution, preparation, and sales, to the stages where consumers purchase, cook, and eat the food. In the agriculture, dairy, forestry, and fishery industries, the safety of soil, sea water, and air is important. Using safe seeds and seedlings, fertilizers, and feedstuff helps ensure environmental safety. It is also desirable that consistent views on food safety are introduced to the processes of food processing, distribution, and sales, as well. It is also important to establish regulations and standards concerning the genetic engineering, irradiation, and preservatives, and for consumers to gain correct knowledge of these.

It is important for consumers to acquire knowledge of food safety and sanitation, and choose safe and sanitarily prepared food on an everyday basis. It is therefore necessary for pupils/students to learn in school health education about contamination and other risks that may occur anywhere between the production and consumption of food. It is also important to provide opportunities for them to learn through first-hand experience, which may include, for instance, growing edible plants from seeds or seedlings, raising animals, observing parasites in fish, and visiting a market or a shop in person. Keeping **school vegetable gardens** may also offer an opportunity for pupils/students to learn about and improve nutrition.

Column: Prevalence of underweight, overweight and obesity in Cambodian children and adolescents aged 5–19 years

When you look at the nutrition status of boys and girls in Cambodia in their middle childhood and adolescence, aged between 5 and 19 years, based on the Global Nutrition Report (https://globalnutritionreport.org/resources/nutrition-profiles/asia/south-eastern-asia/cambodia/) and its data (https://ncdrisc.org/data-downloads-adiposity-ado.html), percentages of boys who are underweight are high for all ages, with approximately 40% being underweight between 11 and 17 years of age (**Figure 5.7**). This shows that many in this age group have problems in their nutrition status. While the percentages of boys who are overweight are relatively large between 5 and 11 years of age, they decrease with age.

Compared to boys, girls overall show lower percentages of being underweight, although about 40% are underweight at around the age of 10 years, which is comparable to boys (**Figure 5.8**). Percentages of girls who are obese are also small, at about one-third of those of boys. Based on these findings on excessively low or high body weight, the nutrition status seems to present larger problems with boys than with girls.

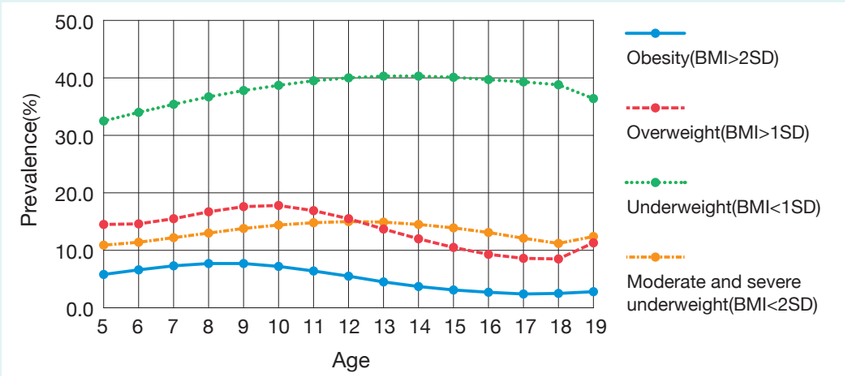


Figure 5.7 Nutrition status by age (Boys, 2016)

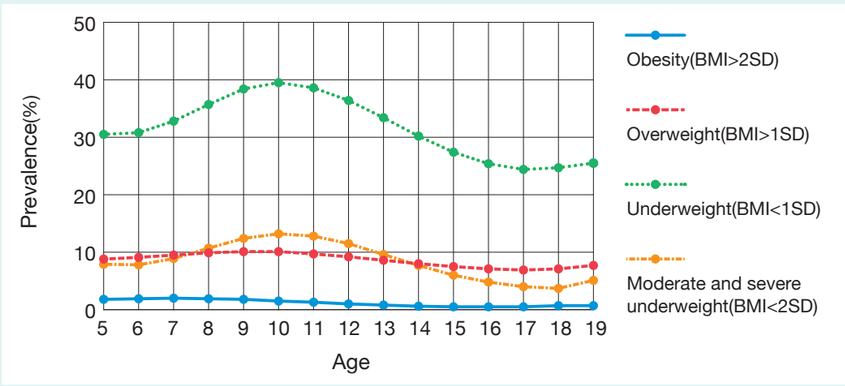


Figure 5.8 Nutrition status by age (Girls, 2016)

Column: UN WFP (United Nations World Food Programme)

UN WFP (United Nations World Food Programme) won the Nobel Prize for Peace in 2020. This was in recognition of WFP members' fighting hunger in all corners of the world and helping to improve conditions to bring peace to the people, as they go anywhere on the planet if needed, even war zones (https://insight.wfp.org/world-food-programme-chief-pays-tribute-to-front-line-staff-and-partners-after-nobel-peace-prize-fc406608d60).

