

# THE BIG LITTLE NEWSLETTER FOR THE STUDY on the prevention of cardiovascular disease and type 2 diabetes in children and adolescents



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## Interview with Jean-Philippe Chaput, researcher

*When games play on appetite !*

**Dr Chaput, can you explain to the children in the Study and their parents what was the goal of your study on video games?**

The point of the study was to determine the effect of sedentary video games on appetite control. Unlike active video games, passive video games do not burn many calories and have been associated with weight gain. Yet no study to date has attempted to determine their global impact on the risk of overweight, including energy expenditure and food intake while children are partaking in these widespread activities.

**Of all research questions that**



**might have interested you, why did you choose to pursue this particular study?**

Video games are very popular with youth and it was necessary to better understand their global impact on weight gain in youth. For many, the link between passive video games and weight gain is due to low energy expenditure associated with this type of sedentary gaming. However, our results demonstrate that children eat

more when playing passive video games, leading to an increased risk of weight gain.

**What are the most interesting results for young Quebecers and their parents?**

Sedentary behaviors do not all have the same impact on our health and must not all be placed in the same basket. Sleep, the most sedentary behavior of all, is generally associated with improved health. In contrast, short nights of sleep increase the risk of weight gain, as well as several health problems. In the case of passive video games, they stimulate food consumption in the same way watching television does.

**In closing, what are your recommendations?**

Active video games are the first step in the right direction, as they burn more calories than passive video games. However, the effect of active video games on appetite control and food intake remains unknown. It is not impossible that youth compensate for the energy expenditure associated with playing active video games by eating more. The best recommendation remains to try and increase physical activity while decreasing sedentary behavior. While is

becoming more and more difficult to limit sedentary time in a modern world where gadgets (TV, computers, cell phones, video games, etc) are ubiquitous, it is important to try and get outside more, and stimulate our muscles (physical activity).



The following is a chart comparing energy expenditure for passive (sitting) video games to active (standing) video games on the Kinect and Wii consoles. Energy expenditure was measured for a young woman weighing approximately 60 kg. Energy expenditure will be lower is you are lighter, and greater if you are heavier than 60 kg.



30 minutes of...	Sitting	Your shape Tonifier	Your shape Cardio	Zumba	Dance central	Adventure	Step
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<b>Energy expenditure, Kcal</b>	35	89	111	144	121	123	62
<b>Average heart rate (min-max)</b>	75 (69-78)	132 (104-162)	144 (99-193)	146 (93-166)	140 (108-175)	140 (98-183)	106 (91-115)



You might have noticed that energy expenditure is greatest when heart rate is the highest. It is therefore interesting to take your pulse if you want to know if an activity is challenging. We have found that the Wii posts greater energy expenditure than what is really spent, while the Kinect posts less calories than what is actually spent.

## Oxygen at the source

You might be wondering why participants of the QUALITY study undergo a cycling test during their evaluation. This maximal fitness test enables us to determine maximal aerobic capacity ( $VO_{2max}$ ). In other words, the  $VO_{2max}$  is the quantity of oxygen that the body is able to consume maximally in 1 minute for every kilogram of weight. The greater the quantity of oxygen one can consume per minute, the better able one is to partake in intense physical activity.



For QUALITY researchers, this variable of fitness permits us to make associations between the physical activity that the children participate in, their environment, their health and their other lifestyle habits.

**Did you** know that this test is used by trainers working with high level athletes? Accordingly, an athlete might do this test at the start of the training season, so that his/her trainer can know his/her  $VO_{2max}$ . The trainer can then tailor training in accordance with these results, such that the athlete can progress well and be in excellent shape for the start of competitions.

