

Targeting the early-teens for extra exercise could cut diabetes risk

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A study has found that physical activity provides the greatest benefits to adolescent insulin resistance - a risk factor for type 2 diabetes - when the condition peaks at age 13, but provides no benefit to it at age 16. The findings, published today, could help design more effective interventions for children by targeting the early-teens.

The researchers measured [insulin resistance](#), a condition which leads to [high blood sugar](#) and is a precursor to type 2 diabetes, in the same 300 children every year from age 9 through to age 16. They set out to determine when and to what extent [physical activity](#) in children impacts on insulin resistance and other markers of metabolic health.

The results showed that the condition was 17% lower in the more active adolescents at age 13 independently of body fat levels, but this difference diminished progressively over the next three years and had disappeared completely by age 16, when insulin resistance levels were much lower.

Dr Brad Metcalf, a senior lecturer in Physical Activity and Health at the University of Exeter said the findings have implications for future actions designed to reduce the insulin resistance of children. He said: "Insulin resistance rises dramatically from age 9 to 13 years, then falls to the same extent until age 16. Our study found that physical activity reduced this early-teenage peak in insulin resistance but had no impact at age 16. A reduction in this peak could lessen the demand on the cells that produce insulin during this critical period, which may preserve them for longer in later life.

"We are not saying that 16-year-olds don't need to be physically active, there are other health benefits to be gained from being active at all ages".

Childhood obesity has increased in much of the industrialised world over the past two decades,

with one-in-six [children](#) currently obese in the UK and USA. This is of great concern because obesity appears to underlie much of the insulin resistance that leads to diabetes, cardiovascular disease and metabolic syndrome.

In this study, activity was measured objectively using accelerometers (electronic motion sensors) worn around the child's waist and set to run continuously for seven days at each of the eight annual check times.

More information: 'Physical activity attenuates the mid-adolescent peak in insulin resistance but by late adolescence the effect is lost: a longitudinal study with annual measures from 9-16 years (EarlyBird 66)' by B. S. Metcalf, J. Hosking, W. E. Henley, A. N. Jeffery, M. Mostazir, L. D. Voss and T. J. Wilkin is published in the journal *Diabetologia*.

Provided by University of Exeter

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