Table 8 Examples of physical activity classifications

Classification of physical activity (within the range of Af[1])	Examples of physical activity
Sleeping (1.0)	Sleeping
Sedentary activities while sitting or standing (1.1-1.9)	Lying down, sit in a relaxed manner (reading books, writing, and watching television), carrying on a conversation (while standing), cooking, dining, toileting activities (dressing, face-washing, and using the toilet facilities), sewing (hand-sewing and operating a sewing machine), engaging in a hobby or entertainment (flower arrangement, tea ceremony, mah-jong, playing musical instrument), driving, desk work (book-keeping and operating a word processor and OA equipment).
Low-intensity activities, such as slow walking or household chores (2.0-2.9)	Use a train or bus where no seats are available. Walk slowly for shopping or just enjoy a walk (45 m/min.). Doing laundry (using an electrically operated washer). House cleaning (using an electrically operated vacuum cleaner).
Mid-intensity exercise or labor that can be sustained for an extended period (including normal walking) (3.0-5.9)	Tend a home vegetable garden. Play gate-ball. Normal walking (71m/min.). Bathing. Cycling (at a normal speed). Walking with a child on one's back. Playing catch-ball. Playing golf. Dancing (light). Hiking (on level ground). Climbing up and down stairs. Lifting or taking down bedding. Normal walking (95m/min). Gymnastics (following radio or TV instruction).
High-intensity activities such as exercise or labor that require frequent rest (>6.0)	Muscle training, aerobic dancing (active), rowing, jogging (120m/min), tennis, badminton, volleyball, skiing, basketball, soccer, skating, jogging (160m/min), swimming, running (200m/min).

[1] Activity factor (Af) is computed from the relative metabolic rate cited by Numajiri[45] as follows:

Af = energy metabolic rate + 1.2

Each physical activity was based on the mean during the time of activity. The data during rest and interruption were excluded.

Table 9 Dietary Reference Intakes for Japanese for Energy: Estimated Energy Requirement (kcal/day)

Sex	Males			Females		
PAL	I	II	III	I	II	III
0-5 months infants						
Breastfed	-	600	-	-	550	-
Formula-fed	-	650	-	-	600	-
6-11 months	-	700	-	-	650	-
1-2 years	-	1,050	-	-	950	-
3-5	-	1,400	-	-	1,250	-
6-7	-	1,650	-	-	1,450	-
8-9	-	1,950	2,200	-	1,800	2,000
10-11	-	2,300	2,550	-	2,150	2,400
12-14	2,350	2,650	2,950	2,050	2,300	2,600
15-17	2,350	2,750	3,150	1,900	2,200	2,550
18-29	2,300	2,650	3,050	1,750	2,050	2,350
30-49	2,250	2,650	3,050	1,700	2,000	2,300
50-69	2,050	2,400	2,750	1,650	1,950	2,200
≥70[1]	1,600	1,850	2,100	1,350	1,550	1,750
Pregnant women: Early-stage (amount to be added)				+50	+50	+50
Mid-stage (amount to be added)				+250	+250	+250
Late-stage (amount to be added)				+500	+500	+500
Lactating women (amount to be added)				+450	+450	+450

[1] For adults, the following formula was used for computation: estimated energy requirement=basal metabolic rate (kcal/day) x PAL. For those between 18-69 years, the PALs were designated as I=1.50, II=1.75 or III=2.00. For those 70 years or older, the following were used instead: I=1.30, II=1.50, III=1.70. The seeming discrepancy in Estimated Energy Requirements for the 50-69 and over 70 years group is mostly explained by this.

PAL: physical activity level.

