

# News from previous months

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## VASCULAR HEALTH IN CHILDREN AGED 8-10 YEARS

In a recent study we examined whether adiposity has a detrimental effect on children's carotid arteries (neck blood vessels) by measuring the amount of deposits in the arteries.

We used a measure of thickness of blood vessels that was determined by ultrasound. This measure of carotid thickness has been shown to be a good indicator of cardiovascular risk in adults. To date, the QUALITY Study has the largest number of measurements of children's carotid thickness in the world. To assess adiposity, we used measures of children's height, weight, waist circumference, and total and central fat.

We showed that heavier children had more deposits in their carotid arteries. These results suggest that the adverse effects of excess weight on vascular health already exist at the young age of 8 to 10 years.

Our study underscores the importance of preventing excess weight from an early age. It suggests that it's important to improve physical activity levels and diet quality in young children to prevent excess weight. Other studies have shown that the vascular damage to children's arteries can be reversed through changes in lifestyle behaviors.

**Katerina Maximova, PhD**  
**University of Alberta**  
**September 2011**

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## BIRTH WEIGHT AND GROWTH AFTER BIRTH: WHAT ARE THE LINKS WITH OBESITY?

Several studies have shown that being born big and growing too fast during the first years of life increase the chances of becoming obese later in childhood and adulthood.

This observation was also made in the QUALITY study. We used measures of weight and height from birth to 2 years of age, which are noted in the Health Booklet of the children who are part of the study. We then estimated growth curves for each child according to standards of the World Health Organization. Our results indicate that children who are bigger at birth are more likely to be heavier at 8 to 10 years of age. Moreover, growing too fast at a very young age (i.e. a weight gain that is too high for the child's height) increases the risk of being heavier at 8 to 10 years of age, and this mainly because of an increase in adipose tissue (body fat).

These interesting results led us to another question: does the parents' weight influence the latter observation between early life growth and childhood weight? We

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found that when the mother is overweight, growing too fast at an early age leads to an even higher increase in fat tissue of the child. This was not found when the father is overweight.

Our study reveals that it is important for family doctors, pediatricians and nurses to monitor weight gain during childhood, especially in children who grew rapidly at a very young age and whose mother is overweight. This may help prevent excessive weight gain and obesity in children as they become older.

**Andraea Van Hulst**

**PhD student in Public Health at Université de Montréal**

**August 2011**

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## NOT ENOUGH SLEEP CAN MAKE US FATTER

Nowadays it is common to decrease our hours of sleep for various reasons. However, many people believe the shorter nights of sleep are not harmful to our health. This is false. Indeed, several recent scientific studies have shown that the restriction of sleep time is associated with obesity, type 2 diabetes and cardiovascular diseases. In the QUALITY cohort, children who slept less than 10 hours per night are 2 times more likely to be overweight or obese compared to those who meet the guidelines on sleep duration.

For your information, the recommendations on adequate sleep duration are as follows:

Age	Daily requirements of sleep
Newborn (1-2 months)	10.5 à 18 hours
Infant (3-11 months)	9-12 hours at night and naps of 30 minutes to 2 hours, one to four times per day
Toddler (1-3 years)	12-14 hours
Pre-school child (3-5 years)	11-13 hours
School aged child (5-12 years)	10-11 hours
Adolescent (11-17 years)	8.5-9.25 hours
Adult (18-64 years)	7-9 hours
Older adult (65 years and +)	7-9 hours

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Recommendations of the *National Sleep Foundation*.

## HOW CAN LACK OF SLEEP MAKE US GAIN WEIGHT?

Sleep deprivation is a stressor to the human body that causes a number of hormonal disturbances. For example, hormones that control appetite are stimulated after a

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short night of sleep and this encourages us to eat more. In addition, shorter sleep duration increases our exposure to the many food temptations of the modern world and it is more difficult to adopt healthy lifestyles in such a context. Finally, lack of sleep makes us feel more tired and those who don't sleep enough are generally less likely to engage in strenuous physical activities.

Overall, an increase in sleep time seems to help control appetite and to be associated with a "healthy weight". As suggested by the proverb "Sleep serves food", sleeping may exert satiating effects as does a meal. On that note, good night everyone!

**Jean-Philippe Chaput, Ph.D.**  
**Professor, University of Ottawa**  
**Researcher, Research Institute of the Children's Hospital of Eastern Ontario**  
**July 2011**

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## YOUTH AND SECOND-HAND SMOKE EXPOSURE

Despite the significant reduction in tobacco smoke concentration of ambient air subsequent to the adoption of anti-smoking laws in public places, second-hand smoke exposure remains a concern in Canada and elsewhere. Half of children ages 13 to 15 years in several European countries, one third of Americans under 18 years of age and one Canadian child in 20 are exposed to second-hand smoke at home. Many children and adolescents are also exposed to second-hand smoke in the family car, where smoke concentrations increase rapidly due to the restricted space. In 2007-2008, 21% of non-smoking youth aged 12-17 years in Quebec were exposed daily to second-hand smoke in private cars.

