

Youth Compendium of Physical Activities for Physical Education Teachers

In 2017, NCCOR released the Youth Compendium of Physical Activities (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

Who should use the Youth Compendium

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

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.

The following case studies describe two ways physical education teachers can use the Youth Compendium:

- Assist with creating physical education lesson plans
- Assist with physical fitness testing

CASE STUDY: CREATING LESSON PLANS FOR PHYSICAL EDUCATION CLASSES

Background

A physical education teacher in a local public elementary school is creating lesson plans for upcoming physical education classes. She needs an array of activities that will meet the physical education requirements for the school district. Although requirements vary among school districts, in this district, students must participate in three 50-minute physical education classes each week. Physical education is one way that children can reach the recommended 60 minutes of physical activity per day as outlined in the 2008 Physical Activity Guidelines for Americans.

Considerations

The teacher is interested in an array of activities that are similar in levels of energy expenditure. The activities should only involve equipment and settings that are available to the school.

How to use the Youth Compendium

She opens the Youth Compendium of Physical Activities and clicks the green “Search the Compendium” box. From the top navigation,

the teacher selects “METy (Metabolic Equivalent of Task for Youth) Values (Smoothed).” The smoothed values are recommended for use by practitioners in the field. The teacher is looking for activities that will allow for her 1st- and 2nd-grade students to participate in moderate to vigorous physical activity (MVPA). The teacher reviews the activities in the tables. She can sort the table by METy level by clicking the arrows next to the age categories. Based on the METy values, the following activities would allow students ages 6–9 to reach target MVPA levels:

Warm up:

- Walking 1.0 mph **2.5 METy**

Moderate:

- Shooting basketballs **5.9 METy**
- Ultimate frisbee **5.6 METy**

Vigorous:

- Running 5.5 mph **7.3 METy**
- Soccer game **7.7 METy**

CASE STUDY: CREATING A CURRICULUM LOG FOR PHYSICAL FITNESS TESTING

Background

School District 123 requires all elementary schools to offer 200 minutes of physical education every 10 days. The district also requires physical fitness testing twice per year for all 3rd–9th graders. If the physical education teachers were asked to report the activities of their curriculum, the volume and intensity of physical activity in which students participate (METy-minutes) could be calculated. This calculation could then be compared to the percentage of students who score in the Healthy Fitness Zone® for aerobic capacity and/or body composition during annual physical fitness testing (i.e., FitnessGram®).

What is a METy-minute?

The Metabolic Equivalent of Task for Youth (METy) represents the energy cost of a physical activity compared to the rate of energy expended at rest. One METy, for example, is the rate of energy expenditure while at rest, while a 5-METy activity expends 5 times the energy at rest. Therefore, if students participate in a 5-METy activity for 30 minutes, they participate in $5 \times 30 = 150$ METy-minutes of physical activity.

How do METy-minutes relate to the percentage of students in the Healthy Fitness Zone?

The Healthy Fitness Zone Standards for school fitness testing (FitnessGram) are criterion-referenced levels of fitness for good health. These standards vary for boys and girls and for different age levels. Scores for aerobic capacity and body composition can help identify potential health risks, and students who fall below the standards are often encouraged to be more physically active. Calculating the number of METy-minutes in a physical education class can help teachers adjust the volume of physical activity in which students participate. It is possible that more METy-minutes in a physical education curriculum would correlate with a higher percentage of students achieving the Healthy Fitness Zone during annual fitness testing.

How to use the Youth Compendium

If the school already participates in annual fitness testing, a physical education teacher would need to log the number of METy-minutes in the curriculum by using the Youth Compendium of Physical

Activities to estimate the energy cost associated with each of the planned activities. Below is an example of a teacher's curriculum log from ABC Elementary for a class of 3rd graders:

Activity	METy (Age 6–9)	Mins	METy-minutes (METy x Mins)
Dodgeball Type Games	5.8	20	116
Freeze/Tag Zone (Moderate intensity)	6.3	20	126
Jump Rope	6.9	15	103.5
Aerobic Dance/Dance	3.6	30	108
Jog – Self-Paced	6.8	20	136
Basketball – Game	6.7	30	201
Soccer – Around Cones	5.4	45	243
Playing Games (Catch and throw balls, jumping jacks)	5.9	20	118
TOTAL in 10 days		200	1,151.5

To compare the 3rd-grade physical education curriculum's METy-minutes with annual fitness results, the following is an example chart for two elementary schools in the district:

SCHOOL	PE CURRICULUM (METy-mins/10 days)	% 3rd-Grade Students in Healthy Fitness Zone for Aerobic Capacity	% 3rd-Grade Students in Healthy Fitness Zone for Body Composition
ABC Elementary	1,151.5	69.4	62.7
XYZ Elementary	925.5	61.2	59.3

After comparing post-testing results to other schools or districts, XYZ Elementary may decide they want to try to increase the percentage of students achieving the Healthy Fitness Zone for aerobic capacity. Therefore, their physical education teacher could increase the intensity of physical activity by selecting activities for the school's physical education curriculum from the Youth Compendium that are associated with higher METy values.