References

1. Food and Nutrition Board, Institute of Medicine. Dietary reference intakes: energy, carbohydrate, fiber, fat, fatty acids, cholesterol, protein, and amino acids. Washington, DC: National Academy Press, 2002. (Internet: http://www.nap.edu/books/0309085373/html/)
2. Brooks GA, Butte NF, Rand WM, Flatt JP, Caballero B. Chronicle of the Institute of Medicine physical activity recommendation: how a physical activity recommendation came to be among dietary recommendations. Am J Clin Nutr 2004; 79(5): 921S-30S.
3. Recommended dietary allowances for Japanese: Dietary reference intakes, 6th revision. Ministry of Health and Welfare, Japan, Tokyo, 1999. (in Japanese)
4. Taguchi M, Higuchi M, Oka J, Yoshiga C, Ishida Y, Matsushita M. Basal metabolic rate in Japanese female endurance athletes. Eiyogaku Zasshi (Jpn J Nutr) 2001; 59: 127-34 (in Japanese with English abstract).
5. Tanaka S, Tanaka C, Futami J, Oka J, Ishikawa-Tanaka K, Kashiwazaki H. Twenty-four-hour energy expenditure of adults in sedentary life measure using indirect human calorimeter. Nippon Eiyo Shokuryo Gakkai Zasshi (J Jpn Soc Nutr Food Sci) 2003; 56: 291-6 (in Japanese with English abstract).
6. Rafamantanantsoa HH, Ebine N, Yoshioka M, Yoshitake Y, Tanaka H, Saitoh S, Jones PJ. The role of exercise physical activity in varying the total energy expenditure in healthy Japanese men 30 to 69 years of age. J Nutr Sci Vitaminol (Tokyo) 2003; 49: 120-4.
7. Usui C, Oka J, Yamakawa J, Sasaki Y, Higuchi M. Basal metabolic rate and its determinants in postmenopausal women. Tairyoku Kagaku (Jpn J Phys Fitness Sports Med) 2003; 52: 189-98 (in Japanese with English abstract).
8. Ozeki O, Ebisawa L, Ichikawa M, Nagasawa N, Sato F, Fujita Y. Physical activities and energy expenditures of institutionalized Japanese elderly women. J Nutr Sci Vitaminol (Tokyo) 2000; 46: 188-92.

9. Shetty PS, Henry CJ, Black AE, Prentice AM. Energy requirements of adults: an update on basal metabolic rates (BMRs) and physical activity levels (PALs). Eur J Clin Nutr 1996; 50(Suppl 1): S11-23.
10. Black AE, Coward WA, Cole TJ, Prentice AM. Human energy expenditure in affluent societies: an analysis of 574 doubly-labelled water measurements. Eur J Clin Nutr 1996; 50: 72-92.
11. Schutz Y, Weinsier RL, Hunter GR. Assessment of free-living physical activity in humans: an overview of currently available and proposed new measures. Obes Res 2001; 9: 368-79.
12. Yao M, McCrory MA, Ma G, Li Y, Dolnikowski GG, Roberts SB. Energy requirements of urban Chinese adults with manual or sedentary occupations, determined using the doubly labeled water method. Eur J Clin Nutr 2002; 56: 575-84.
13. Westerterp KR. Impacts of vigorous and non-vigorous activity on daily energy expenditure. Proc Nutr Soc 2003; 62: 645-50.
14. Sawaya AL, Saltzman E, Fuss P, Young VR, Roberts SB. Dietary energy requirements of young and older women determined by using the doubly labeled water method. Am J Clin Nutr 1995; 62: 338-44.
15. Fuller NJ, Sawyer MB, Coward WA, Paxton P, Elia M. Components of total energy expenditure in free-living elderly men (over 75 years of age): measurement, predictability and relationship to quality-of-life indices. Br J Nutr 1996; 75: 161-73.
16. Baarends EM, Schols AM, Pannemans DL, Westerterp KR, Wouters EF. Total free living energy expenditure in patients with severe chronic obstructive pulmonary disease. Am J Respir Crit Care Med 1997; 155: 549-54.
17. Vinken AG, Bathalon GP, Sawaya AL, Dallal GE, Tucker KL, Roberts SB. Equations for predicting the energy requirements of healthy adults aged 18-81 y. Am J Clin Nutr 1999; 69: 920-6.

18. Hoos MB, Gerver WJ, Kester AD, Westerterp KR. Physical activity levels in children and adolescents. Int J Obes Relat Metab Disord 2003; 27: 605-9.
19. The National Nutrition Survey in Japan, 2002. Ministry of Health, Labour and Welfare, Japan, Tokyo, 2004.
20. Butte NF, Hopkinson JM, Wong WW, Smith EO, Ellis KJ. Body composition during the first 2 years of life: an updated reference. Pediatr Res. 2000; 47: 578-85.
21. Fomon SJ, Haschke F, Ziegler EE, Nelson SE. Body composition of reference children from birth to age 10 years. Am J Clin Nutr 1982; 35(5 Suppl): 1169-75.
22. Haschke F. Body composition during adolescence. In: Body Composition Measurements in Infants and Children: Report of the 98th Ross Conference on Pediatric Research. Columbus, OH, Ross Laboratories, 1989, p76-83.
23. FAO/WHO/UNU Expert Consultation. Report on Human Energy Requirements, Interim Report, 2004.
24. Forsum E, Kabir N, Sadurskis A, Westerterp K. Total energy expenditure of healthy Swedish women during pregnancy and lactation. Am J Clin Nutr 1992; 56: 334-42.
25. Goldberg GR, Prentice AM, Coward WA, Davies HL, Murgatroyd PR, Sawyer MB, Ashford J, Black AE. Longitudinal assessment of the components of energy balance in well-nourished lactating women. Am J Clin Nutr 1991; 54: 788-98.
26. Prentice AM, Spaaij CJ, Goldberg GR, Poppitt SD, van Raaij JM, Totton M, Swann D, Black AE. Energy requirements of pregnant and lactating women. Eur J Clin Nutr 1996; 50(Suppl 1): S82-110; discussion S10-1.
27. Butte NF, Wong WW, Hopkinson JM. Energy requirements of lactating women derived from doubly labeled water and milk energy output. J Nutr 2001; 131: 53-8.
28. Suzuki K, Sasaki S, Shinzawa K, Totani M. Milk intake by breast-fed infants before weaning. Eiyogaku Zasshi (Jpn J Nutr Diet) 2004; 62:369-72. (in Japanese with English abstract).