In Cambodia, the WFP Cambodia Country Strategic Programme - 2019-2023 started in February 2019. At the top of the Executive Summary, the challenges in food security are described as follows: "Cambodia has achieved sustained economic growth over the past two decades, attaining lower middle-income country status in 2016. Despite substantial progress, socio-economic and gender inequalities persist, hampering access to a nutritious diet. Food security and nutrition face challenges caused by shocks, a rapidly changing food environment, and inefficiencies in the food system." (https://docs.wfp.org/api/documents/WFP-0000112436/download/?_ga=2.261728648.484506432.1604280209-264903587.1595213932)

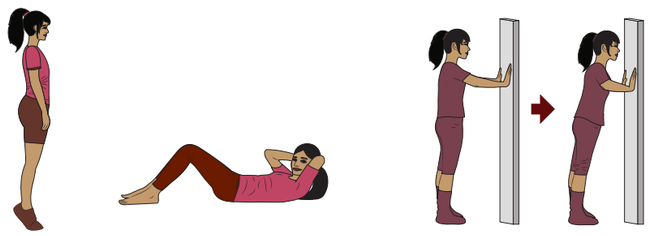
3. Exercise and health

Exercising promotes growth and development of children's organs, and benefits their health. Stimulation to epiphysis as a result of exercising promotes bone growth. **Moderately loaded exercise** that involves muscle contraction, such as strength training, enlarges muscles and improves muscle strength. **Aerobic exercise** that sends oxygen throughout the body, such as walking and swimming, strengthens the heart and lungs, and helps reduce the risk of lifestyle diseases. Exercise that improves flexibility, such as stretching, increases the range of motion in joints, which helps reduce the risk of injuries (**Figure 5.9**).

Aerobic exercises

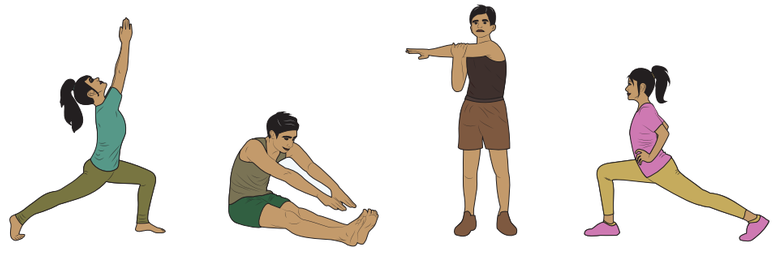
Do exercises that would make you sweat and huff and puff, for a duration of 30 minutes, three times a week.

Exercises to improve muscle strength



Do exercises such as standing on tiptoes, sit-ups, and push-ups to an extent that does not put strain on you.

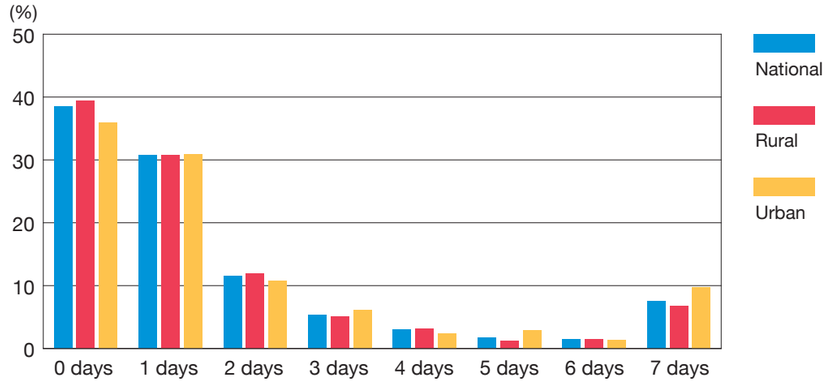
Exercises to improve flexibility



Extend body part(s) without recoil, stop where they feel stretched, and take deep breaths.

