

Annual report of the Fiscal Year 2010

Unit for International Collaboration on Nutrition and Physical Activity

1. Center for International Collaboration and Partnership (Chief: Nobuo Nishi)

This center works on planning and coordination of various external programs at the NIHN; establishment of international research networks in particular with Asian countries, promotion of collaborative research with overseas research institutes, fellowship/training programs for young foreign researchers, collaborative research with domestic universities and private companies and organization of international symposiums.

Section of International Nutrition Research and Development (Head: Miki Miyoshi)

<Mission>

1. Promotion of collaborative research with research institutes in the field of health and nutrition in Asian countries
2. Promotion of cooperation and collaboration with international organizations (e.g. WHO)
3. Fellowship/training program for human resource development (e.g. “NIHN Fellowship Program for Asian Researchers”, WHO fellowship program, JICA training course)
4. Organization of international symposium (e.g. “Asian Network Symposium on Nutrition” held biannually)
5. The information on the research activities at the NIHN as well as Japanese health and nutrition policies is available in English, on the NIHN website.

<Major activities in 2010>

- As a GEMS/Food Collaborating Institution, we provide dietary intake data from the National Health and Nutrition Survey to the WHO.
- NIHN Fellowship Program for Asian Researchers

In the fiscal year 2010, two young researchers from China and Malaysia were accepted as below;

Name	Nationality	Duration	Research Theme
Jing Jiang	China	2010.5.10-8.9	Prevalence of Diabetes and Pre-diabetes in Changchun, China and association of KCNQ1 polymorphism and the QT interval duration
Leng Huat Foo	Malaysia	2010.5.10-8.9	Association between serum ferritin and insulin resistance among Japanese population

- IUNS Workshop on Capacity and Leadership Development in Nutritional Sciences was jointly organized with “IUNS Committee of the Science Council of Japan”, “The Japanese Society of Nutrition and Dietetics” and “The Japanese Society of Nutrition and Food Science” at the National Institute of Health and Nutrition (NIHN) on September 7-9 2010
- The 4th Asian Network Symposium on Nutrition entitled “Nutrition Education Program for National Health Promotion in Asian Countries: a Focus on School-based Program” was held at the NIHN on September 8, 2010. Nutrition researchers/professionals were invited from Korea, Taiwan, Vietnam, Singapore, Japan and WPRO/WHO for the academic debate on present situation and future direction of each country and the Asian region.
- International collaborative research was undertaken with research institutes in the field of health and nutrition in Papua New Guinea and Vietnam.
- English version of the NIHN quarterly news letter “Health and Nutrition News” was prepared and published on the NIHN website.

2. Department of Nutritional Epidemiology (Chief: Akemi Morita)

In order to explore effects of diet and nutrition on health, our department undertakes nutrition research using epidemiological methodology. Our findings are utilized to evaluate the current status on nutritional intake and diet-related diseases of the Japanese people, and also as scientific evidence to determine “how much intake of each nutrient is required to achieve healthy living”.

Section of the National Health and Nutrition Survey (Head: Nobuo Nishi)

<Mission>

Not only tabulation and analyses of the data of the annual National Health and Nutrition Survey (NHNS) conducted every November at 300 units throughout the country by the Ministry of Health, Labour and Welfare, this section works on technical and scientific research on survey methodology and data management. Additionally, technical support for implementation and evaluation of research on health and nutrition originally undertaken by the national and local governments is actively provided. The findings from these surveys are widely utilized for development of ideal health promotion policies at national/local level.

<Major activities in 2010>

- Results of data analyses for the National Health and Nutrition Survey 2009 was submitted to the Ministry of Health, Labour and Welfare on July 29, 2010. Based on which, the summary report for the National Health and Nutrition Survey 2009 was published in December 2010.
- Data collection for the National Health and Nutrition Survey 2010 was undertaken under collaboration with the Ministry of Health, Labour and Welfare.
- A software called “*Shokuji-Shirabe*”, which was developed to support data entry of the National Health and Nutrition Survey, as well as a food model booklet to measure portion size at the dietary intake survey were revised and distributed to the local government offices.
- Technical training seminars related to the National Health and Nutrition Survey were held in six sessions in Tokyo and Osaka, where there were 244 participants from the local government offices.
- Relevant information for implementation of the National Health and Nutrition Survey 2010 were provided through our website. Besides, technical support and additional information were provided upon request.