29. Matsuzawa Y, Inoue S, Ikeda Y. New cutoffs of obesity and diagnostic criteria for 'obesity disease'. Himan Kenkyu (J Jpn Soc Study Obes) 2000; 6:18-28 (in Japanese).
30. Tsugane S, Sasaki S, Tsubono Y. Under- and overweight impact on mortality among middle-aged Japanese men and women: a 10-y follow-up of JPHC study cohort I. Int J Obes Relat Metab Disord 2002; 26: 529-37.
31. Livingstone MB, Black AE. Markers of the validity of reported energy intake. J Nutr 2003; 133: 895S-920S.
32. Okubo H, Sasaki S. Underreporting of energy intake among Japanese women aged 18-20 years and its association with reported nutrient and food group intakes. Public Health Nutr 2004; 7: 911-7.
33. Hill RJ, Davies PS. The validity of self-reported energy intake as determined using the doubly labelled water technique. Br J Nutr 2001 85: 415-30.
34. Trabulsi J, Schoeller DA. Evaluation of dietary assessment instruments against doubly labeled water, a biomarker of habitual energy intake. Am J Physiol Endocrinol Metab 2001; 281: E891-9.
35. Tokudome Y, Imaeda N, Nagaya T, Ikeda M, Fujiwara N, Sato J, Kuriki K, Kikuchi S, Maki S, Tokudome S. Daily, weekly, seasonal, within- and between-individual variation in nutrient intake according to four season consecutive 7 day weighed diet records in Japanese female dietitians. J Epidemiol 2002; 12: 85-92.
36. Ogawa K, Tsubono Y, Nishino Y, Watanabe Y, Ohkubo T, Watanabe T, Nakatsuka H, Takahashi N, Kawamura M, Tsuji I, Hisamichi S. Inter- and intra-individual variation of food and nutrient consumption in a rural Japanese population. Eur J Clin Nutr 1999; 53: 781-5.

37. Egami I, Wakai K, Kaitoh K, Kawamura T, Tamakoshi A, Lin Y, Nakayama T, Sugimoto K, Ohno Y. Intra- and inter-individual variations in diets of the middle-aged and the elderly. Nippon Koshu Eisei Zasshi 1999; 46:828-37 (in Japanese with English abstract).
38. Muto K, Yamada S, Hosoi Y, Sasaki S. Day-to-day variation and assessment period of dietary survey for female students. The 46th Annual Conference of Japan Society of Nutrition 1999, p260 (abstract, in Japanese).
39. Buzzard M. 24-hour dietary recall and food record methods. In: Willett W ed, Nutritional epidemiology. 2nd edition. Oxford University Press, New York, Oxford, 1998, p50-73.
40. Wessel TR, Arant CB, Olson MB, Johnson BD, Reis SE, Sharaf BL, Shaw LJ, Handberg E, Sopko G, Kelsey SF, Pepine CJ, Merz NB. Relationship of physical fitness vs body mass index with coronary artery disease and cardiovascular events in women. JAMA 2004; 292: 1179-87.
41. Weinstein AR, Sesso HD, Lee IM, Cook NR, Manson JE, Buring JE, Gaziano JM. Relationship of physical activity vs body mass index with type 2 diabetes in women. JAMA 2004; 292: 1188-94.
42. Giovannucci E, Ascherio A, Rimm EB, Colditz GA, Stampfer MJ, Willett WC. Physical activity, obesity, and risk for colon cancer and adenoma in men. Ann Intern Med 1995; 122: 327-34.
43. Martinez ME, Giovannucci E, Spiegelman D, Hunter DJ, Willett WC, Colditz GA. Leisure-time physical activity, body size, and colon cancer in women. Nurses' Health Study Research Group. J Natl Cancer Inst 1997; 89: 948-55.
44. Miller WC, Koceja DM, Hamilton EJ. A meta-analysis of the past 25 years of weight loss research using diet, exercise of diet plus exercise intervention. Int J Obes 1997; 21: 941-7.
45. Numajiri K, ed. Energy metabolic rate of physical activity, Vol 2. Rodo Kagaku Kenkyusho Press, Tokyo, 1987 (in Japanese).

