

Physical Activities Defined by Level of Intensity

Minnesota Department of Health adapted this information in accordance with the Centers for Disease Control and Prevention (CDC) and American College of Sports Medicine (ACSM).

Children and adolescents (**6-17 years of age**) need **at least 60 minutes** of physical activity every day. This includes activities that make their hearts beat faster, build muscles, and strengthen bones.

Building muscles might include climbing or doing pushups. Strengthening bones can include running or jumping. Some activities are a higher intensity than others because they require more energy to do. For example, a person expends more energy walking briskly than slowly strolling.

Measuring intensity

Rates of energy expenditure during physical activity are commonly described as light, moderate, or vigorous intensity.

Energy expenditure is expressed by multiples of the metabolic equivalent of task (MET). A MET is the ratio of the rate of energy expended during an activity to the rate of energy expended at rest, where 1 MET is the rate of energy expenditure while sitting at rest.

Absolute aerobic intensity is defined in terms of METs:

Light-intensity activities require less than 3.0 METs; examples include walking at a slow or leisurely pace (2 mph or less), cooking activities, or light household chores.

Moderate-intensity activities require 3.0 to 5.9 METs; examples include walking briskly (2.5 to 4 mph), playing doubles tennis, or raking the yard.

Vigorous-intensity activities require 6.0 METs or more; examples include jogging, running, carrying heavy groceries or other loads upstairs, shoveling snow, or participating in a strenuous fitness class.

When using relative intensity, people pay attention to how physical activity affects their heart rate and breathing. As a rule of thumb, a person doing moderate-intensity aerobic activity can talk, but not sing, during the activity. A person doing vigorous-intensity activity cannot say more than a few words without pausing for a breath.

This document includes guidance for children, adolescents, and adults of all ability levels. Use this guidance along with the [Minnesota Outdoor Air Quality Guidance for Schools and Child Care](#) to align your physical activities with the current air quality conditions in your area.

Examples of activities by intensity

Light-intensity activities

Less than 3.0 METs (less than 3.5 kcal/min)
Light calisthenics, such as: <ul style="list-style-type: none">▪ Yoga and Tai Chi at light-intensity▪ Stretching▪ Dancing slowly
• Walking at a slow pace, 2.0 miles per hour (mph) or less
• Light household work, such as: <ul style="list-style-type: none">▪ Dusting▪ Ironing▪ Folding laundry▪ Washing dishes▪ Putting groceries away
• Cooking activities
• Leisurely recreation sports, such as: <ul style="list-style-type: none">▪ Playing catch▪ Fishing

Moderate-intensity activities

3.0 to 6.0 METs (3.5 to 7 kcal/min)
• Walking at a moderate or brisk pace of 3.0 to 4.5 mph on a level surface or outside, such as: <ul style="list-style-type: none">▪ Walking to class, work, or the store▪ Walking for recreation▪ Walking the dog▪ Walking as a break from work▪ Walking downstairs▪ Racewalking (5 mph or less)

PHYSICAL ACTIVITIES DEFINED BY LEVEL OF INTENSITY

<ul style="list-style-type: none">▪ Hiking
<ul style="list-style-type: none">• Roller skating at a leisurely pace
<ul style="list-style-type: none">• Bicycling 5 to 9 mph, level terrain, or with few hills<ul style="list-style-type: none">▪ Stationary bicycling, using moderate effort
<ul style="list-style-type: none">• Calisthenics with moderate effort, such as:<ul style="list-style-type: none">▪ Yoga▪ Gymnastics▪ General home exercises with light to moderate effort, such as getting up and down from the floor▪ Jumping on a trampoline▪ Using a stair climber machine at a light to moderate pace▪ Using a rowing machine, with moderate effort▪ Weight training and body building using free weights▪ Boxing, such as using a punching bag
<ul style="list-style-type: none">• Dancing, such as:<ul style="list-style-type: none">▪ Ballroom dancing▪ Line dancing▪ Square dancing▪ Folk dancing▪ Modern dancing▪ Ballet
<ul style="list-style-type: none">• Competitive sports, such as:<ul style="list-style-type: none">▪ Table tennis▪ Tennis, doubles▪ Golf, including carrying or wheeling clubs▪ Softball, fast pitch, or slow pitch▪ Basketball, shooting baskets▪ Coaching children's or adult's sports▪ Volleyball
<ul style="list-style-type: none">• Indoor or outdoor recreational sports, such as:<ul style="list-style-type: none">▪ Playing Frisbee▪ Juggling

