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Title: The effects of physical fitness on lung function from childhood to adulthood - The Odense schoolchild study

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Body: The potential beneficial role of physical activity on the development of lung function is not well known. The present study is aimed to investigate the longitudinal association between physical fitness level and the development of lung function. 1369 children from the Odense schoolchild study (Denmark) were assessed from age 9 to 29 years. Physical fitness and lung function was tested at all occasions. In longitudinal analysis high physical fitness at age 9 years was associated a higher percent predicted FEV1, a higher ratio of FEV1/FVC from 9 to 29 years. Physical fitness at age 9 was associated with an absolute increase FVC up to age 21 adjusted for asthma, sex and smoking status and height increase from age 9. At age 29 years the associated between absolute increase FVC an fitness at age 9 did not reach statistically significance (p=0.1) when the increase in height from age 9 was taken into account. In conclusion, high physical fitness levels at age 9 years predict a higher FEV1 and a higher FEV1/FVC ratio in young adulthood: An absolute increase in FVC was seen at age 15 and 29. This brings further evidence for a weak but beneficial effect of high physical activity in childhood on lung function in adulthood.