Second-hand smoke exposure has been associated with several adverse health conditions in children, including low birth-weight, sudden infant death syndrome (SIDS), asthma, pneumonia, middle ear infections, dental caries, sleep disturbances, as well as learning disabilities and behavior problems. Second-hand smoke exposure has been shown to increase carotid intima-media thickness, a marker of cardiovascular disease risk, in non-smoking adults. To date, few researchers have studied this issue in youth.

You might remember that in the QUALITY study, we examined via ultrasound the carotid arteries of participants when they were 8-10 years old. We discovered that second-hand smoke exposure is associated to intima-media thickness, suggesting that even at such a young age, second-hand smoke exposure can have negative effects on the health of children's arteries. We must therefore eliminate, or minimize as much as possible, our children's exposure to second-hand smoke. A smoke-free environment is beneficial for little ones, but for adults too.

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Jennifer O'Loughlin  
May 2011

## **PARENTS ARE IMPORTANT!**

There are consistent reports that parents can positively influence the activity levels of their children by themselves engaging in physical activity (i.e., role-modeling), and providing feedback and encouragement. Furthermore, social support from parents helps kids develop confidence in their physical activity skills and abilities, and enjoyment of physical activity – and both self-confidence and enjoyment are critical to maintaining physical activity participation long-term.

Using the questionnaire data from kids and their physical activity data assessed using accelerometers, we looked at whether kids' perceptions of the support they get from their mothers and fathers differ, and whether support for physical activity is associated with moderate-to-vigorous physical activity.

Fathers were perceived to provide more physical activity support than mothers. Girls reported higher social support from fathers compared to boys. Higher social support from fathers was related to more minutes of light and moderate-to-vigorous intensity physical activity and more organized sport participation for both boys and girls. Also, kids who had higher social support from both mothers and fathers had higher perceptions of self-confidence, and enjoyed physical activity more than kids with little support from their parents. These findings suggest that both mothers and fathers need to engage in physical activity themselves, encourage their children to be active, and help children include activity into their lifestyle by driving them to places where they can be active and watching them play sports. Mothers should focus on these strategies in particular to help raise the profile that they support their children in activity pursuits. These actions will help kids develop positive self-perceptions of confidence and enjoyment, and will lead to higher physical activity participation.

**April 2011**

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Does the type of food stores available near our home influence our habits? To answer this question, a study on the possible links between access to supermarkets, convenience stores, fast food restaurants and the consumption of fruits and vegetables was conducted among youth of the QUALITY cohort.

Access to food stores was defined in terms of proximity and number of each food service within a 750 meters radius around each residence. Youth of the cohort consumed an average of 4 servings of fruits and vegetables per day, while Canada's Food Guide recommends 5-6 servings daily for children aged 8 to 10 years. In addition, the results show that youth who have better access to supermarkets eat more fruits and vegetables, while those who live in a neighbourhood with better access to fast food restaurants consume fewer fruits and vegetables.

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It thus seems likely that the food environment in the vicinity of the residence influences lifestyle. Future studies will allow us to determine whether this link may eventually have an impact on youth cardiovascular health.

**January 2011**

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Maintaining a normal blood sugar (glucose) level is the result of a delicate balance between insulin secretion by the pancreas and peripheral tissue responsiveness (mainly by muscle) to insulin action, referred to as insulin sensitivity. A decrease in insulin sensitivity is a precursor to the development of type 2 diabetes mellitus. We were interested in exploring how physical activity and fitness impact insulin sensitivity in the QUALITY cohort.

We found that the association between fitness and insulin sensitivity is different for boys than for girls. For boys, increased fitness is associated with better insulin sensitivity, while increasing total body fat and increasing age predicted lower insulin sensitivity. For girls, fitness was not clearly associated with insulin sensitivity, but rather physical activity was: increased physical activity predicted better insulin sensitivity. Similarly to boys, increasing total body fat and increasing age predicted lower insulin sensitivity in girls.

These findings are important, given that physical activity and fitness are modifiable risk factors, and that they have a significant effect on insulin sensitivity in the cohort. We will continue to investigate these associations, particularly to see if they change with time, as the children in QUALITY get older. Learning more about how physical activity and fitness impact insulin sensitivity will help us to develop preventive strategies against the development of type 2 diabetes.

**December 2010**

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QUALITY participants have lower levels of vitamin D in winter. In order to be sure to get enough vitamin D, youth need to drink milk regularly, eat fish from the sea (salmon or tuna), be active outdoors to get some sun (but of course not too much) and possibly take a multivitamin. Children who take a multivitamin have slightly higher levels of vitamin D in their blood.

**November 2009**

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