

Leisure time physical activity and health-related quality of life

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Available online 5 April 2005

Abstract

Background. There are few data on the relationship between health-related quality of life (HRQoL) and leisure time physical activity (LTPA) in the general population. We investigated the relationships of meeting public health recommendations (PHR) for moderate and vigorous physical activity with HRQoL in French adult subjects.

Methods. LTPA and HRQoL were assessed in 1998 in 2333 men and 3321 women from the SU.VI.MAX. cohort using the French versions of the Modifiable Activity Questionnaire (MAQ) and the SF-36 questionnaire, respectively. Relationship between LTPA and HRQoL was assessed using analysis of variance.

Results. Results from multivariate analysis showed that meeting physical activity recommended levels was associated with higher HRQoL scores (except in Bodily pain dimension for women); differences in mean HRQoL scores between subjects meeting or not PHR ranged from 2.4 (Mental health) to 4.5 (Vitality) and from 2.2 (Bodily pain) to 5.7 (Vitality) for women and men, respectively.

Conclusions. Subjects meeting PHR for physical activity had better HRQoL than those who did not. Our data suggest that 30' of moderate LTPA per day on a regular basis may be beneficial on HRQoL. Higher intensity LTPA is associated with greater HRQoL. This emphasizes the importance to promote at least moderate physical activity.

Published by Elsevier Inc.

Keywords: Physical activity; Health-related quality of life; Health promotion

Introduction

Physical activity promotion is now recognized as an important component in health prevention policies. The impact of physical activity on health status has been mostly investigated by objective outcomes. In addition to such health indicators, there is growing use of health-related quality of life (HRQoL) measures assessing subject's perception of their own health. Relationships between physical activity and HRQoL have been mostly investigated in intervention studies on the effects of an exercise training program on HRQoL [1–3], especially in population with

chronic conditions [2,3]. As yet, there are few studies in the general population. They are mostly cross-sectional, but suggest however that leisure time physical activity (LTPA) is favorably associated with HRQoL [4–7].

Current physical activity recommendations for the general population are that all adults should accumulate at least 30 min of moderate-intensity physical activity on most, and preferably all, days of the week [8]. Earlier guidelines recommended vigorous exercise for at least 20 min performed 3 or more days per week [9]. There are few studies that have assessed whether meeting these public health recommendations (PHR) for physical activity is associated with better HRQoL [4,5].

The aim of our study was to investigate, in a large sample of apparently healthy French adults, the relationships of

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meeting public health recommendations (PHR) for moderate and vigorous physical activity with HRQoL.

Methods

Data source

The data analyzed here were collected in the SU.VI.MAX (SUpplementation en Vitamines et Minéraux AntioXydants) study. SU.VI.MAX was a randomized, double-blind, placebo-controlled, primary-prevention trial designed to test the efficacy of daily supplementation with antioxidant vitamins (vitamin C, 120 mg; vitamin E, 30 mg, and beta-carotene, 6 mg) and minerals (selenium, 100 µg and zinc, 20 µg) at nutrition-level doses in reducing the incidence of cancers (all sites) and ischemic heart diseases in a French general adult population. A total of 13,017 eligible subjects (women aged 35–60 years and men aged 45–60 years) were enrolled in 1994–1995 with a planned follow-up for 8 years including yearly visits (alternately for laboratory assessment and clinical examination) and morbidity determination using the Minitel Telematic Network, a small terminal used in France as an adjunct to the telephone. The design of the SU.VI.MAX study has been previously reported [10,11].

Participants

For the present study, only those subjects with available data on HRQoL and LTPA in 1998, i.e., the year when detailed physical activity and HRQoL questionnaires were sent, were included. We excluded subjects who had been confined to bed more than 1 month during the period covered by the physical activity questionnaire ($n = 126$, 1.7%) and subjects with cancer or ischemic disease before HRQoL assessment ($n = 209$, 2.8%).

Analyses in the present report were thus based on data from 2333 men and 3321 women.

HRQoL assessment

HRQoL was a secondary end-point of the SU.VI.MAX trial, with assessment every 2 years starting in 1996 (questionnaires were sent out by post and returned at the next yearly visit).

HRQoL was assessed using the Medical Outcome Study 36-item short form health survey (SF-36) questionnaire [12]. The French-language version of the SF-36 is a validated instrument [13,14] containing 36 items divided into eight dimensions of health using multi-item scales: Physical functioning, role limitations due to physical functioning (Role-physical), Bodily pain, Mental health, role limitations due to emotional functioning (Role-emotional), Social functioning, Vitality, and General Health perceptions. The eight scales were scored from 0 to 100 (worst to best possible health status). For each dimension,

the score represents the mean of item values obtained by the subject when all the items were completed or when the number of missing values was no more than half of the total items. Otherwise, the score was recorded as missing. Cronbach's α coefficients were going from 0.74 (Role-emotional) to 0.87 (Bodily pain). As described elsewhere [15], Physical (PCS) and Mental (MCS) Component Summary assessing the impact of health on physical and social/emotional function, respectively, were calculated according to American norms allowing for international comparisons (mean 50 ± 10) [15]. PCS and MCS scores were missing when one score of the eight scales was missing.

SF-36 findings in 1998 were used for the present purposes.

Assessment of leisure-time physical activity (LTPA) and television watching

Physical activity and sedentary behavior were assessed using a French self-administered version of the Modifiable Activity Questionnaire (MAQ). The MAQ was initially designed to be interviewer-administered [16]. The self-administered French version of the MAQ was thus previously compared to administration by trained interviewers in a subsample of the SU.VI.MAX cohort. The agreement between the two modes of administration was high, with intra-class correlation coefficients of >0.80 [17]. The questionnaire assesses past 12-month physical activity during both leisure time and work, and uses time spent daily at watching TV as an indicator of sedentary behavior. For this study, only LTPA and television indicators were used. For LTPA, subjects were asked to report all activities performed at least 10 times for 10 min each session during leisure time over the past 12 months. Then, detailed information was collected about the frequency and duration of each activity reported. Hours per week for all activities performed during the past year period were summed to obtain an indicator expressed in hours per week of leisure activity. An energy expenditure indicator, expressed in MET-hours per week, was also calculated by multiplying the number of hours per week of each leisure activity by its estimated metabolic cost, expressed in Metabolic Equivalent Task (MET) [18].

Based on PHR for physical activity [8,9], four groups of LTPA were defined:

1. Inactivity: no LTPA reported
2. Irregular activity: some LTPA but below group 3
3. Moderate activity: ≥ 150 min/week of LTPA ≥ 3 METs but below group 4
4. Vigorous activity: ≥ 60 min/week of LTPA > 6 METs during ≥ 20 min/session.

Subjects in group 3 (corresponding to PHR for moderate physical activity) [8] or 4 (corresponding to PHR for

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