DIETARY REFERENCE INTAKES FOR JAPANESE, 2005

[OUTLINE]

1. Purpose

Dietary Reference Intakes for Japanese, 2005 (DRIs-J) was prepared for health individuals and groups and designed to present reference of intake values of energy and each nutrient to maintain and promote health and to prevent lifestyle-related diseases and illness due to excessive consumption of energy and nutrients.

2. Effective Duration

It is intended to be effective for 5 years: from April 2005 to March 2010.

3. Principles

1) Basic concepts

DRIs-J were decided to be established based on scientific basis, utilizing domestic and foreign academic theses and data that are available.

DRIs-J were based on the following three basic concepts:

i) "True" optimal intake varies among individuals and within an individual. Therefore, due to the difficulty of measuring the 'true' optimal intake for maintaining and promoting health and preventing deficiencies, a probability approach is necessary along nutritional approach in computation or application of optimal intake values.

ii) Emphasize on prevention of lifestyle-related diseases. To meet this, it is necessary to indicate a "range of intake" and adopt an idea that keeping one's intake in the rage could reduce the risk of lifestyle-related diseases.

iii) Clearly indicate that excessive intake beyond the range increases the risk of developing health problems due to overconsumption.

2) Indices

DRIs-J have one index for energy and 5 for nutrients.

[Energy]

Estimated Energy Requirement (EER)

EER is defined as the intake value at which the risks of both deficiency and excess intake are minimized.

[Nutrients]

To maintain and promote health and prevent deficiencies, two indices, "Estimated Average Requirement (EAR)" and "Recommended Dietary Allowance (RDA)" were specified. For those nutrients that were unable to determine these 2 indices, "Adequate Intake (AI)" was provided. For those nutrients for which DRIs-J were established mainly to prevent lifestyle-related diseases, a "Tentative Dietary Goal for Preventing Lifestyle-related Diseases (DG)" was specified. In addition, "Tolerable Upper Intake Level (UL)" was specified to prevent health disorders due to excessive intake of nutrients.

Estimated Average Requirement (EAR)

The mean requirement value for Japanese (stratified by gender and age) was estimated based on requirement values determined from specific population group studies. It is estimated daily intake level which would meet the requirement of 50 percent population of a particular gender and age group.

Recommended Dietary Allowance (RDA)

RDA is defined as the estimated daily intake level that is considered to meet the requirement of most (97 to 98%) of a particular gender and age group. As a rule, this is "twice the EAR + standard deviation (2SD)".

Adequate Intake (AI)

When the sufficient scientific basis to compute EAR and RDA cannot be obtained, this is a quantity that is sufficient to maintain a satisfactory nutritional status of a particular gender and age group.

Tentative Dietary Goal for Preventing Lifestyle-related Diseases (DG)

DG is defined as the intake level (or range) that Japanese should currently aim primarily to prevent lifestyle-related diseases.

Tolerable Upper Intake Level (UL)

The maximum intake level which almost all the people of a particular gender and age group may consume without incurring a disease due to excessive intake.

