An internet-based computer-tailored physical activity intervention has short term positive effects on physical activity levels among adolescents

Synopsis


Question: Does an internet-based computer-tailored physical activity intervention improve physical activity levels in adolescents? Design: A cluster randomised, controlled trial. Setting: 49 schools with 82 different classes in Austria, Belgium, Crete, Germany, Greece, and Sweden. Participants: Adolescents attending school. Classes were randomised resulting in 581 adolescents allocated to receive computer-tailored advice on physical activity and 469 adolescents allocated to a control group that received generic advice. Interventions: Both groups received advice promoting physical activity at baseline and at 1 month. The intervention group received tailored feedback about their attitudes, self-efficacy, social support, knowledge, perceived benefits, and barriers related to their physical activity. The control group received general advice that included all the above elements but the advice was not tailored to each student. Teachers guided the students through the computer-program available at www.helenastudy.com. Outcome measures: The primary outcome was physical activity levels determined using an adolescent adaptation of the International Physical Activity questionnaire. Activity levels were calculated for total moderate to vigorous physical activity (MVPA). The change in physical activity levels after 1 month and 3 months was assessed by intention to treat analysis using the carry forward technique. Subgroup analysis was completed for adolescents who were sedentary at baseline. Results: 494 participants (47%) completed the study. At the end of 1 month, the intervention group spent an additional 44.8 min/wk (95% CI 8.0 to 81.6) engaged in MVPA compared to the control group. Among sedentary adolescents, those who completed the intervention spent an additional 52.8 min/wk (95% CI 8.5 to 97.8) engaged in MVPA compared with the control group. At the end of 3 months, the intervention group were engaged in an additional 59.1 min/wk (95% CI 18.5 to 99.8) of MVPA compared to the control group. Among sedentary adolescents, those who completed the intervention spent an additional 83.8 min/wk (95% CI 20.5 to 147.1) engaged in MVPA compared with the control group at 3 months. Conclusion: Computer-tailored feedback for adolescents resulted in favourable short-term changes in physical activity levels that were superior to generic advice. The results of the intervention were also favourable for those adolescents considered to be sedentary. The relatively high number of students who did not complete the study highlighted the importance of providing adequate resources, IT support, and teacher support for this type of intervention.

Commentary

Interventions aimed at increasing physical activity have become commonplace. With continual improvements in technology and the widespread availability of computers and the internet, computer-based interventions are emerging as a novel and accessible delivery mode. A handful of studies using internet-based interventions in children have been published (Baranowski et al 2003, Palmer 2005, Haerens et al 2006, Jago et al 2006). These have varied in their setting, program features, intensity, level of tailoring, and degree of interactivity. Efficacy has been mixed. Overall, findings have been modestly promising; however it is unclear which intervention parameters are most effective.

With participants from six European countries, this is the largest study to date examining an internet physical activity intervention in adolescents. The trial was well designed and reported. Participant retention was fair (47% overall), limiting the generalisability of results. It was unfortunate that the primary outcome measure (IPAQ-A) has demonstrated such low validity in other studies (0.20 in correlation with accelerometry (Hagströmer et al 2008)), thus one cannot be confident that the IPAQ-A measures or detects change in activity accurately.

Results showed that tailored advice led to a significant increase in physical activity compared with generic advice, suggesting that individuals are more likely to change their behaviour favourably in response to personally relevant and specific information. The magnitude of change in physical activity was, however, relatively small (seven minutes per day). The benefits associated with an increase of this magnitude are unclear.

Several feasibility issues were identified. Implementation was aided where a large number of computers were readily available, where there was a fast internet connection, and where an educator facilitated the intervention. Clinicians considering using internet-delivered health services should bear these factors in mind.

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References