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<ul style="list-style-type: none">▪ Curling▪ Cricket (batting and bowling)▪ Badminton▪ Archery (nonhunting)▪ Fencing
<ul style="list-style-type: none">● Winter recreation sports with light to moderate effort, such as:<ul style="list-style-type: none">▪ Downhill skiing▪ Ice skating at a leisurely pace (9 mph or less)▪ Snowmobiling▪ Ice sailing
<ul style="list-style-type: none">● Recreational water sports, such as:<ul style="list-style-type: none">▪ Swimming▪ Treading water, slowly, moderate effort▪ Diving, springboard, or platform▪ Waterskiing▪ Snorkeling▪ Surfing, board, or body▪ Canoeing or rowing a boat (4 mph or less)▪ Sailing, recreational or competition▪ Paddle boating or boarding▪ Kayaking on a lake or calm water▪ Washing or waxing a powerboat or the hull of a sailboat▪ Fishing while walking along a riverbank or while wading in a stream
<ul style="list-style-type: none">● Hunting, such as:<ul style="list-style-type: none">▪ Hunting deer or small game▪ Pheasant and grouse hunting▪ Hunting with a bow and arrow or crossbow
<ul style="list-style-type: none">● Horseback riding, including saddling or grooming a horse
<ul style="list-style-type: none">● School-based activities, such as:<ul style="list-style-type: none">▪ Playing on school playground equipment, moving about, swinging, or climbing▪ Playing hopscotch, 4-square, or tetherball▪ Dodgeball or t-ball

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<ul style="list-style-type: none">▪ Skateboarding
<ul style="list-style-type: none">• Playing instruments while actively moving, such as:<ul style="list-style-type: none">▪ Playing in a marching band▪ Playing guitar or drums in a band▪ Twirling a baton in a marching band▪ Singing
<ul style="list-style-type: none">• Gardening and yard work, such as:<ul style="list-style-type: none">▪ Raking the lawn▪ Bagging grass or leaves▪ Digging, hoeing, light shoveling (less than 10 lbs. per minute)▪ Weeding while standing or bending▪ Planting trees, trimming shrubs and trees▪ Hauling branches or stacking wood▪ Pushing a power lawn mower or tiller▪ Shoveling light snow
<ul style="list-style-type: none">• Moderate housework, such as:<ul style="list-style-type: none">▪ Scrubbing the floor or bathtub while on hands and knees▪ Hanging laundry on a clothesline▪ Sweeping an outdoor area▪ Moving light furniture▪ Packing or unpacking boxes▪ Walking and putting household items away (e.g., glass, newspapers, and plastics)▪ Carrying water or firewood▪ General household tasks requiring considerable effort▪ Putting groceries away, walking and carrying especially large or heavy items less than 50 lbs.
<ul style="list-style-type: none">• Actively playing with individuals under supervision, including:<ul style="list-style-type: none">▪ Walking, running, or climbing while playing with children▪ Walking while carrying a child weighing less than 50 lbs.▪ Walking while pushing or pulling a child in a stroller or an adult in a wheelchair▪ Carrying a child weighing less than 25 lbs. up a flight of stairs▪ Child care, such as handling uncooperative young children (e.g., chasing, dressing, lifting into car seat) or handling several young children at one time

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<ul style="list-style-type: none">▪ Bathing and dressing an adult
<ul style="list-style-type: none">• Animal care, such as:<ul style="list-style-type: none">▪ Shoveling grain▪ Feeding livestock and farm animals▪ Grooming animals▪ Playing with or training animals
<ul style="list-style-type: none">• Home repair and general home construction work, such as:<ul style="list-style-type: none">▪ Cleaning gutters▪ Caulking▪ Refinishing furniture▪ Sanding floors with a power sander▪ Laying or removing carpet or tiles▪ Roofing▪ Painting inside or outside of the home▪ Wall papering▪ Scraping, plastering, or remodeling▪ Outdoor carpentry, e.g., sawing wood with a power saw
<ul style="list-style-type: none">• Automobile bodywork, such as hand washing and waxing a car
<ul style="list-style-type: none">• Other general tasks frequently requiring moderate effort and considerable use of arms, legs, or occasional total body movements:<ul style="list-style-type: none">▪ Occupations that require extended periods of walking, pushing or pulling objects weighing less than 75 lbs.▪ Standing while lifting objects weighing less than 50 lbs.▪ Carrying objects of less than 25 lbs. up a flight of stairs▪ Briskly walking on a level surface while carrying a suitcase or load weighing up to 50 lbs.▪ Maid service or cleaning services▪ Waiting tables or institutional dishwashing▪ Driving or maneuvering heavy vehicles (e.g., semi-truck, school bus, tractor, or harvester) that are not fully automated and requiring extensive use of arms and legs▪ Operating heavy power tools (e.g., drills and jackhammers)▪ Homebuilding tasks (e.g. electrical work, plumbing, carpentry, dry wall, and painting)