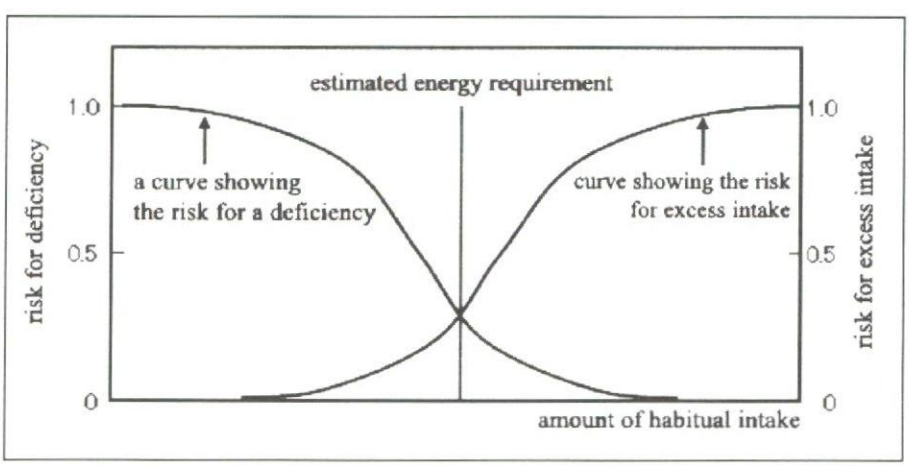

Fig. 1 A model to aid in the comprehension of Estimated Energy Requirement (EER)
With an increase in habitual intake, the risk for insufficiency is reduced and that for excessive intake increases. The intake at which both of these risks are the lowest is EER.

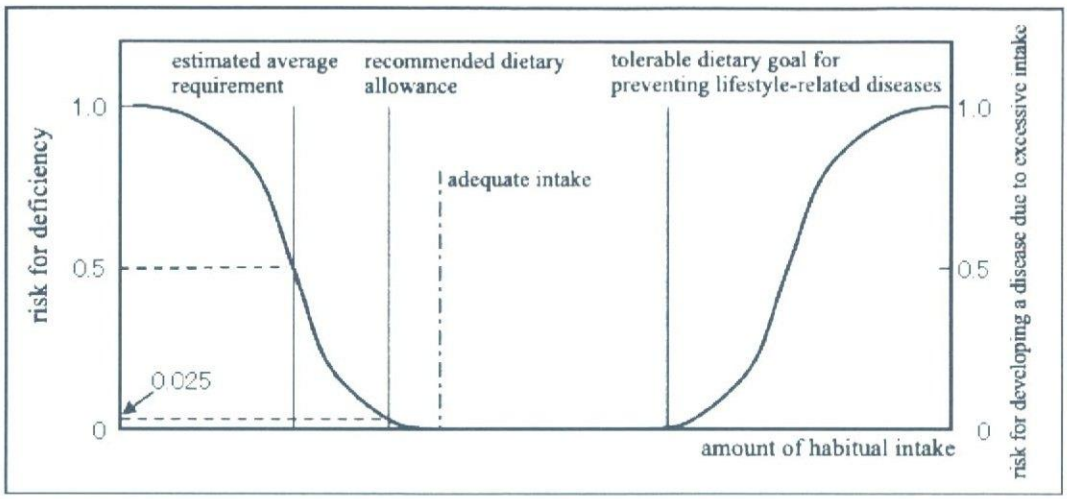

Fig. 2 A model to aid in understanding the indices for DRIs-J (Estimated Average Requirement, Recommended Daily Allowance, Adequate Intake and Tolerable Upper Intake Level)

The figure shows the risk of deficiency exist for 0.5 (50%) for EAR and 0.02 to 0.03 (mean, 0.025, 2 to 3% or 2.5%) for RDA. Note that there is a potential risk of developing a disease from adverse effects due to excessive intake when the amount exceeds UL. It can also be seen that when the intake is between RDA and UL, the risk of a deficiency or developing a disease due to excessive intake is near zero (0).

An AI is not in a fixed relationship with EAR or RDA. If it is possible to compute the last two simultaneously, the estimated intake is believed to be greater than RDA (on the right side in the figure). The estimated intake was added for reference.

Because the DG is determined from the EDA or AI and the median of the current intake, it cannot be displayed here.

3) Age groups

Age 0 to 5 months, 6 to 11 months, 1 to 2 years, 3 to 5 years, 6 to 7 years, 8 to 9 years, 10 to 11 years, 12 to 14 years, 15 to 17 years, 18 to 29 years, 30 to 49 years, 50 to 69 years, 70 years and older, pregnant women, and lactating mothers.

Difference between the 6th revised Recommended Dietary Allowance and Dietary Reference Intake for Japanese, 1999: the age groups were reclassified to coordinate with the school lunch programs from 6 to 8 years and 9 to 11 years to 6 to 7 years, 8 to 9 years, and 10 to 11 years.

4) Nutrients

Energy, proteins, lipids (total fats, saturated fatty acids, n-6 fatty acids, n-3 fatty acids and cholesterol), carbohydrates and dietary fibers

Water-soluble vitamins: vitamin B_1, vitamin B_2, niacin, vitamin B_6, folic acid, vitamin B_{12}, biotin, pantothenic acid and vitamin C

Oil-soluble vitamins: vitamin A, vitamin E, vitamin D and vitamin K

Minerals: magnesium, calcium, phosphorus and iron

Trace elements: chromium, molybdenum, manganese, copper, zinc, selenium and iodine

Electrolytes: sodium and potassium

4. Basic Approach for Application

The use of DRIs-J is roughly divided into two: "dietary assessment" (Table 1); and "dietary planning: including nutritional consultation and school lunch programs" (Table 2).

