

1. Introduction

The worldwide prevalence of overweight and obesity are increasing ¹. According to the World Health Organization (WHO) more than 1.4 billion adults and more than 42 million children under the age of 5 years are overweight ¹. Among adults, overweight and obesity is among the leading risks of death, and further contributes significantly to the burdens of major life style diseases; diabetes and ischaemic heart diseases in particular ¹. Treatment of obesity is difficult ² and once established, obesity tracks from childhood into adulthood ³. Furthermore, childhood obesity is associated not only with increased risk for adult obesity ⁴ but also with a number of physical health problems as well as adverse effects on social and emotional development during childhood ⁵. This makes early prevention a key priority, and increased physical activity and decreased physical inactivity may be one of the keys in the prevention of obesity and related diseases.

In school-aged children and adolescents, physical activity is associated with a number of beneficial health outcomes; bone mineral density, cardiovascular risk factors and obesity prevention among others ⁶. Likewise, physical inactivity or sedentary behaviour, especially screen based sedentary behaviour is associated with adverse health effects, and these effects seem to be independent of activity levels ⁷. Less is known about these associations in the preschool years ^{8;9}. However, the preschool period (3-5 years of age) are regarded a critical period for establishing healthy and active behaviours ¹⁰, since physical activity ¹¹⁻¹³ and sedentary behaviours ¹⁴ may track during childhood and adulthood.

During the last decade, national health authorities and organisations have suggested recommendations for physical activity ¹⁵⁻¹⁹ and physical inactivity ^{15;17;18;20} for children younger than five years. With the most recently published recommendations ¹⁷⁻¹⁹, an emerging consensus has started to appear ²¹, suggesting that toddlers (aged 1-3 years) and pre-schoolers should spent at least 3 hours per day being physically active, and limit the time being inactive, including time spent on screen-based entertainment. However, the suggested recommendations are impaired by the lack of evidence linking physical activity and health outcomes ⁹ and the methodological challenges regarding how to quantify physical activity in young children ²².

1.1. Objectives of the PhD

In compliance with the objectives of the SKOT cohort-study, the overall objective of this PhD-study is

To contribute to the scientific basis for life style strategies, policies and guidelines for young children in Denmark with respect to physical activity.

The specific objectives are

- To describe levels and distribution of physical activity and sedentary behaviour across typical everyday settings among healthy 3-year-olds in a high income country
- To study the hypothesis that physical activity is associated with health parameters at age 3 years
- To discuss the usefulness of the recommendation of 3 hours of physical activity of at least light intensity per day