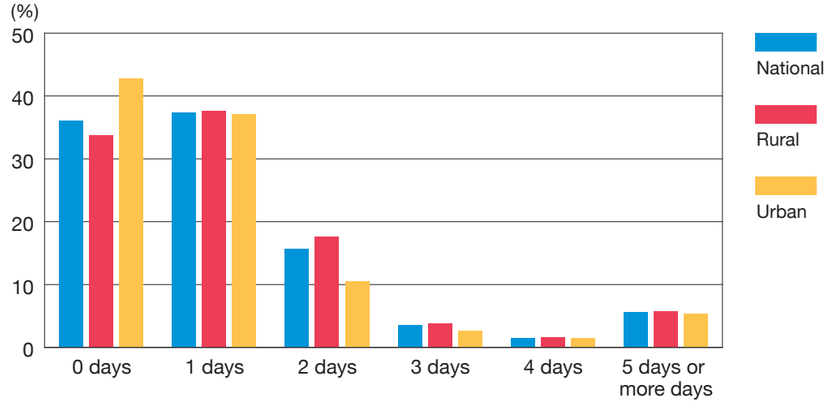
Figure 5.9 Examples of physical activities to build health

Physical inactivity can cause lifestyle diseases such as obesity, arteriosclerosis, and diabetes. In Cambodia, while some children were physically active for a total of at least 60 minutes per day on five or more days, many were not so physically active (**Figures 5.10 and 5.11**)[12]. For instance, nearly 40% of the children said they had not been physically active for a total of at least 60 minutes per day on any of the preceding seven days, while around 35-43% had been attending zero physical education classes per week. The fact that physical education class is not common poses a challenge for ensuring that children acquire exercising habits in Cambodia. Styles of living vary among individual children, and it is important that a child should choose what suits them from among different varieties of exercises, and enjoy doing it. In doing so, they should incorporate activities that improve muscle strength and post-exercise activities that improve flexibility, in order to prevent injury. Care should be taken to avoid excessive exercise, for it can cause injury, which may hinder a child's growth and development.



Source: 2013 Global School – Based Student Health Survey Results -Cambodia Survey Public Use Codebook (https://extranet.who.int/ncdsmicrodata/index.php/catalog/220)

Figure 5.10 No. of days with a daily total of ≥60 minutes of physical activity during the preceding seven days



Source: 2013 Global School – Based Student Health Survey Results -Cambodia Survey Public Use Codebook (https://extranet.who.int/ncdsmicrodata/index.php/catalog/220)

Figure 5.11 No. of days with a physical education class per week

4. Rest/sleep and health

Sleep not only helps one recover from fatigue caused by various activities they have performed during the day, but also promotes growth and development in children. The growth hormone produced during sleep, in particular, helps repair damaged tissues and promotes child growth.

Sleep is a part of lifestyle habits, and good sleep is a product of a regular sleeping pattern. Humans have **a body clock**, which not only determines the timing of sleep but also regulates hormone secretion and other physiological activities in advance to prepare one for sleep. Keeping regular hours helps one's body clock work properly and facilitates sleep.

In modern life, however, use of electronic devices such as smartphones and PCs is on the increase. Exposure to **blue light**, or intense light from a smartphone or PC, before bedtime is believed to affect the quality of sleep and sleep rhythm in a negative manner. In order to improve the quality of sleep, one should aim to get the right amount of exercise during the day, keep a well-balanced diet, and do things that relax the body, such as stretching and avoiding the use of electronic devices that stimulate the brain before bedtime.

5. Health habits of adults and life expectancy

We have so far looked at the relationships between lifestyle habits and growth/development and health by focusing on exercise, diet/nutrition, and sleep/rest. We will now take a look back at past studies to see what lifestyle habits or kinds of lifestyles have an influence over our health and life expectancy. The term "health habits" here refers to lifestyle habits that are associated with health. In a study initiated in 1965, Breslow, L., et al.[13,14] surveyed 7,000 residents of Alameda County, California, United States on a variety of health practices and levels of their physical health, and found that seven health practices were strongly associated with physical health levels. When a 45-year-old man who was practicing 6-7 of the seven health practices was compared with another 45-year-old man who was practicing only 0-3, for instance, the two had a gap of approximately eleven years in their life expectancy. This was the first study that demonstrated that one's habits have an influence on their health.

