INTERNATIONAL JOURNAL OF MEDICAL INFORMATICS 83 (2014) 354–360

journal homepage: www.ijmijournal.com

One-year outcome of an interactive internet-based physical activity intervention among university students

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ARTICLE INFO

Article history:
Received 26 March 2013
Received in revised form
21 January 2014
Accepted 23 January 2014

Keywords:
Physical activity
Internet-based intervention
Interactive learning system
University course
Follow-up

ABSTRACT

Objective: The purpose of the present study was to evaluate whether improvement in physical activity of students following a 4-month intervention of a university course was maintained 8 months later.
Methods: Data on 77 students who responded to our scheduled inquiries completely through 1 year were analyzed. Participants of the intervention group ($n = 49$) using the internet-based physical activity program exhibited significant increases in energy expenditures measured by IPAQ compared with the no-treatment control group ($n = 28$) through 1 year.
Results: Participants who did not engage in regular university sports activities (baseline: 450 ± 351 kcal day^{-1}; post: 587 ± 320 kcal day^{-1}; 8-month follow-up: 580 ± 394 kcal day^{-1}) only exhibited significant increases in energy expenditures compared with those of the control group (baseline: 498 ± 341 kcal day^{-1}; post: 414 ± 242 kcal day^{-1}; 8-month follow-up: 347 ± 275 kcal day^{-1}).
Conclusion: These results suggested that an internet-based interactive intervention could become a helpful tool in promoting and maintaining physical activity in the long term.

1. Introduction

Regular physical activity is important to one's health status and well-being [1]. The Ministry of Health, Labour and Welfare Japan in 2006 advocates physical activity as one of the most important practices in addition to eating well, stress management, and resting. For optimal health benefits, adults aged 18–65 years need moderate intensity physical activity for a minimum of 30 min at least 5 days per week [2]. Recently, the recommendation from the American College of Sports Medicine (ACSM) and the American Heart Association (AHA) were updated, and the recommendation suggested that all healthy adults aged 18–65 years need moderate intensity physical activity for a minimum of 30 min at least 5 days per week or vigorous intensity physical activity for a minimum of 20 min on the other 2 days of the week [3].

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http://dx.doi.org/10.1016/j.ijmedinf.2014.01.012

We assessed physical activity levels based on these 2 recommendations by a cross-sectional self-reported questionnaire among Japanese university students [4] and found that most students (46.7% of males and 61.3% of females) did not meet both recommended criteria. Insufficient physical activity in students is envisaged to become more prevalent after graduating from the university [5]. It is important for university students to consider their own health behaviors, such as physical activity during the university life because most students experience great changes in lifestyle, such as starting to live alone and holding a part-time job, as compared with high school [6]. Furthermore, advancement rates to the university have increased such that approximately 60% of high school graduates attend college in Japan. This high rate represents an optimal time for more and more students to learn how to modify the behavior of physical activity. Thus, an effective physical activity program is warranted among university students.

To promote physical activity, the internet-based physical activity program (i-PAP) among university students was developed, which demonstrated its effectiveness [7]. i-PAP is an interactive learning system conducted through the internet. Participants used i-PAP through a computer or mobile phone during their first semester in a 4-month intervention. This significantly enhanced physical activity compared with the no-treatment control group. i-PAP is mainly based on social cognitive theory [8] and the health belief model [9] and has several functions including goal-setting, scheduling, self-monitoring, strength and stretch training, a Web-based quiz, and energy expenditure calculations for physical activity.

The purpose of the present study was to evaluate whether the improvement in physical activity following the

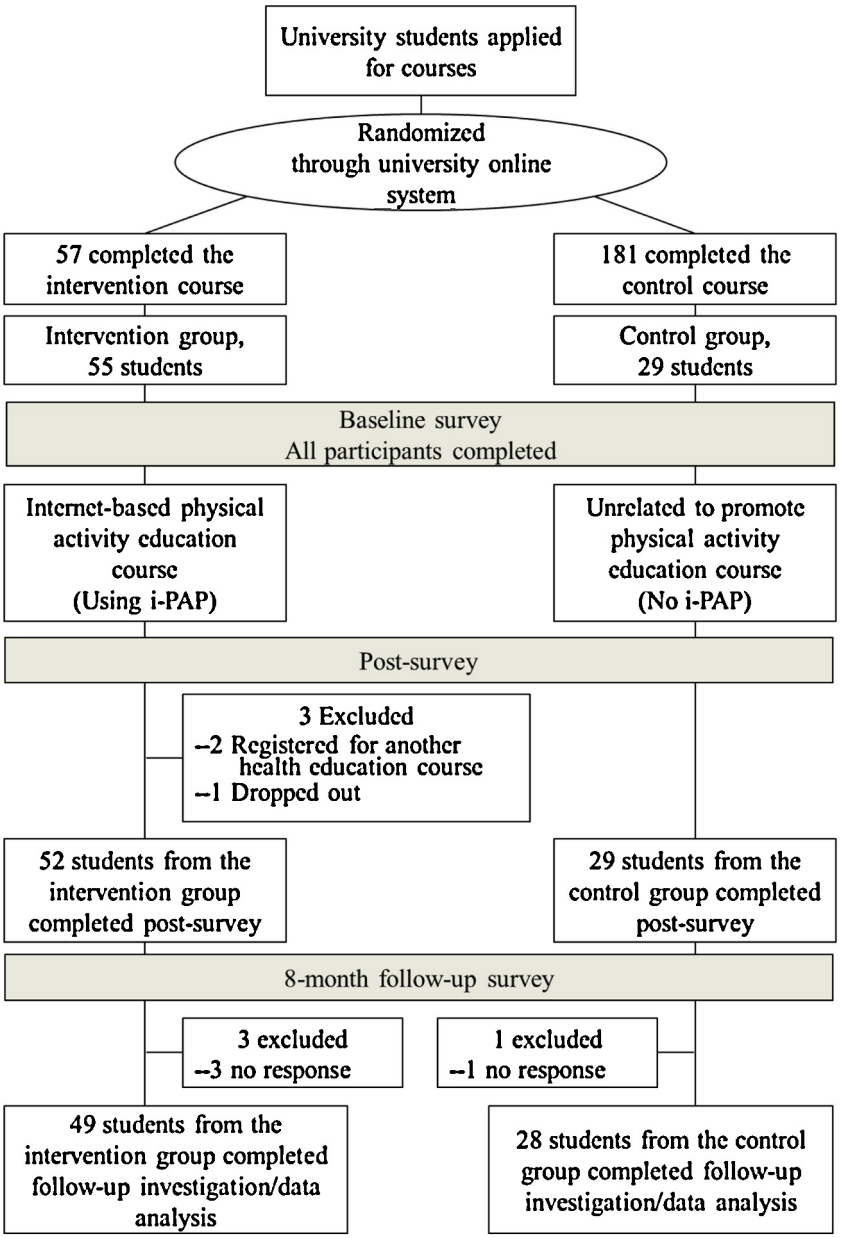

Fig. 1 – Flow diagram of participants' progress through the intervention and follow-up.