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- Farming, e.g., feeding and grooming animals, milking cows, shoveling grain, picking fruit from trees, or picking vegetables
- Packing boxes for shipping or moving
- Mail delivery, e.g., walking while carrying a mailbag
- Patient care, e.g., bathing, dressing, and moving patients or physical therapy

Vigorous-intensity activities

Greater than 6.0 METs (*more than 7 kcal/min*)

- **Walking, hiking, jogging, or running, such as:**
 - Racewalking and aerobic walking (5 mph or faster)
 - Wheeling your wheelchair
 - Walking and climbing briskly up a hill
 - Backpacking
 - Mountain climbing, rock climbing, rappelling
 - Roller skating or in-line skating at a fast pace
 - Jumping rope
 - Performing jumping jacks
- **Bicycling more than 10 mph or bicycling on steep uphill terrain, including stationary bicycling using vigorous effort**
- **High-impact aerobics, such as:**
 - Aerobic dancing
 - Step aerobics
 - Water jogging
 - Teaching an aerobic dance class
- **Vigorous-effort calisthenics, such as:**
 - Push-ups and pull-ups
 - Karate, judo, taekwondo, jujitsu
 - Jumping rope
 - Performing jumping jacks
 - Using a stair climber machine at a fast pace
 - Using a rowing machine with vigorous effort
 - Using an arm cycling machine with vigorous effort

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- Circuit weight training
- Boxing (e.g., in the ring, sparring)
- Wrestling

- **Dancing energetically, such as:**

- Professional ballroom dancing
- Square dancing
- Folk dancing
- Clogging

- **Competitive sports, such as:**

- Tennis (singles) and wheelchair tennis
- Football
- Basketball and wheelchair basketball
- Soccer
- Rugby
- Kickball
- Field or rollerblade hockey
- Ice hockey
- Lacrosse
- Beach volleyball, on a sand court
- Handball
- Racquetball
- Squash

- **Winter recreation and competition sports with vigorous effort, such as:**

- Downhill skiing (e.g., racing)
- Ice-skating (e.g., fast pace or speedskating)
- Cross-country skiing
- Sledding
- Tobogganing
- Ice hockey

- **Water-related recreation sports, such as:**

- Swimming (e.g., steady paced laps)
- Synchronized swimming

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<ul style="list-style-type: none">▪ Treading water at a fast, vigorous effort▪ Water jogging▪ Water polo▪ Water basketball▪ Scuba diving▪ Canoeing or rowing (4 mph or faster)▪ Kayaking in whitewater rapids
<ul style="list-style-type: none">● Horseback riding, including trotting, galloping, jumping, in competition, or playing polo
<ul style="list-style-type: none">● Playing a heavy musical instrument while actively running in a marching band
<ul style="list-style-type: none">● Gardening and yard work, such as:<ul style="list-style-type: none">▪ Heavy or rapid shoveling (more than 10 lbs. per minute)▪ Digging ditches▪ Carrying large logs▪ Swinging an axe▪ Hand-splitting logs▪ Climbing and trimming trees▪ Pushing a nonmotorized lawn mower▪ Shoveling heavy snow
<ul style="list-style-type: none">● Heavy housework, such as:<ul style="list-style-type: none">▪ Moving or pushing heavy furniture (75 lbs. or more)▪ Carrying household items weighing 25 lbs. or more up a flight of stairs▪ Shoveling coal into a stove▪ Standing, walking, or walking down a flight of stairs while carrying objects weighing 50 lbs. or more▪ Carrying several heavy bags (25 lbs. or more) or groceries at one time up a flight of stairs▪ Grocery shopping while carrying young children and pushing a full grocery cart▪ Pushing two full grocery carts at once
<ul style="list-style-type: none">● Vigorously playing with individuals under supervision, such as:<ul style="list-style-type: none">▪ Running longer distances or playing strenuous games with children▪ Racewalking or jogging while pushing a stroller designed for sport use▪ Carrying an adult or child weighing 25 lbs. or more up a flight of stairs

