

# School performance, body constitution and the augmentation index in young adolescents

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# Childhood obesity



# School performance and obesity

- [Alison K. Cohen](#), [Manisha Rai](#), [David H. Rehkopf](#) **Educational attainment and obesity: A systematic review.** [Obes Rev. Dec 2013; 14\(12\): 989–1005.](#)
- [Booth JN<sup>1</sup>](#), [Tompsonski PD<sup>2</sup>](#), [Boyle JM<sup>3</sup>](#), [Ness AR<sup>4</sup>](#), [Joinson C<sup>4</sup>](#), [Leary SD<sup>4</sup>](#), [Reilly JJ.](#) **Obesity impairs academic attainment in adolescence: findings from ALSPAC, a UK cohort.** [Int J Obes \(Lond\).](#) 2014 Oct;38(10):1335-42.

# Obesity and CVD

- 20-30% of children in developed countries are overweight or obese
- Obesity is the leading cause of atherosclerosis and CVD
- Atherosclerosis starts in the early childhood
- 10 -20 % of extremely obese people never get CVD

# Atherosclerosis

- Completely reversible in early stages (minimal intima damage, stage of inflammation, foamy cells stage).
- Irreversible in the stage of fibroatheroma and thrombosis.
- Atherosclerosis increases arterial stiffness.

# Study hypothesis

- An early atherosclerosis affects school performance in children.



# Study design

## **participants**

- 81 healthy school children aged 11-16 years
- Part of periodic health checks

## **methods**

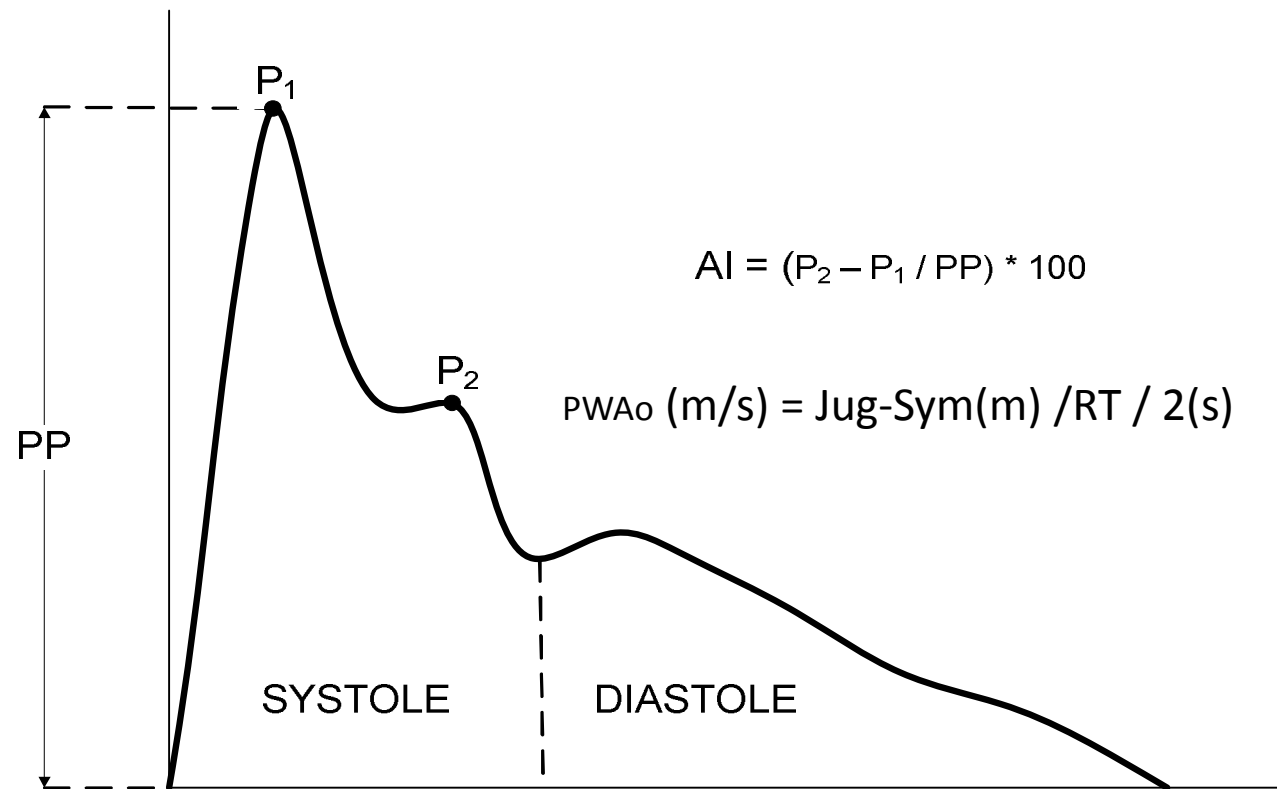
- Body weight, height, waist circumference
- BMI, SDS BMI
- Tanner puberty score
- Time of menarche (girls)
- Aix (Arteriograph)
- General school performance





