Background
Physical inactivity has been identified as the fourth leading risk factor for global mortality causing an estimated 3.2 million deaths globally. Physical inactivity has become an increasingly important topic in health promotion and health research. Engaging in physical activity has a well-established preventive role for common lifestyle diseases such as diabetes type 2, cardiovascular disease and certain cancer types. It also contributes to quality of life.

Parents are believed to play an important role in influencing their children’s health behavior. Yet, the results of studies on parent-child physical activity (or inactivity) correlations are mixed. Possible explanations for the inconsistent findings might be the use of different methodology for assessment of – as well as use of – different definitions of physical activity. Current studies suggest that parental modeling effects in regard to physical activity differ by gender.

Furthermore, the influence of one versus two physically active parents may contribute differently to the physical activity level of the children in the family. Use of screen-based electronic media (e.g. smartphone and tablet) may have considerably changed the way the families interact with each other and the physical activity of family members.

Research on these newer forms of media use in relation to parent-child interaction is lacking.

Design and methods
The present project is a cross-sectional study on a subsample of the large “Lolland-Falster Health Study” (LOFUS). LOFUS is a comprehensive, cross-sectional population study in Denmark.

The study aim is to investigate patterns and correlates of physical activity in 1250 families with children below 18 years old, on Lolland and Falster.

Physical activity will be assessed objectively by using two accelerometers for seven consecutive days. Questionnaires on physical activity will be applied.

Measurement technique
The accelerometer used is the Axivity AX3, which combines a MEMS accelerometer, light and temperature sensor in a small case weighing 9 g. The AX3 is mounted on the subjects using a specially designed adhesive patch to enable full 24-hour recordings and to improve wear compliance. One accelerometer is placed at the waist and the other on the thigh.

The combination of waist- and thigh worn accelerometry is a new method. Preliminary data from a validation study at the University of Southern Denmark, which takes place among children in conjunction with studies in adults, shows that this combination provides high sensitivity and specificity to distinguish activities such as lying, sitting, standing, walking, running and cycling.

It also detects transitions from a sitting to a standing state. In addition, the accelerometers are used to calculate the frequency and duration of sedentary behaviour, and low and moderate to vigorous physical activity.

Accelerometer data will be presented and used in the form of raw data, intensity, as well as frequency and duration of physical activity and sedentary behaviour. Family patterns of physical activity will be examined.

Perspectives
Understanding whether or how primary caregivers influence children’s physical activity could be important for identifying effective strategies for increasing children’s health and preventing the development of adverse health outcomes.

The knowledge gained during this study will help us in the prevention against physical inactivity in the population.

Acknowledgement
We thank Region Zealand and University College Zealand for research funding.