BMI (body mass index) should be used as an indicator for the evaluation and determination of energy intake, and body weight for monitoring. Because a restriction on energy intake may cause a nutritional deficiency, it is desirable to include increase of energy consumption, physical activities, in planning.

Table 1 Concept of Dietary Reference Intakes for Japanese uses for dietary assessment (excluding energy requirements)[1-3]

	For an Individual	For a Group
EAR	If the habitual intake is less than EAR, the probability for deficiency is more than 50%: the probability increases as the habitual intake is reduced below EAR.	The percentage of those with a habitual intake less than EAR is generally equal to that suffering from insufficient intake.
RDA	When the habitual intake exceeds the EAR and approaches RDA, the probability for deficiency is reduced. When it reaches RDA, the probability becomes low (2.5%).	Not used.
AI	If the habitual intake exceeds AI, the probability for deficiency becomes very low.	When the median intake of the group is more than AI, the percentage of those suffering from a deficiency is small. If the median intake is less than AI, the percentage cannot be determined.
DG[4]	If the habitual intake has reached DG or within the range indicated, the risk for lifestyle-related disease[6] is very unlikely.	The percentage of those not achieving DG or those with an intake outside the range corresponds to those having a risk of developing a lifestyle-related disease.[6]
UL[5]	As the habitual intake exceeds the upper limit and continues to increase, the risk for developing a disease[6] related to excessive intake increases.	The percentage of those with habitual intake exceeding UL corresponds to the percentage of those having a risk for developing a disease[6] due to excessive intake.

[1] The assessment based on intake is meant to be used for screening. To know the true nutritional state, it is necessary to obtain clinical information, results of biochemical determinations and physiological data.

[2] It has been reported in American and European studies that the energy intake (although the extent may vary in the method of survey or study subjects) is often underreported by 5 to 15%.[4)] Among Japanese, it is also known that the mean for a group be underreported by 8% than actual intake.[5)] The tendency is particularly notable when the subjects are obese;[20)] but the quantitative relationship has not been elucidated. For the nutrients, underreporting, such as seen for energy, is suspected but details are not known.

[3] It is desirable that the habitual intake be estimated as accurately as possible (Refer to 4-3).

[4] The nutrient intake and related risk for developing a lifestyle-related disease are ongoing events and should be regarded carefully. The "high" and "low" risks are relative concepts.

[5] There are some nutrients for which no UL is indicated because there is no sufficient scientific basis to determine the actual value. It by no means assures safety from excessive intake.

[6] The "risk" here means the probability of developing a lifestyle-related disease or disorder due to excessive consumption of the nutrient in question.

Table 2 Concept of Dietary Reference Intakes for Japanese uses for dietary planning[1] (excluding energy requirements)

	For an Individual	For a Group
EAR	Not used.	The percentage of those with a habitual intake below EAR should be brought down to less than 2.5%
RDA	Those whose habitual intake is less than EAR should try to achieve the RDA.	Not used.
AI	One should try to bring his/her habitual intake close to AI.	The goal is to bring the mean of the group to AI.
DG[2]	One should strive to bring his/her habitual intake close to DG or within the range indicated.	Reduced the percentage of those whose habitual intake is below DG or outside the range.
UL[3]	One should bring the habitual intake below UL.	The percentage of those whose habitual intake exceeds UL should be brought to zero (0).

[1] It is important to design and implement a plan tailored to the subject, based on a dietary assessment (using not only the dietary intake but also biochemical and physiological data). The numerical indices are not to be followed faithfully. The dietary assessment, which constitutes the basis of planning, is used for screening purposes. To understand one's true nutritional status, clinical information, results of biochemical tests and physiological data are needed.

[2] The nutrient intake and related risk for developing a lifestyle-related disease are ongoing events and should be regarded carefully. The "high" and "low" risks are relative concepts. The "risk" here means the probability of developing a lifestyle-related disease or disorder due to excessive consumption of the nutrient in question.

[3] There are certain nutrients for which no UL are indicated because there is no sufficient scientific basis to determine the actual value. It by no means guarantees safety from excessive intake.

