“+10 min of Physical Activity per Day”: Japan Is Looking for Efficient but Feasible Recommendations for Its Population

Motohiko MIYACHI1, Julien TRIPETE1,2, Ryoko KAWAKAMI1 and Haruka MURAKAMI1

1Department of Health Promotion and Exercise, National Institute of Health and Nutrition, Tokyo 162–8636, Japan, 2Leading Graduate School Promotion Center and Department of Life Sciences, Ochanomizu University, Tokyo, Japan

Summary Prospective cohort studies have shown that people with a larger amount of physical activity (PA) and exercise have lower risks of non-communicable diseases (NCDs). In Japan, the Ministry of Health, Labour and Welfare published in March 2013 the “Active-Guide,” i.e. the Japanese official PA guidelines for health promotion. In this document, the most important message is “+10,” standing for “add 10 min of MVPA per day.” The establishment of the “+10” recommendation is supported by strong scientific evidence. Firstly, a meta-analysis including 26 cohort studies indicated that an increment of 10 min of moderate-to-vigorous PA per day can result in a 3.2% reduction of the average relative risk of NCDs, dementia, joint-musculoskeletal impairment, and mortality. Secondly, the National Health and Nutrition Survey (Japan, 2010) reported that 60.8% of the Japanese population is inclined to add the equivalent of 10 min of PA in their daily life. In line with these results, the “+10” recommendation is viewed as feasible and efficient for the Japanese population. To our knowledge, this implementation of an additional low-dose PA recommendation in a governmental health promotion policy is a world first. We hope that the Japanese PA policy will inspire other national and international public health agencies.

Key Words physical activity, guideline, NCD, health promotion

Background Prospective cohort studies have shown that people with a larger amount of physical activity (PA) and exercise have lower risks of non-communicable diseases (NCDs), such as cardiovascular diseases (1, 2) and cancer (3–5). Considering the findings of such epidemiological studies, the World Health Organization (WHO) presented Global Recommendations on PA for Health in 2010 (6). In recent years, it has become apparent that PA and exercise not only prevent the onset of NCDs but they also suppress the decrease in social functioning, such as cognitive (7) and locomotor functions (8). The public should be made aware of the significant health benefits of PA and exercise can have on their lives, as well as being given realistic and rewarding guidelines on the type and amount of PA they require per day. If these guidelines are followed, this will extend the healthy life expectancy in Japan, which is becoming a super-aging society.

In Japan, the mean number of steps per day (a parameter for the amount of moderate-to-vigorous PA (MVPA)) has decreased significantly over the past decade, from ~8,000 in 1997 to ~7,000 steps a day in 2009 (9). There has also been a decline in the number of people, among the working population (aged 20–60), that exercise regularly (9). Healthy Japan 21 (2nd edition) is a new initiative launched in 2013 by the Ministry of Health, Labour and Welfare (MHLW) and will run until 2022. Its aim is to reduce the number of deaths of people in the prime of their lives, prolong healthy years of life and improve people’s quality of life. To do this, Healthy Japan 21 sets goals for both individuals; such as “increase the number of steps taken,” and goals for regions and municipalities; such as “increase the number of cities facilitating physical activities” and “support municipalities working to improve an active environment” (10).

The Japanese Official PA Guidelines for Health Promotion—ActiveGuide The WHO and the Centers for Disease Control and Prevention of United States (CDC) currently recommend completing the equivalent of 30 min of MVPA per day in bouts of at least 10 min (6, 11). Based on scientific evidence provided by the National Institute of Health and Nutrition (NIHN), MHLW established and published the Japanese official PA guidelines for health promotion “ActiveGuide” in March 2013 (12). The Japanese recommendations of PA differ from those of the US, due to differences in the basal level of PA (~5,000 steps a day for the US (13) compared to ~7,000 steps a day for Japan). Therefore, the Active-Guide advises Japanese adults (aged 18–64) to perform 60 min of MVPA per day without any consideration of the duration of the bouts.