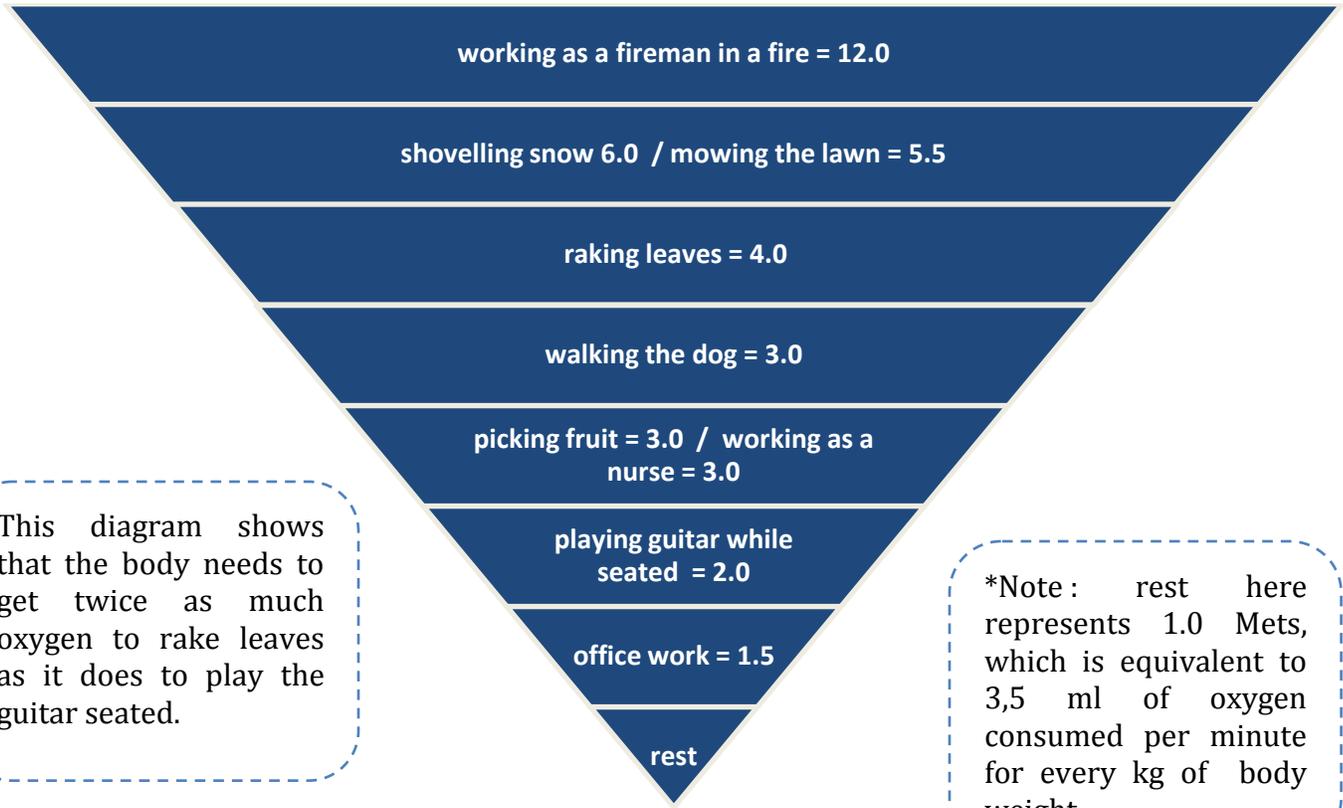
### Picture of activities

Over the years, researchers have determined the volume of oxygen consumption needed to do various activities. They have evaluated daily living tasks: physical activity, household chores, different job occupations and leisure time activities. This enables us to classify different activities according to their level of intensity. Can you rank by order of intensity, from the lowest to the highest, the following activities?

- \* sweeping the floor
- \* shovelling snow
- \* office work
- \* working as a fireman (in action)
- \* picking fruit from a tree
- \* playing guitar while seated
- \* raking leaves
- \* mowing the lawn with an electric lawn mower
- \* working as a nurse
- \* walking the dog



Check your answer with the graph on the next page...



This diagram shows that the body needs to get twice as much oxygen to rake leaves as it does to play the guitar seated.

\*Note: rest here represents 1.0 Mets, which is equivalent to 3,5 ml of oxygen consumed per minute for every kg of body weight.

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