

Summary in English

Active commuting includes various forms of activities with cycling and walking as the most dominant active transport modes between home and school or work.

Supplementary to the potential impact on traffic-related issues and environmental aspects, active commuting also appears relevant from a public health perspective since it potentially could target the entire population including the least active individuals among who will achieve the greatest health benefits.

The prevalence of commuting to school and work varies considerably between countries with the highest rates in Denmark, China and the Netherlands. The evidence of health-enhancing effects of commuter cycling, independent of other LTPA, is growing. Most studies about cycling and health are, however, observational studies and relatively few articles are based on intervention studies.

In this thesis the associations between weight status, CRF, muscular strength as well as muscular endurance and travel mode to school was investigated using data from two observational studies. By means of intervention studies it was further investigated whether commuter cycling to school or work caused improvement in CRF. Additionally, it was investigated whether there is a causal relationship between cycling to school and clustering of cardiometabolic risk factors.

The main findings were that cycling to school was favourably associated with weight status, dynamic leg extensor muscle strength, back extensor muscle endurance compared to passive commuting. Cycling to school was generally associated with higher cardio respiratory fitness compared to walkers and passive commuters and the children who started cycling to school improved cardio respiratory fitness compared to participants who remained non-cycling. Finally, it was found that initiation of cycling to work and school improved CRF and lowered clustering of cardiometabolic risk factors respectively.

Summary in Danish

Aktiv transport omfatter forskellige former, hvoraf cykling og gang er de langt mest udbredte former for transport mellem hjem og skole eller arbejde. Udover mulig indvirkning på trafikale og miljømæssige aspekter er aktiv transport også relevant ud fra et folkesundhedsperspektiv eftersom fysisk aktivitet i forbindelse med pendlertransport potentielt omfatter hele befolkningen inklusive de mindst fysisk aktive personer, der er dem som vil opnå den største sundhedseffekt ved forøgelse af fysisk aktivitet.

Prævalensen af cykelpendling varierer betragteligt med de højest observerede rater af pendling til skole og arbejde i lande som Danmark, Kina og Holland. Evidensen af sundhedsfremmende effekter af cykelpendling, uafhængigt af fysisk aktivitet i fritiden, er stigende. De fleste studier vedrørende cykling og sundhed er imidlertid observationelle og der er kun publiceret få studier, hvor effekterne af interventioner er blevet undersøgt.

I denne afhandling er associationerne mellem vægtstatus, kardiorespiratorisk fitness, muskelstyrke og muskeludholdenhed undersøgt ved at bruge data fra to observationelle studier. Ved hjælp af interventionsstudier blev det undersøgt nærmere, hvorvidt cykelpendling til skole eller arbejde forårsagede forbedringer i kardiorespiratorisk fitness. Desuden blev det også undersøgt om der var et kausalt forhold mellem cykling til skole og ophobning af *kardiometaboliske* risikofaktorer.

Hovedfundene var, at cykling til skole var positivt associeret med vægtstatus, dynamisk styrke i benekstensorerne, muskeludholdenhed i rygekstensorerne sammenlignet med passiv pendling. Cykling til skole var generelt associeret med højere kardiorespiratorisk fitness sammenlignet med fodgængere og passive pendlere. De børn, der startede med at cykle til skole forbedrede kardiorespiratorisk fitness sammenlignet med de børn, der forblev ikke-cyklende. Endelig blev det fundet, at påbegyndelse af cykling til skole og arbejde henholdsvis forøgede kardiorespiratorisk fitness og nedsatte ophobning af kardiometaboliske risikofaktorer.