



**LIIKKUVA KOULU**  
skolan i rörelse

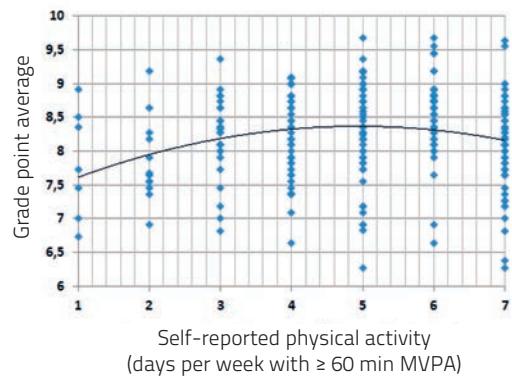
Active body, active mind

# HOW DOES PHYSICAL ACTIVITY AFFECT LEARNING?

Physical activity has a positive effect on learning and cognition.

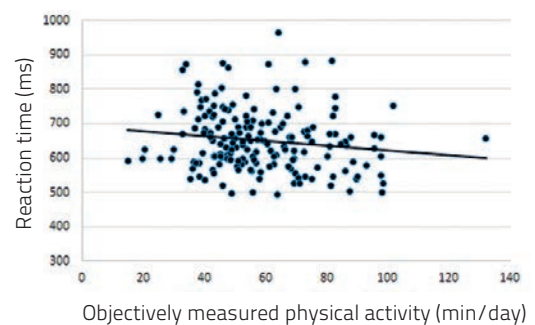
## Academic achievement

Physically active 5th and 6th graders achieved better grade point averages than their inactive peers. (Syväoja et al. 2013 Med. Sci. Sports Exerc)



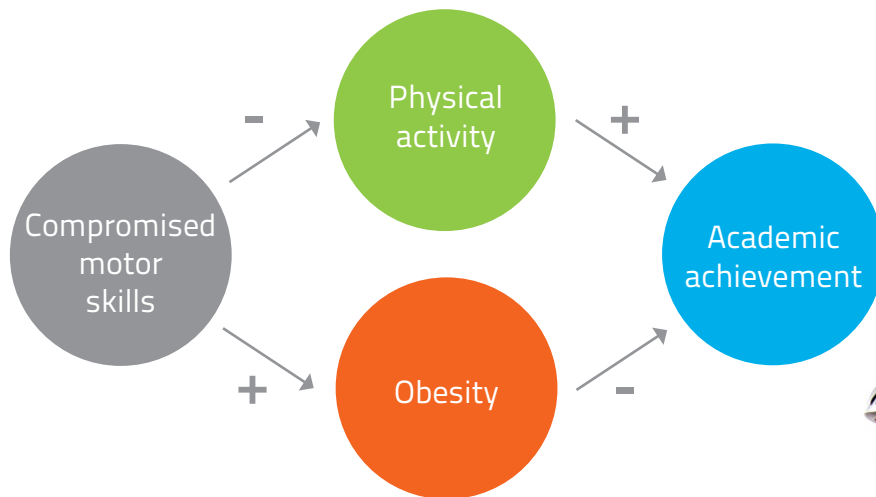
## Attention

Physically active children achieved better results in the attention test. (Syväoja et al. 2014. PloS One)



## Academic achievement

Physically active children had higher academic achievement scores at the age of 16. Motor skills at the age of 8 predicted physical activity and academic achievement at age 16. (Kantomaa et al. 2012. PNAS)