It is difficult for the majority of the working population to engage in PA. Modern life and commitments to work and family indeed reduce the time that each individual can allocate to PA. However, recent studies have demonstrated that a very small amount of daily PA (such as 5 min of running or 15 min of walking) could positively influence cardiovascular mortality and
increase life expectancy by 3 y, making it possible for even the busiest persons to take care of their health by completing very short bouts of exercise (14, 15). The MHLW is the first entity to address concretely this issue by publishing guidelines (i.e., the ActiveGuide) that compromise both the feasibility and effectiveness of their PA recommendations. The main message disseminated to the Japanese population is “+10,” standing for “an additional 10 min of physical activity per day.”

**How the “+10” Recommendation Was Established**

The Japanese “+10” recommendation results from two complementary analyses:

First, a systematic review method was used to exhaustively collect and carefully evaluate previous studies regarding PA epidemiology in March 2011. In the next step, meta-analysis was used to determine references for the prevention of NCDs, reduced locomotor function, and dementia. A literature search was conducted for prospective observational studies (cohort studies) regarding the influences of PA on mortality and onset of NCDs, as well as reduced social functioning. Initially, all papers potentially fulfilling the selection criteria based on the title and contents of the abstract were collected. Multiple researchers read the selected studies and data were extracted from the literature that fulfilled the selection criteria. For inclusion criteria, studies needed to display a numeric total amount of PA (expressed in METs·h/wk or similar units) that was summed from at least two PA domains (e.g., occupational PA, domestic PA, commuting, leisure time PA, or exercise). These studies not only included structured bouts of running or walking, but also incorporate MVPa resulting from housework, commuting or shopping. A total of 26 studies was used to perform the meta-analysis (see Fig. 1 for references). From each study, the amount of PA and the corresponding relative risks (RR) of NCDs, dementia, joint-musculoskeletal impairments and mortality were extracted, and the increase in log RR per 1 MET·h/wk was estimated using a method previously described by Greenland and Longnecker (16). The RRs were combined in a random-effects meta-analysis (Comprehensive Meta-Analysis, BioStat, Englewood, NJ) (Fig. 1). An increment of 1 MET·h/wk, which is equivalent to 2–3 min of MVPa per day, results in a 0.8% reduction of the average RR.

Second, the (Japanese) National Health and Nutrition Survey of 2010 (NHNS-2010) indicates that 60.8% of the Japanese population is inclined to add 1,000 steps per day (i.e., an equivalent of 10 min of PA; data obtained from a random sample of 7,876 Japanese people) (17).

Thus, if 100% of the Japanese population were able to take the minimal recommendation of an additional 10 min of PA per day, this would lead to a 3.2% reduction of the incidence of NCDs and mortality. Indeed, according to the above-described meta-analysis, each increment of 2–3 min of MVPa per day induces a 0.8% reduction of mortality and RR for NCD, which would lead to a minimum 3.2% reduction for a 10 min increment. If only 60% of the Japanese population is able to follow the “+10” recommendation (as indicated by the NHNS-2010), the latter result should be weighted to a 2% reduction, which is still valuable from a public health perspective. Consistent with the above, some previous meta-analyses that used a similar method, on the dose-response relationship between PA and onset of NCDs or mortality risk indicated that RR was reduced by 2–8% by increasing the amount of MVPa by 10 min per day (2, 18).

**Conclusion and Perspectives**

To summarize, we demonstrated that an additional low dose of MVPa, which can be performed in the course of daily life and not necessarily through structured sessions of running or walking, could positively influence the RR for NCDs and mortality. Our study to establish the +10 recommendation is unique owing to several
Physical Activity Guideline for Japanese

Acknowledgments

The authors wish to thank Dr. Katie Ryan who assisted in the proofreading. This study was supported by a Grant-in-Aid for Scientific Research from the Ministry of Health, Labor, and Welfare of Japan (M. Miyachi).

REFERENCES