5. Notes for Applying DRIs-J

1) The subjects to whom the DRIs-J are applied are, as a rule, healthy individuals or groups that is composed of healthy individuals. The healthy individuals here may include those who have some mild conditions such as hypertension, hyperlipidemia and hyperglycemia but enjoy a normal life and no specific dietary guidance is being given or diet therapy or diet restriction is imposed.

2) Although the unit used in DRIs-J is "per day", it is the value which converted the habitual intake into daily intake level.

3) When applying DRIs-J to nutritional consultation, lunch programs and others, it is desirable to consider followings: energy, lipids, proteins, vitamin A, vitamin B, vitamin C, calcium, iron, sodium and dietary fibers.

4) Fundamentally, RDA, AI and DG should be fulfilled through a balanced diet that is composed of normal food in daily life.

5) Regarding UL, health disorder is not brought about just because it exceeded UL temporarily through meals by normal foods.

6) For aged, weakening of their masticatory function, deterioration of digestive and absorptive fraction, and a reduction in food intake due to less physical activities exist. One characteristic of this age group is that their individual intake varies widely; another is that many aged individuals are affected by an illness. Sufficient attention should be directed not only to the age but also to individual characteristics.

6. Dietary Reference Intakes (Tables)

See the attached tables.

Nutrients for which Dietary Reference Intakes for Japanese (DRIs-J) have been established and its indices (ages 1 year and over)[1]

		EAR	RDA	AI	DG	UL
Proteins		○	○	-	○	-
Lipids	Total fats	-	-	-	○	-
	Saturated fatty acids	-	-	-	○	-
	n-6 fatty acids	-	-	○	○	-
	n-3 fatty acids	-	-	○	○	-
	Cholesterol	-	-	-	○	-
Carbohydrates		-	-	-	○	-
Dietary fibers		-	-	○	○	-
Water-soluble vitamins	Vitamin B_1	○	○	-	-	-
	Vitamin B_2	○	○	-	-	-
	Niacin	○	○	-	-	○
	Vitamin B_6	○	○	-	-	○
	Folic acid	○	○	-	-	○[2]
	Vitamin B_{12}	○	○	-	-	-
	Biotin	-	-	○	-	-
	Pantothenic acid	-	-	○	-	-
	Vitamin C	○	○	-	-	-
Oil-soluble vitamins	Vitamin A	○	○	-	-	○
	Vitamin E	-	-	○	-	○
	Vitamin D	-	-	○	-	○
	Vitamin K	-	-	○	-	-
Minerals	Magnesium	○	○	-	-	○[2]
	Calcium	-	-	○	○	○
	Phosphorus	-	-	○	-	○
Trace elements	Chromium	○	○	-	-	-
	Molybdenum	○	○	-	-	○
	Manganese	-	-	○	-	○
	Iron	○	○	-	-	○
	Copper	○	○	-	-	○
	Zinc	○	○	-	-	○
	Selenium	○	○	-	-	○
	Iodine	○	○	-	-	○
Electrolytes	Sodium	○	-	-	○	-
	Potassium	-	-	○	○	-

EAR, estimated average requirement, RDA, recommended dietary allowance; AI, adequate intake; DG, tentative dietary goal for preventing life-style related diseases; UL, tolerable upper intake level

[1] Including when the DRIs-J were defined for only certain age groups.

[2] Defined as intake from other than normal food.

Reference physiques (reference height and reference weights)

Sex	Males		Females[1]	
Age	Reference height (cm)	Reference body weight (kg)	Reference height (cm)	Reference body weight (kg)
0-5 months	62.2	6.6	61.0	6.1
6-11	71.5	8.8	69.9	8.2
1-2 years	85.0	11.9	84.7	11.0
3-5	103.5	16.7	102.5	16.0
6-7	119.6	23.0	118.0	21.6
8-9	130.7	28.0	130.0	27.2
10-11	141.2	35.5	144.0	35.7
12-14	160.0	50.0	154.8	45.6
15-17	170.0	58.3	157.2	50.0
18-29	171.0	63.5	157.7	50.0
30-49	170.0	68.0	156.8	52.7
50-69	164.7	64.0	152.0	53.2
≥70	160.0	57.2	146.7	49.7

[1] Excluding pregnant women.

