

## Development and evaluation of a tailored web-based intervention promoting physical activity and sports in sedentary adults

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### Introduction

Despite the numerous physiological and psychological benefits associated with regular physical activity and sports, most people in Belgium, as in other western countries, do not maintain an active lifestyle. Mass media campaigns aimed to increasing physical activity often fail, mainly because these interventions are seldom adjusted to the personal characteristics of the individual. Several studies showed that intervention strategies for behaviour change are most effective if they are tailored to the actual behaviour of the individual. However, in primary prevention and health education it is very hard to tailor interventions to individual's characteristics through face-to-face education, as large numbers of people are often involved. Therefore developing a computer tailored intervention using the internet makes the research cost-effective and applicable in health promotion at a population level.

The intervention consists of a Dutch computer physical activity tailored program (including a 'Physical Activity Advice' and an 'Action plan') supplemented with stage-based reinforcement e-mails. To receive the *physical activity advice*, participants have to fill out a questionnaire consisting of three parts: demographics, physical activity and psychosocial determinants. For measuring physical activity the IPAQ (International physical activity questionnaire) was used, including work activity, leisure, transportation, household and gardening, and sitting. After completing the questionnaire, immediate personalised feedback on the computer screen will be shown. The feedback is based on the principles of the Trans-theoretical Model of behaviour change (Prochaska) and the Theory of Planned Behaviour (Ajzen). It consist information about the level of physical activity compared to current recommendations (normative feedback). Tips and suggestions how to increase physical activity are given, incorporating participant's psychosocial determinants related to physical activity: support possibilities, solutions for barriers, information on benefits and encouragements to use their behaviour plan. These tips incorporate engagement in sports, becoming a member of a sports club, as well as encouragement of an active lifestyle, at home, at work and in the environment. After reading the feedback, participants who are motivated to become more active can make their own *action plan*. This was included to transform physical activity intentions into concrete acts (implementation intentions). It is comparable with the activity plan use in the PACE project (Patrick et al,1994). By asking people what, when where, how long and with whom they plan to do the activity, a process of thought is stimulated. Subjects could print out both their Physical Activity Advice and Action Plan by using the print button.

### Method

The evaluation of the present web-based intervention consisted out of two part. First a feasibility study was executed, second the effect of the intervention on behaviour change was analysed using a randomised control design.

In the feasibility study, 192 subjects, between 25 and 55 years of age, ran through the tailored materials and completed a pretest questionnaire afterwards. 40.3 % of sample subjects were in precontemplation phase, 39.8 % in contemplation or preparation phase and 18.8 % in action or maintenance phase. The computer-tailored intervention program consists of questionnaires concerning demographics, physical activity and psychosocial determinants, leading to a 'physical activity advice' and an 'action plan'. This feedback was constructed taking the Stages of Change into account at content level as well as in the way participants were approached. The pretest questionnaire contained feasibility and acceptability questions about all intervention parts: questions, physical activity advice, action plan and computer use.

In the effect study, participants (N = 771) were randomly assigned to an experimental condition or to a control group (waiting list control). Participants were recruited through the media. Physical activity and

physical activity determinants was measured at baseline and at six months post-intervention. The International Physical Activity Questionnaire (IPAQ) was used at the physical activity measure.

### **Results**

High acceptability and feasibility scores were found for all intervention parts. Only one significant difference between stages of change was found. Precontemplators indicated significantly less ( $p < 0.05$ ) to intent to use the physical activity advice compared to participants in all other stages. Further, very few differences were found between gender, age groups, social class, and computer literacy. This shows that the intervention is acceptable and feasible for different subgroups in the population.

Six months post-baseline the results showed that the tailored interventions produced significantly higher physical activity scores ( $F = 11.4$ ,  $p < 0.001$ ) in the experimental group when compared to the control group. An increase in total physical activity and in moderate to high intensity physical activity was found in the subsample already meeting the physical activity recommendations ( $F = 7.5$ ,  $p < 0.001$ ;  $F = 3.7$ ,  $p < 0.05$ ) and in the subsample not meeting the physical activity recommendations at baseline ( $F = 7.1$ ,  $p < 0.001$ ;  $F = 2.5$ ,  $p < 0.10$ ).

### **Discussion**

These results suggest that this computer-tailored intervention is an acceptable and feasible tool for promoting physical activity and the small number of significant differences indicates that the intervention tailors respondents in different Stages of Change very well. Moreover, the interactive computer-tailored physical activity intervention is effective in inducing behavior change. Further research is necessary to study the implementation of the web-based advice through the Internet so that it can be used in the entire Flemish population.

### **References**

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IPAQ : International Physical Activity Questionnaire, [www.ipaq.ki.se](http://www.ipaq.ki.se)

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