Brisk exercise linked to better arterial health already in childhood

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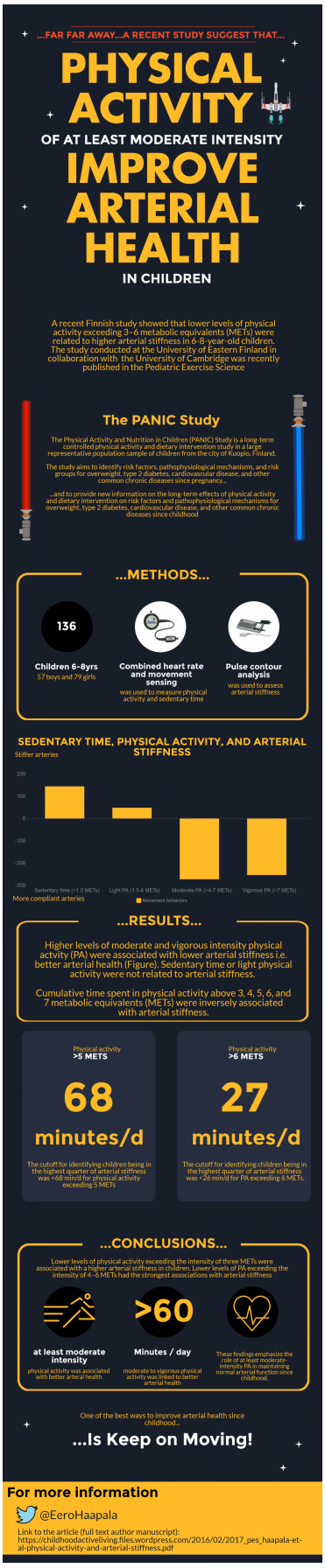
...FAR FAR AWAY...A RECENT STUDY SUGGEST THAT...
PHYSICAL ACTIVITY
OF AT LEAST MODERATE INTENSITY
IMPROVE ARTERIAL HEALTH
IN CHILDREN
A recent Finnish study showed that lower levels of physical activity exceeding 3–6 metabolic equivalents (METs) were related to higher arterial stiffness in 6-8-year-old children. The study conducted at the University of Eastern Finland in collaboration with the University of Cambridge was recently published in the Pediatric Exercise Science
The PANIC Study
The Physical Activity and Nutrition in Children (PANIC) Study is a long-term controlled physical activity and dietary intervention study in a large representative population sample of children from the city of Kuopio, Finland.
The study aims to identify risk factors, pathophysiological mechanisms, and risk groups for overweight, type 2 diabetes, cardiovascular disease, and other common chronic diseases since pregnancy...
...and to provide new information on the long-term effects of physical activity and dietary intervention on risk factors and pathophysiological mechanisms for overweight, type 2 diabetes, cardiovascular disease, and other common chronic diseases since childhood
...METHODS...
136
Children 6-8yrs
57 boys and 79 girls
Combined heart rate and movement sensing
was used to measure physical activity and sedentary time
Pulse contour analysis
was used to assess arterial stiffness
SEDENTARY TIME, PHYSICAL ACTIVITY, AND ARTERIAL STIFFNESS
Stiffer arteries
200
100
0
-100
-200
-300
Sedentary time (<1.5 METs)
Light PA (1.5-4 METs)
Moderate PA (>4-7 METs)
Vigorous PA (>7 METs)
Movement behaviors
More compliant arteries
...RESULTS...
Higher levels of moderate and vigorous intensity physical actvity (PA) were associated with lower arterial stiffness i.e. better arterial health (Figure). Sedentary time or light physical activity were not related to arterial stiffness.
Cumulative time spent in physical activity above 3, 4, 5, 6, and 7 metabolic equivalents (METs) were inversely associated with arterial stiffness.
Physical activity >5 METS
68
minutes/d
The cutoff for identifying children being in the highest quarter of arterial stiffness was <68 min/d for physical activity exceeding 5 METs
Physical activity >6 METS
27
minutes/d
The cutoff for identifying children being in the highest quarter of arterial stiffness was <26 min/d for PA exceeding 6 METs.
...CONCLUSIONS...
Lower levels of physical activity exceeding the intensity of three METs were associated with a higher arterial stiffness in children. Lower levels of PA exceeding the intensity of 4–6 METs had the strongest associations with arterial stiffness
at least moderate intensity
physical activity was associated with better arterial health
>60
Minutes / day
moderate to vigorous physical activity was linked to better arterial health
These findings emphasize the role of at least moderate-intensity PA in maintaining normal arterial function since childhood.
One of the best ways to improve arterial health since childhood...
...Is Keep on Moving!
For more information
@EeroHaapala
Link to the article (full text author manuscript):
https://childhoodactiveliving.files.wordpress.com/2016/02/2017_pes_haapala-et-al-physical-activity-and-arterial-stiffness.pdf

Physical activity and arterial health. Credit: Eero Haapala

High levels of moderate-to-vigorous physical activity are associated with lower arterial stiffness in 6-8-year-old children, according to a new study from the University of Eastern Finland. No similar association was found for light physical activity. Published in *Pediatric Exercise Science*, the findings constitute part of the Physical Activity and Nutrition in Children (PANIC) Study carried out in the University of Eastern Finland. The study was conducted in collaboration with the University of Cambridge.

Increased arterial stiffness indicative of the development of cardiovascular disease can begin already in childhood. The study investigated the associations of objectively measured physical activity and sedentary time with arterial stiffness among 136 Finnish 6-8-year-old children. Physical activity and sedentary time were assessed using a combined heart rate and movement sensor. Arterial stiffness was measured using pulse contour analysis based on photoplethysmography. Various confounding factors including diet quality, body fat percentage and sleep length were controlled for in the analyses.

The study found that children with less moderate-to-vigorous daily physical activity had stiffer arteries.

The intensity of physical activity is described using MET values, expressing the energy cost of physical activities. The study found that the threshold value for sufficient exercise was 68 minutes of physical activity at the level of at least 5 METs, and 26 minutes of physical activity at the level of at least 6 METs. Children with physical activity

below the threshold values had increased arterial stiffness. Examples of moderate-to-vigorous physical activity include games involving running, ball games, gymnastics and dance.

Differences in arterial stiffness were due to differences in moderate-to-vigorous physical activity, not light physical activity or sedentary time.

"It seems that the positive effects of physical activity on arterial stiffness require sufficient cardiovascular strain, and light physical activity does not provide that kind of stimulus. Moderate-to-vigorous exercise can also counterbalance the effects of sedentary time," says Dr Eero Haapala, PhD, from the University of Eastern Finland.

The study found that moderate-to-vigorous physical activity was associated with better arterial health already in childhood. According to various exercise recommendations, children need diverse physical activity every day, and at least 60 minutes should be moderate-to-vigorous physical activity.

More information: Eero A. Haapala et al, Associations of Objectively Measured Physical Activity and Sedentary Time With Arterial Stiffness in Pre-pubertal Children, *Pediatric Exercise Science* (2017). DOI: 10.1123/pes.2016-0168

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