

# Youth Compendium of Physical Activities

Compendia of energy expenditure values for different types of physical activity are widely used to translate the energy cost of physical activities into standardized values. The Compendium of Physical Activities for adults, first released in 1993, has been an invaluable contribution to physical activity research and promotion. However, energy costs of physical activity change as children grow and mature, making adult values inappropriate for youth.

Recognizing this distinction, the first compendium of energy expenditure levels devoted to youth was published in 2008. At this time, energy expenditure values were unavailable for many youth activities, and the 2008 youth compendium relied heavily on translated adult values. In 2012, NCCOR established the Youth Energy Expenditure workgroup to develop energy expenditure values specifically for youth. The workgroup has engaged in several activities to collate existing measures and create standardized energy expenditure values for common physical activities in which youth and children engage.

In 2017, the workgroup released the *Youth Compendium of Physical Activities* ([www.nccor.org/youthcompendium](http://www.nccor.org/youthcompendium)), a list of 196 common activities in which youth participate and the estimated energy cost associated with each activity.

The Youth Compendium provides energy cost values for:

- Sedentary activities, such as lying down or watching TV
- Standing, household chores, and active video games
- Playing and participating in games and sports activities
- Walking and running

## WHAT IS A YOUTH MET?

In this new Youth Compendium, energy expenditure levels are reported in youth METs. A MET, or metabolic equivalent, is a unit that represents the metabolic cost of physical activity. A youth MET (MET<sub>y</sub>) is a MET that has been adjusted to account for the unique physiological characteristics of children and adolescents. The MET<sub>y</sub> values in the Youth Compendium were derived from literature reviews, data analysis, and imputation.

## NCCOR: WORKING TOGETHER TO REVERSE CHILDHOOD OBESITY

NCCOR is a partnership of the four leading funders of childhood obesity research: the Centers for Disease Control and Prevention (CDC), the National Institutes of Health (NIH), the Robert Wood Johnson Foundation (RWJF), and the U.S. Department of Agriculture (USDA). These four leaders joined forces in 2008 to continually assess the needs in childhood obesity research, develop joint projects to address gaps and make strategic advancements, and work together to generate fresh and synergetic ideas to reduce childhood obesity. For more information about NCCOR, visit [www.nccor.org](http://www.nccor.org).

## How to use the data in the Youth Compendium

Values are best used to represent group-level estimates for energy expenditure. In cases where individual estimation is desired, users should realize that energy expenditure can be influenced by many factors not represented by values in the table (e.g., body size, economy of movement). Users should understand that these values are estimates based on modest sample sizes and are not recommended to be used for precise estimates of individual energy balance.

## Who should use the Youth Compendium?

The Youth Compendium is intended for widespread use by researchers, state and local health departments, educators, fitness professionals, and in the commercial sector for development of metrics related to exercise equipment and behavioral interventions. The Youth Compendium can be used to:

- Summarize energy expenditures from diverse activities reported in physical activity questionnaires
- Contribute to the design of physical activity interventions via the selection of physiologically comparable programmatic elements
- Help in the design of fitness programs
- Aid in the comparison and evaluation of school- and community-based programs and activities

Butte NF, Watson KB, Ridley K, et al. A youth compendium of physical activities: activity codes and metabolic intensities. *Med Sci Sports Exerc.* 2017; doi: 10.1249/MSS.0000000000001430. Epub 2017 Sep 21.

Pfeiffer KA, Watson KB, McMurray RG, et al. Energy cost expression for a youth compendium of physical activities: rationale for using age groups. *Pediatr Exerc Sci.* 2017; doi: 10.1123/pes.2016-0249. Epub 2017 Aug 8.

Herrmann S, Pfeiffer KA. New data for an updated youth energy expenditure compendium: an introduction. *J Phys Act Health.* 2016;13(6 Suppl 1):S1-2.

McMurray RG, Butte NF, Crouter SE, et al. Exploring metrics to express energy expenditure of physical activity in youth. *PLoS One.* 2015;10(6):e0130869.