The seven health habits identified by Breslow, L., et al. [13,14] are as follows:

1. Getting 7–8 hours of sleep at night regularly
2. Eating breakfast nearly every day
3. Eating between meals once a day or less frequently
4. Not drinking habitually, or having four drinks or less at one time
5. Not smoking habitually
6. Performing moderate to vigorous physical activities[*1] frequently, and
7. Keeping a proper weight[*2]

[*1] Vigorous sports activities, long-distance walking, hunting, gymnastic exercises, gardening

[*2] BMI of around 22 (see Chapter 6)

The relationship between health habits and health has since been explored in a variety of different combinations. In a study[15] that examined five lifestyle factors, for instance, the authors found that those who adhered to more of the following factors: never smoked cigarettes; physical activity of ≥3.5 hours/week with moderate to vigorous intensity; high diet quality (e.g. a diet rich in whole grains, nuts, legumes, and vegetables, and low in red and/or processed meats, refined grains, sugar-sweetened beverages, and sodium); moderate alcohol intake of 5–15 g/day for women or 5–30 g/day for men; and normal weight (body mass index <25) had a longer life expectancy from age 50 free of diabetes, cardiovascular diseases, and cancer.

Past studies such as these have shown that life habits related to **exercise**, **diet**, **smoking**, **alcohol use**, and **weight control** are important factors of health habits. Health habits are influenced by society and culture, however, and it is important that Cambodia should pursue health habits that are rooted in its own society and culture. To promote school health education, in particular, it is necessary to clarify how lifestyle habits and living activities are associated with health, growth, and development of young people in Cambodia.

Topics for further thought and research

[5-1] List up as many types of play as you can think of that would involve children being physically active.

[5-2] Think of what teachers can do to secure playtime for children to be physically active.
Do research on foods in Cambodia that can cause food allergies (see the column on Food Allergy).

[5-3] Recall and write down what you have eaten in the past few days, and discuss with others as to whether or not you are keeping a well-balanced diet based on a good variety of food, by using the Cambodian food pyramid (**Figure 5.5**) and the Seven key messages (**Figure 5.6**) as references. If your diet lacks certain foods, think of what you should eat to make up for it.

[5-4] Ask an elderly person (Cambodians have an average life expectancy of approximately 69 years) who is active and healthy without suffering any major illness about what health habits they keep in their everyday life (such as diet, physical activity, smoking, drinking, and stress-relief habits).

[5-5] Identify unhealthy lifestyle behaviors of people around you, and think of what should be done to help them change such behaviors.

[5-6] Check on your lifestyle habits using the checklist in **Table 5.3**. Based on the results, review your lifestyle habits by using the examples of good and poor rhythms of everyday life (**Figure 5.2**).

Table 5.3 Lifestyle habit checklist

Item / Date	8/23/2021 (Mon)	/ ( )	/ ( )	/ ( )	/ ( )	/ ( )	/ ( )	/ ( )
What time did you get up in the morning? (Rest/sleep)	H: 6	H:	H:	H:	H:	H:	H:	H:
	Min: 30	Min:	Min:	Min:	Min:	Min:	Min:	Min:
Did you get up feeling refreshed? (Rest/sleep)	(Yes)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	No	No	No	No	No	No	No	No
How many hours of sleep did you have? (Rest/sleep)	8 hours	hours	hours	hours	hours	hours	hours	hours
Did you have breakfast? (Diet)	(Yes)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	No	No	No	No	No	No	No	No
Did you pass a bowel movement? (Diet)	(Yes)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	No	No	No	No	No	No	No	No
For how long did you do sports or other exercises on the day in question? (Exercise)	90 min	min	min	min	min	min	min	min
For how long did you walk getting to and from school, or do light exercises? (Exercise)	60 min	min	min	min	min	min	min	min
Did you eat at regular hours? (Diet)	(Yes)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	No	No	No	No	No	No	No	No
Did you eat between meals? (Diet)	(Yes)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	No	No	No	No	No	No	No	No
Did you use a smartphone, etc. before bedtime? (Rest/sleep)	(Yes)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	No	No	No	No	No	No	No	No
Did you do things that improve sleep like stretching and taking a bath? (Sleep/rest)	(Yes)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	No	No	No	No	No	No	No	No
What time did you go to sleep? (Rest/sleep)	H: 21	H:	H:	H:	H:	H:	H:	H:
	Min: 30	Min:	Min:	Min:	Min:	Min:	Min:	Min:

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