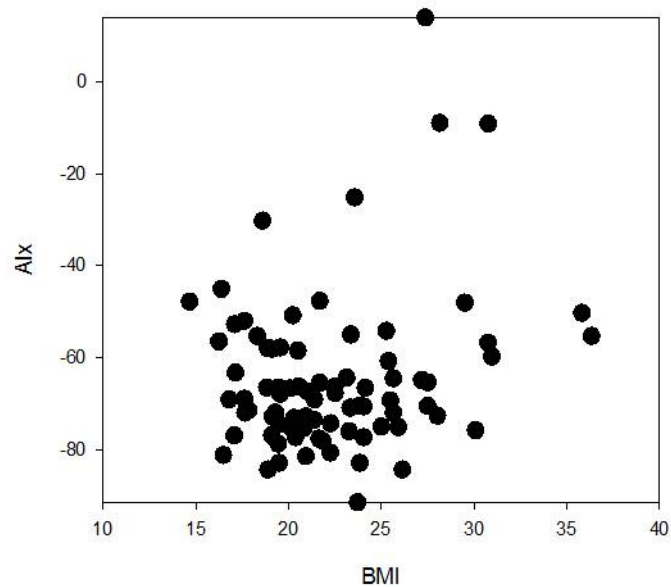


# Augmentation index

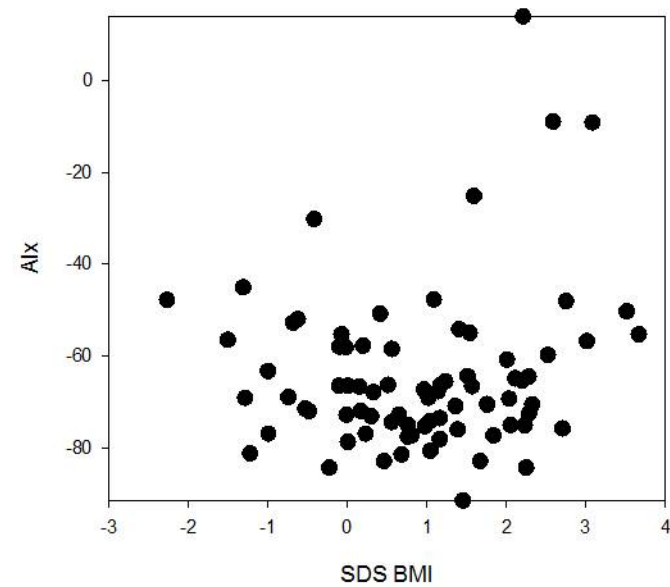


# Results

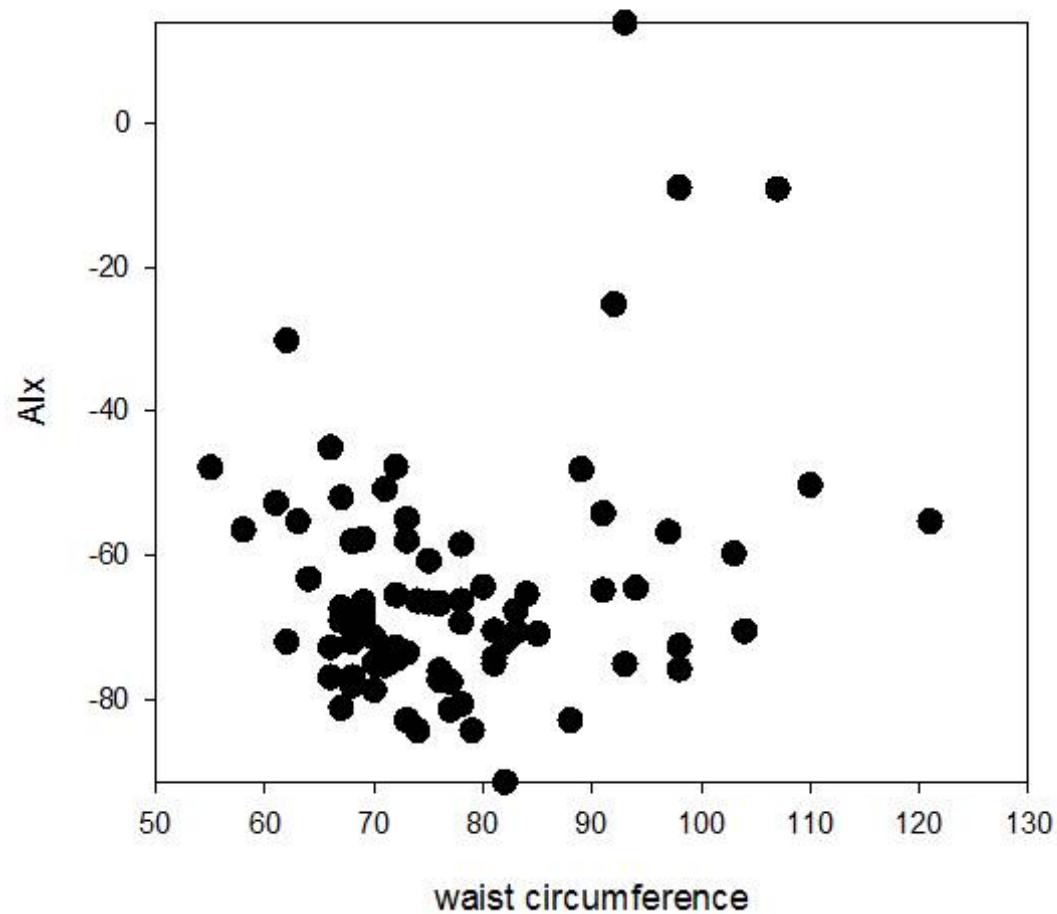
## Aix - BMI



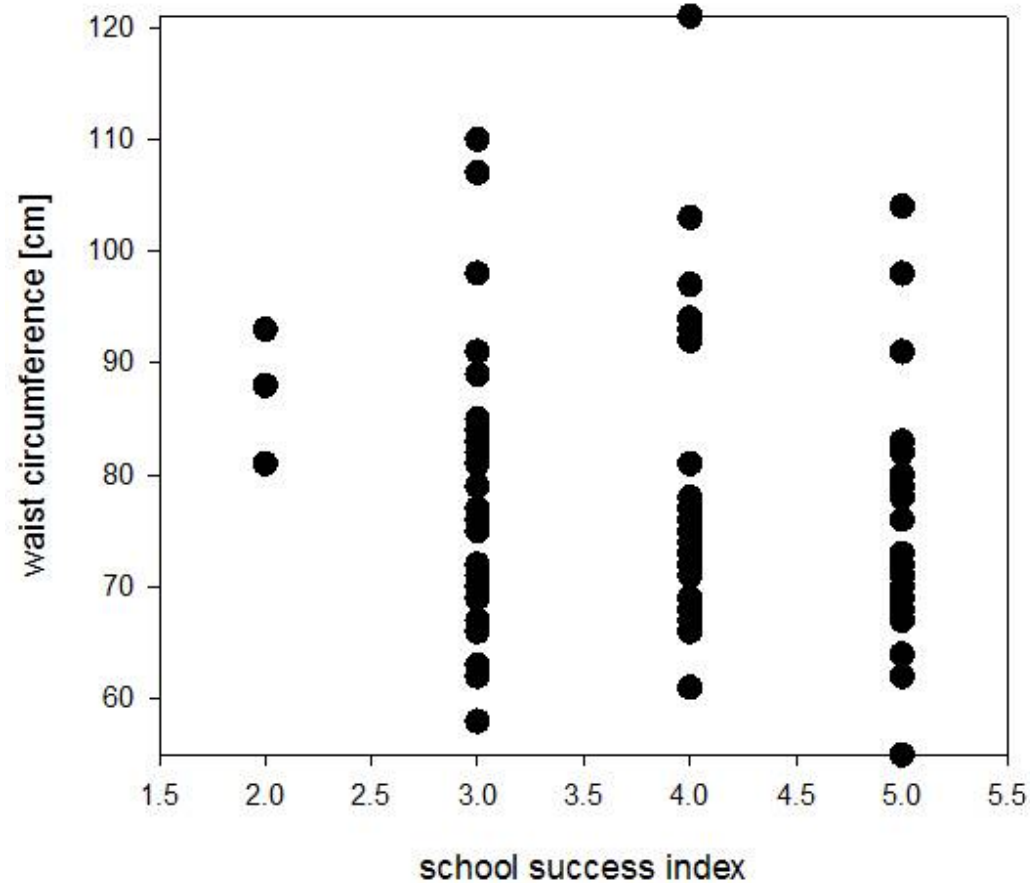
