CHILD HEALTH & EXERCISE MEDICINE PROGRAM
McMaster University
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Preschooler *focus*

ACTIVE VIDEO GAMES

Today's society is looking for ways that children can become and stay active. Technology is also all around us and creates conveniences that can reduce physical activity. Lately, it has become popular to combine technology and physical activity to address childhood obesity and physical inactivity. The result is active video games. But do they work?

Active video games propose to combine technology and physical activity as a contemporary solution to childhood obesity

Active video games are based on the assumption that combining exercise with technology may make contemporary children more likely to enjoy physical activity. With increasing rates of childhood obesity, active video games have been offered as a possible aid to increase physical activity levels. Unfortunately, the research does not support this idea. In fact, researchers have concluded, from the results of studies, that simply acquiring an active video game does not provide a public health benefit to children. Playing an active video game may result in light to moderate intensity physical activity and increases in overall energy expenditure, but it does not lead to increased habitual physical activity. There is currently no evidence that children who play active video games are generally more active than children who play inactive video games[1]. Active video games do increase heart rate and are a good way to decrease the amount of sedentary screen time, but they are not a replacement for playing outdoor games or sports.

Active Video Games for Preschoolers

Canadian physical activity guidelines recommend that preschoolers should accumulate at least 180 minutes of physical activity, at any intensity, throughout the day and work their way towards at least 60 minutes of moderate- to vigorous-intensity physical activity daily by age 5. Active video games can increase the heart rate and may improve motor skills of preschoolers, but they are unlikely to help children obtain the energetic play necessary for good health. Outdoor active play helps increase physical activity, provides children with vitamin D, fresh air and social interactions that are not provided with active video games.

Active Video Games vs. Active Play

The novelty of active video games attracts preschoolers and can help get them moving. Active video games do increase overall energy expenditure, but active play provides more moderate- to vigorous-intensity physical activity. Active play also increases heart rate and burns more calories in children than active video games. For example, a 5 year old boy who weighs 25 kg might be expected to burn the following amounts of energy:

Wii™ Sports Frisbee 68 kcals/hr		**Outdoor Frisbee** 151 kcals/hr
Wii™ Table Tennis 60 kcals/hr		**Tennis** 168 kcals/hr
Wii™ Baseball 98 kcals/hr		**Baseball** 110 kcals/hr

Further research is needed to determine the implications of active video games and their long term effects on physical activity levels in preschoolers.

Did You Know?

In North America, children over the age of 2 spend on average 13 hours a week playing all types of video games. Limiting the time children are sedentary and gaming, and replacing video games with active play can help get children up and moving to increase their physical activity.

When purchasing new toys for your child, balls, skipping ropes and sports equipment are a better health investment than active video games.

Do not use active video games as a replacement for active play; ensure your child is still playing outdoors, engaging in sports and interacting with others.

About Active Video Games

- **Nintendo Wii™**: This gaming system uses a wireless controller that evaluates the participants' movement in space. It allows active games such as baseball, tennis, frisbee and many others to be played. The Nintendo Wii can increase heart rate and energy expenditure[2].
- **Konami DanceDance Revolution™**: This game uses a mat with arrows, a screen and music. The screen gives participant's directions where to step on the mat to dance along to the beat. DanceDance Revolution improves coordination between eyes and feet, helps improve endurance and increases muscle strength[3].
- **Cateye Fitness GameBike™**: This stationary bike links into gaming consoles and allows participant's to pedal and steer with the bike to control the game. GameBike increases heart rate, oxygen uptake and agility[4].

the HOPP study

Learn about preschooler health and physical activity through a study conducted at McMaster University! Contact Nicole at macHOPP@mcmaster.ca or (905) 521-2100 x.77217 or visit us online at fhs.mcmaster.ca/chemp

ADDITIONAL RESOURCES:

Active Healthy Kids Canada (www.activehealthykids.ca)
ParticipACTION (www.participaction.com)
Best Start Resource Centre (www.beststart.org/haveaballtogether/campaign.html)
Canadian Fitness and Lifestyle Research Institute (www.cflri.ca)
Canadian Society for Exercise Physiology (www.csep.ca/guidelines)
McMaster University Child Health & Exercise Medicine Program (fhs.mcmaster.ca/chemp)

References:
[1] Baranowski et al. (2012). Impact of an Active Video Game on Healthy Children's Physical Activity. *Pediatrics, 129: 636-642.*
[2] Warsaw, V. (2009). Comparison of Physiological and Metabolic Responses to Playing Nintendo Wii Sports and Brisk Treadmill Walking. *Journal of Human Kinetics*, 22: 43-49.
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[4] Mark et al. (2009). Active Video Games: A Good Way to Exercise? *Alberta Centre for Active Living: WellSpring, 20 (4).*

Additional Readings:
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Hussey, J., O'Donovan, C. and E.F. Roche. (2013). The energy cost of playing active video games in children with obesity and children of a healthy weight. *Ped Obesity,* DOI: 10.1111/j.2047-6310.2013.00172.x.
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