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<ul style="list-style-type: none">▪ Standing or walking while carrying an adult or child weighing 50 lbs. or more
<ul style="list-style-type: none">• Animal care, such as:<ul style="list-style-type: none">▪ Forking bales of hay or straw▪ Cleaning a barn or stables▪ Carrying animals weighing over 50 lbs.▪ Handling or carrying heavy animal-related equipment or track
<ul style="list-style-type: none">• Home repair or construction, such as:<ul style="list-style-type: none">▪ Very hard physical labor▪ Standing or walking while carrying heavy loads of 50 lbs. or more▪ Taking loads of 25 lbs. or more up a flight of stairs or ladder (e.g., carrying roofing materials onto the roof)▪ Concrete or masonry work▪ Hand-sawing hardwoods
<ul style="list-style-type: none">• Other tasks frequently requiring strenuous effort and extensive total body movements, such as:<ul style="list-style-type: none">▪ Running up a flight of stairs while carrying a suitcase or load weighing 25 lbs. or more▪ Teaching a class or skill requiring active and strenuous participation, such as aerobics or physical education instructor▪ Firefighting▪ Masonry and heavy construction work▪ Coal mining▪ Manually shoveling or digging ditches▪ Using heavy nonpowered tools▪ Forestry work▪ Farming, e.g., forking straw, baling hay, cleaning barn, or poultry work▪ Moving items professionally▪ Pushing a broken car▪ Loading and unloading a truck

Source: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Nutrition and Physical Activity. *Promoting physical activity: a guide for community action*. Champaign, IL: Human Kinetics, 1999. (Table adapted from Ainsworth BE, Haskell WL, Leon AS, et al. Compendium of physical activities: classification of energy costs of human physical activities. *Medicine*

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The ratio of exercise metabolic rate: One MET is defined as the energy expenditure for sitting quietly, which, for the average adult, approximates 3.5 ml of oxygen uptake per kilogram of body weight per minute (1.2 kcal/min for a 70-kg individual). For example, a 2-MET activity requires two times the metabolic energy expenditure of sitting quietly.

For an average person, defined here as 70 kilograms or 154 pounds. The activity intensity levels portrayed are most applicable to men aged 30 to 50 years and women aged 20 to 40 years. For older individuals, the classification of activity intensity might be higher. For example, what is moderate intensity to a 40-year-old man might be vigorous for a man in his 70s. Intensity is a subjective classification.

To compute the amount of time needed to accumulate 150 kcal, do the following calculation: 150 kcal divided by the MET level of the activity equals the minutes needed to expend 150 kcal. For example: $150/3 \text{ METS} = 50$ minutes of participation. Generally, activities in the moderate-intensity range require 25-50 minutes to expend a moderate amount of activity, and activities in the vigorous-intensity range would require less than 25 minutes to achieve a moderate amount of activity. Each activity listed is categorized as light, moderate, or vigorous based on current knowledge of the overall level of intensity required for the average person to engage in it, taking into account brief periods when the level of intensity required for the activity might increase or decrease considerably.

Persons with disabilities, including motor function limitations (e.g., quadriplegia) may wish to consult with an exercise physiologist or physical therapist to properly classify the types of physical activities in which they might participate, including assisted exercise. Certain activities classified in this listing as moderate might be vigorous for persons who must overcome physical challenges or disabilities.

Note: Almost every occupation requires some mix of light, moderate, or vigorous activities, depending on the task at hand. To categorize the activity level of your own position, ask yourself: How many minutes each working day do I spend doing the types of activities described as light, moderate, or vigorous? To arrive at a total workday caloric expenditure, multiply the minutes spent doing activities within each intensity level by the kilocalories corresponding to each level of intensity. Then, add together the total kilocalories spent doing light, moderate, and vigorous activities to arrive at your total energy expenditure in a typical day.

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