## Aix - SDS BMI



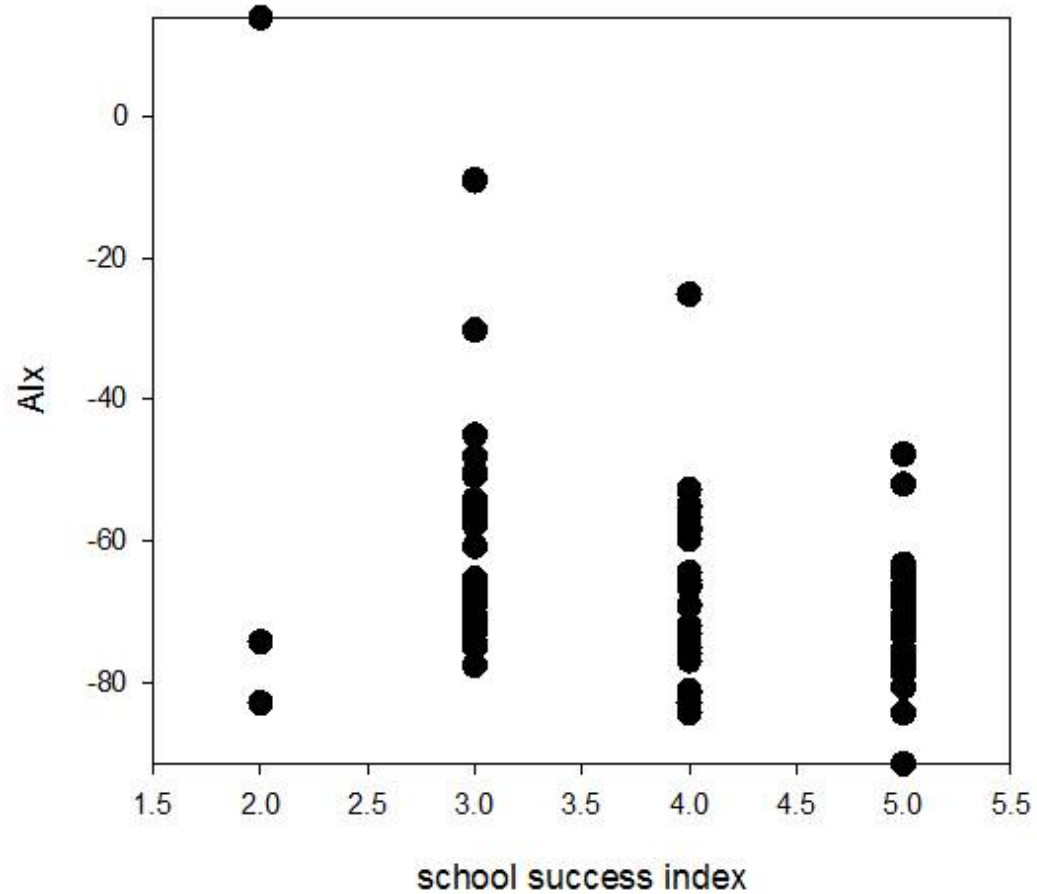
# Aix – Waist circumference



# Waist circumference – school success



# Aix – school success



# Conclusions

- Body constitution (obesity) has no significant effect on school performance
- Aix is highly influenced by body constitution
- Higher Aix suggests increased arterial stiffness in a group of children with lower school performance.



# Thank you