Section of the Dietary Reference Intakes (Head: Nobuyo Tsuboyama-Kasaoka)

<Mission>

In order to obtain extensive scientific evidence for the “Dietary Reference Intakes (DRIs) for Japanese” which is revised every 5 years, by the Ministry of Health, Labour and Welfare and to promote effective application, we work on the following three activities;

1. Nutrition research to generate evidence for the DRIs for Japanese and practical research on its application.
2. Collection of basic data necessary to establish the DRIs for Japanese, and database management for next revision.
3. Dissemination of the DRIs for Japanese domestically and internationally, and promotion of its application.

<Major activities in 2010>

- Following establishment of the “Dietary Reference Intakes for Japanese 2010” in April 2010, relevant update information was provided to the Ministry of Health, Labour and Welfare and other concerned organizations.
- Lecturers were sent to the symposiums and seminars on the “Dietary Reference Intakes for

Japanese 2010” organized by the local government offices and the Japan Dietetic Association. As a part of which, our institute hosted a seminar with the theme of “Practical application of the Dietary Reference Intakes for Japanese and future perspective”.

- Evidence of database of literature review for the next revision of the Dietary Reference Intakes for Japanese is being developed.
- Nutritional epidemiological researches on nutrient intake among the elderly and an intervention study titled “Saku Control Obesity Program (SCOP)” are currently undertaken.

3. Department of Health Promotion and Exercise (Chief: Motohiko Miyachi)

Increasing numbers of people with lifestyle-related diseases and those with metabolic syndrome (or prodromal one) has become a significant social problem as these diseases would affect one’s QOL as well as the national medical expenditure. Our department undertakes research to explore scientific evidence for prevention of metabolic syndrome and lifestyle-related diseases by increasing physical activity and exercise.

Section of Exercise Guideline (Head: Motohiko Miyachi)

<Mission>

In order to provide scientific evidence that is required in formulation and revision of the “Exercise and Physical Activity Reference for Health Promotion (EPAR)” and “Exercise Guide”, this section undertakes systematic review of academic papers published worldwide (literature study), and a large-scale intervention study targeting middle-aged individuals. The latter study aims to investigate how much more physical activity and exercise they should perform, and how much physical fitness they should improve, so as to prevent lifestyle-related diseases.

<Major activities in 2010>

- A large-scale intervention study to examine the validity of amount of physical activity, exercise, and physical fitness shown in the EPAR 2006 is currently undertaken.
- Systematic review was undertaken to examine the type of exercise for the elderly to prevent nursing care and weakness, and the appropriate outcome indicators were also discussed.
- Database of literature review for the professionals to provide evidence-based guidance on physical activity and exercise is being updated.
- An intervention study titled “Nutrition and Exercise Intervention Study (NEXIS)” is currently undertaken in Tokyo Metropolitan area.
- As a collaborative study with a computer game production company, a randomized control trial was undertaken to examine the effect of computer game to reduce body weight.
- A large-scale cohort study has been undertaken to investigate the risk factors of obesity and diabetes using the regular health examination, where amount of physical activity were measured, in Japanese rural area.

Section of Energy Metabolism (Head: Shigeho Tanaka)

<Mission>

This section undertakes scientific evaluation of energy expenditure of Japanese and collects basic data that can be scientific evidence for estimated energy requirement (EER) of the “Dietary Reference Intakes for Japanese” which is revised every 5 years by the Ministry of Health, Labour and Welfare“. Additionally, this section evaluates energy expenditure during various types of physical activity that is required in formulation and revision of “EPAR” and “Exercise Guide”, and develops accurate assessment methods using convenient devices, and investigates possible factors affecting physical activity.

<Major activities in 2010>

- Physical activity level (PAL) was obtained from daily energy expenditure measured by the doubly labeled water (DLW) method and was compared by occupation and exercise habit in Japanese adults.
- As a part of research to assess amount of physical activity among children, from elementary school children to high school students, energy expenditure was measured for elementary school children by analyzing samples obtained by the DLW method.
- Intensity of various physical activities was measured for elementary school children. For which, validity of estimation by accelerometer was examined and then, an equations different from those of adults were developed for children.
- Accuracy of accelerometer to measure energy expenditure of the independent elderly for walking with various speed were examined.
- Daily physical activity of young children was investigated, and it was found that daily step counts are correlated with the most of moderate/high intensity activity time.
- Association between physical status/body composition and physical activity level (PAL) obtained by the DLW method was examined for Japanese adult women.
- It was confirmed that the equation of basal metabolic rate developed at our institute (Ganpule et al., EJCN, 2007) could be applied to obese individuals too without systematic error.