## Working memory

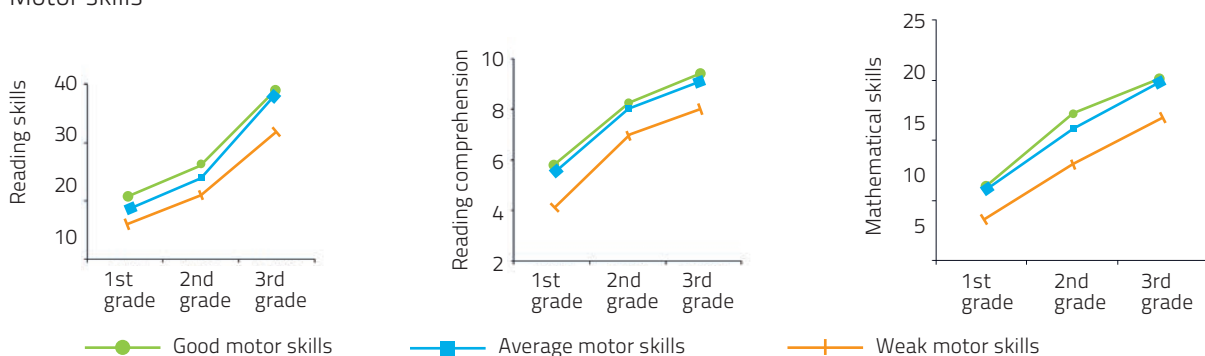
The students participated in a physical activity program every day after school for 9 months. The performance of the group that took part in physical activity improved in the memory task, whereas there was no change in the performance of the children in the control group. In addition, the more challenging the tasks were, the more pronounced the benefits of the physical activity. (Kamijo et al. 2011. Developmental Science)



## Reading and arithmetic skills

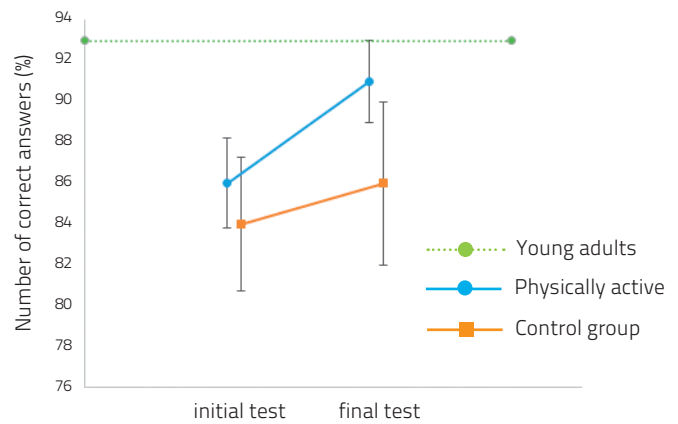
Weak motor skills correlate with weaker reading and arithmetic skills. (Haapala et al. 2014. Med. Sci. Sports Exerc)

Motor skills



## Executive functions

The performance of 8 to 9-year-old children who took part in physical activity improved to the level of young adults in tasks that require executive functions. (Chaddock-Heyman et al. 2013. *Frontiers in Human Neuroscience*)



Physical exercise during the school day promotes learning

## Executive functions/attention

Two 30-minute physical activity sessions a week were added for primary school students. These physical activity sessions led by teachers consisted of activities at moderate to vigorous intensity, such as tag games and modified ball games.

After six months, the results of the students who participated in the physical activity were considerably improved in tasks requiring executive functions, compared to those who did not participate. (van der Niet 2015. *Pediatric Exercise Science*)



In psychology, executive functions is a term that describes cognitive processes, which are necessary for the cognitive control of behaviour and processing information.

Executive functions control other cognitive functions that are essential for human behaviour, such as memory, attention and thinking.

## Academic achievement

After 20 minutes of vigorous physical activity, 8th graders achieved better results in the mathematics test than they did after 20 minutes of sitting still. (Phillips et al 2015. JTPE)

After a 10 and 20-minute break of vigorous physical activity, 4th and 5th graders achieved better results in the mathematics test than they did after 10 minutes of sitting. (Howie et al. 2015. Research Quarterly for Exercise and Sport)



## Academic engagement

In six months, physically active academic lessons improved the academic engagement of primary school students. Children's time-on-task was higher during the lesson that followed physically active lessons compared to lessons that followed regular lessons. (Mullender-Wijnsma et al. 2015. BMC Public Health)