Dietary Reference Intakes for Japanese for energy: Estimated Energy Requirements (EERs) (kcal/day)

Sex	Males			Females		
PAL	I	II	III	I	II	III
0-5 months infants	-		-	-		-
Breastfed		600			550	
Formula-fed	-	650	-	-	600	-
6-11 months	-	700	-	-	650	-
1-2 years	-	1,050	-	-	950	-
3-5	-	1,400	-	-	1,250	-
6-7	-	1,650	-	-	1,450	-
8-9	-	1,950	2,200	-	1,800	2,000
10-11	-	2,300	2,550	-	2,150	2,400
12-14	2,350	2,650	2,950	2,050	2,300	2,600
15-17	2,350	2,750	3,150	1,900	2,200	2,550
18-29	2,300	2,650	3,050	1,750	2,050	2,350
30-49	2,250	2,650	3,050	1,700	2,000	2,300
50-69	2,050	2,400	2,750	1,650	1,950	2,200
≥70[1]	1,600	1,850	2,100	1,350	1,550	1,750
Pregnant women: Early-stage (amount to be added)				+50	+50	+50
Mid-stage (amount to be added)				+250	+250	+250
Late-stage (amount to be added)				+500	+500	+500
Lactating women (amount to be added)				+450	+450	+450

[1] For adults, the following formula was used for computation: Estimated Energy Requirement=Basal Metabolic Rate (kcal/day) x PAL. For those between 18-69 years, the PALs were designated as I=1.50, II=1.75 or III=2.00. For those 70 years or older, the following were used instead: I=1.30, II=1.50, III=1.70. The seeming discrepancy in Estimated Energy Requirements for the 50-69 and over 70 years group is mostly explained by this.

PAL: physical activity level

(Reference 1)

The description and duration of Physical Activity Levels (ages 15 through 69 years)[1]

PAL[2]		Low (I)	Moderate (II)	High (III)
		1.50 (1.40-1.60)	1.75 (1.60-1.90)	2.00 (1.90-2.20)
Details of daily activities		Subjects remain sedentary most of the time and engage mainly in less energetic activities.	Subjects remain sedentary most of the time but the activities include any of the following: move within the work site, work performed while standing, interacting with customers, commuting, shopping, housekeeping, and light sport activities.	Subjects engage in work that require moving or remain standing, or they customarily engage in active athletic activities.
Classification of each activity (hours/day)[2]	Sleeping (1.0)	8	7-8	7
	Sedentary or being still while standing (1.5 : 1.1-1.9)	13-14	11-12	10
	Low-intensity activities such as slow walking and housekeeping (2.5 : 2.0-2.9)	1-2	3	3-4
	Mid-intensity activities such as exercise or labor that can be sustained for an extended period (includes normal speed walking) (4.5 : 3.0-5.9)	1	2	3
	Highly-intensity activities, such as exercise or labor that requires frequent rest (7.0 : >6.0)	0	0	0-1

PAL, physical activity level

[1] Representative values. The range is shown in parentheses.

[2] Data in parentheses is an activity factor (Af: intensity per unit time of each physical activity, expressed in a multiple of the basal metabolism). (Representative value: lower threshold-upper threshold)

(Reference 2)

Examples of physical activity classifications

Classification of physical activities (within the range of Af[1])	Examples of physical activities
Sleeping (1.0)	Sleeping
Sedentary activities while sitting or standing (1.1-1.9)	Lying down, sit in a relaxed manner (reading books, writing, and watching television), carrying on a conversation (while standing), cooking, dining, toileting activities (dressing, face-washing, and using the toilet facilities), sewing (hand-sewing and operating a sewing machine), engaging in a hobby or entertainment (flower arrangement, tea ceremony, mah-jong, playing musical instrument), driving, desk work (book-keeping and operating a word processor and OA equipment).
Low-intensity activities, such as slow walking or household chores (2.0-2.9)	Standing in a train or bus. Walk slowly for shopping or just enjoy a walk (45 m/min.). Doing laundry (using a washing machine). House cleaning (using a vacuum cleaner).
Mid-intensity exercise or labor that can be sustained for an extended period (including normal walking) (3.0-5.9)	Tend a home vegetable garden. Play gate-ball. Normal walking (71 m/min.). Bathing. Cycling (at a normal speed). Walking with a child on one's back. Playing catch-ball. Playing golf. Dancing (light). Hiking (on level ground). Climbing up and down stairs. Lifting or taking down bedding. Normal walking (95 m/min). Gymnastics (following radio or television instructions).
High-intensity activities such as exercise or labor that require frequent rest (>6.0)	Muscle training, aerobic dancing (active), rowing, jogging (120 m/min), tennis, badminton, volleyball, skiing, basketball, soccer, skating, jogging (160 m/min), swimming, running (200 m/min).

[1] Activity factor (Af) is computed from the relative metabolic rate cited by Numajiri[45] as follows:

Af=energy metabolic rate÷1.2

Each physical activity was based on the mean during the time of activity. The data during rest and interruption were excluded.