

# Physical activity and well-being among adolescents

## A public health perspective

AKADEMISK AVHANDLING

som för avläggande av medicine doktorsexamen vid Sahlgrenska akademien,  
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av

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Avhandlingen baseras på följande delarbeten:

- I **Baldursdóttir B**, Valdimarsdóttir HB, Krettek A, Gylfason HF, Sigfusdóttir ID. Age-related differences in physical activity and depressive symptoms among 10–19-year-old adolescents: A population based study.  
*Psychology of Sport & Exercise 2016; resubmitted after revision.*
- II **Baldursdóttir B**, Tahtinen RE, Sigfusdóttir ID, Krettek A, Valdimarsdóttir HB. Impact of a physical activity intervention on adolescents' subjective sleep quality: A pilot study.  
*Glob Health Promot. 2016 May 12. pii: 1757975915626112. [Epub ahead of print].*
- III **Baldursdóttir B**, Valdimarsdóttir HB, Elvarsson BTh, Sigfusdóttir ID, Krettek A. Increasing physical activity among adolescents: A randomized controlled trial.  
*Submitted.*



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### ABSTRACT

**Background:** Physical activity among adolescents is diminishing and worldwide about 80% of 13–15-year-old adolescents do not meet the public health guidelines of minimum 60 minutes of daily physical activity of at least moderate intensity. This decline in physical activity has serious consequences as lack of physical activity adversely affects physical and mental health. As physical activity patterns develop during childhood/adolescence and are tracked into adulthood, diminished physical activity during adolescence can negatively influence health and well-being later in life.

**Aims:** The specific aims of this Thesis were to 1) Examine age-related differences in physical activity and depressive symptoms among 10–19-year-old adolescents; 2) Explore potential effects of a pedometer- and diary-based physical activity intervention on 15–16-year-old adolescents' physical activity and subjective sleep quality; and 3) Investigate the effects of a pedometer- and diary-based physical activity intervention on physical activity among 15–16-year-old adolescents.

**Methods:** Cross-sectional, semi-longitudinal population-based data from Iceland were used to examine differences in age-related physical activity and depressive symptoms. In a pilot-study, a 2-x-2 factorial design was applied to test the effects of a pedometer- and diary-based intervention. Finally, a randomized controlled trial (RCT) with 4-x-4 factorial design was applied to test the effectiveness of using pedometers, diaries or combination of both in a physical activity intervention.

**Results:** A decrease occurred in physical activity from the age of 15 with an increase in depressive symptoms during the age from 10 to 19 in Icelandic adolescents. Gender differences were apparent with girls being less active and having higher levels of depressive symptoms than boys. The intervention in the pilot-study was effective in increasing physical activity among 15–16-year-old adolescents as the intervention group had significantly higher step-count compared to the control group at follow-up. Additionally, subjective sleep quality improved over time in the intervention group. The RCT demonstrated further the effectiveness of the intervention with pedometers alone being equally effective in increasing physical activity as pedometers in combination with diaries.

**Conclusion:** This Thesis provides important information about when to tailor public health efforts to enhance physical activity and well-being among adolescents. Brief physical activity interventions based on pedometers were effective in increasing daily steps and improving sleep quality among adolescents. This has important public health relevance as the intervention is cost-effective and can easily be disseminated and incorporated into schools' curricula.

**Keywords:** *Adolescents, physical activity, depressive symptoms, sleep quality, intervention, pedometer, school setting, health promotion, public health.*

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