

WHEN ARE WE GOING TO TEACH HEALTH?

LET'S TEACH HEALTH AS IF EACH CHILD'S
LIFE DEPENDS ON IT—BECAUSE IT DOES

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CHAPTER 8

PHYSICAL ACTIVITY: MAXIMIZING THE TIME WE ALREADY HAVE

A solution for overloaded school schedules: Increasing exercise intensity offers the same aerobic benefits as adding more time for physical activity.

Note: The terms Physical Education (PE) and Physical Activity (PA) overlap; the main difference is that PE focuses on movement-oriented physical skill-building, whereas PA focuses on movement itself. Sometimes the term “structured PA” is used to distinguish adult-supervised activities that require movement from “recess,” when movement is optional. Since research demonstrates a correlation between PA and both health and educational benefits, we’ll use the term PA here.

Fighting for Minutes

How many minutes of the school day or week should

be devoted to PA is a hotly debated topic, and one with a zero-sum mentality. Each minute added to the quota is perceived as a gain for health advocates but a loss for educators, and vice versa for each minute subtracted. Parents can be found on both sides of the debate.

For example, the California Education Code requires all elementary schools to provide two hundred minutes of PA to students every 10 school days. Frustrated with a 50 percent compliance rate, along with independent findings that the rule was rarely enforced, in 2013 San Francisco-area elementary school parent, Marc Babin, and his advocacy group Cal200 sued 37 districts around the state.¹

A Hollow Victory?

Cal200 eventually won, but the newly enforced minutes of PA in California can be supervised by anyone with a state teaching certification. In other words, teachers are required to lead PA but are not required to have any experience or professional development in doing so. Naturally, many teachers who suddenly find themselves needing to cover PA are at a loss for how to teach it, and one can hardly expect them to do so without formal training. To understand why this outcome makes Cal200's case less of a victory than it seems requires understanding how PA is measured and the amount of exercise children need for a beneficial health effect.

The Measure That Really Matters

The scientific unit of measure for PA is MET-minutes, movement time (in minutes) multiplied by movement intensity (in Metabolic Equivalents, or METs). A MET is the ratio of oxygen consumed when moving compared with oxygen consumed at rest. Oxygen consumption at rest is the baseline and has a MET of 1.0. Physical activity with an intensity of less than 3.0 METs—which means you're exerting less than three times the energy you would sitting still—is classified as light, 3.0–5.9 METs is considered moderate, and 6.0 or more METs is considered vigorous.

For protection against cancer and other noncommunicable diseases, the U.S. Department of Health and Human Services (HHS) recommends a PA “dose” of 500–1,000 MET-minutes per week for average adults.² Based on the 2011 Compendium of Physical Activities, which lists hundreds of activities and their MET levels, this recommendation could be met by, for example, running at six mph for 25 minutes three times a week:

$$25 \text{ minutes of movement time} \times 9.8 \text{ METs} = 245 \text{ MET-minutes} \\ \times 3 \text{ days} = 735 \text{ MET-minutes.}$$

It could also be met by raking a lawn for four hours a week:

$$240 \text{ minutes} \times 4.0 \text{ METs} = 960 \text{ MET-minutes.}^3$$

Health agencies sometimes simplify their PA guidelines

by expressing them in minutes, and therefore that is how many people think of them. For example, many adults consider a good exercise goal to be 20 minutes per day, 5 days per week (100 minutes per week). But as shown in the examples above and in figure 7, minutes of exercise mean little without considering intensity. Doing 100 minutes of physical activity per week at an intensity of 3.0 METs is not enough; 100 minutes at 6.0 METs is near the bottom of the recommended range; 100 minutes at 9.0 METs is near the top of the recommended range.

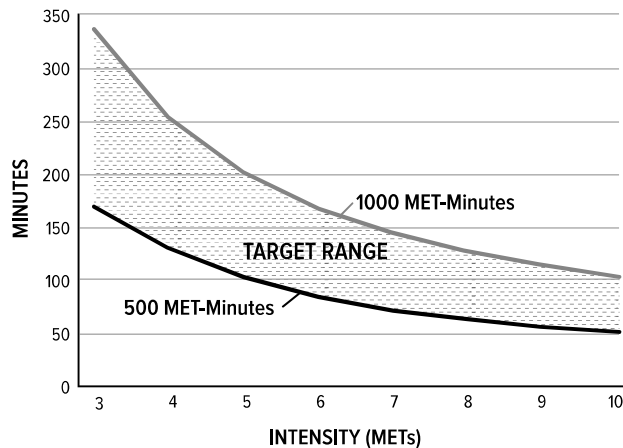


Figure 7: Recommended Weekly Physical Activity Range for U.S. Adults

Children ages six to seventeen need a recommended 60 minutes or more of moderate-to-vigorous-intensity aerobic physical activity (MVPA) per day.⁴ That’s an hour of exercise at a level of 3.0 METs or higher—basically walking briskly or running. At an average intensity of 4.0 METs, that means the minimum recommendation for children and adolescents is about twice that for adults:

420 minutes of movement x 4.0 METs = 1,680 MET-minutes per week.

The recommendation for children is not shown in figure 7 because intensity is so important for them that only a moderate-to-vigorous level provides any meaningful benefit. Since anything below 3.0 METs counts as 0, MET-minutes is not an ideal unit of measure for the recommendation. Nonetheless, the MET-minute equation is very helpful conceptually in understanding the importance of intensity when planning PA for youth.

Shortfalls in School PA

Now back to our California story. Imagine PA being led by a general classroom teacher there, or in any one of the 25 percent of schools nationwide that do not require PA teachers to have any “certification, licensure or endorsement by the state in physical activity.”⁵ This teacher quite possibly knows no more about PA than any of us do, beyond our shared cultural experience in elementary school gym class, with its repertoire of elimination, low-participation, and low-intensity games. And suppose that the teacher has decided to have the class play kickball.

At any moment, what is a given child most likely doing? The smart money is on standing, or possibly sitting on the floor. During a kickball game, only two or three people are in motion at a time (and usually not for long) while the rest wait for their turn to move. These kids are all getting effectively no PA.

And kickball is far from the only example. Dodgeball may actually be the worst offender because it combines a low overall dose of activity with a concentration of that dose in the children who are already the most skilled and fit. The kids who got hit in the back during the first five seconds watch as the last couple of athletes duke it out for 10 minutes or more, further honing their skills and fitness—thus making dodgeball the PA equivalent of the rich getting richer.

To encourage a higher dose of activity and help kids meet daily minimums, the CDC recommends that schools ensure that at least 50 percent of all students' activity time is spent moving at an MVPA intensity level. They call this threshold “one of the most critical outcome measures in determining the quality of a physical education [or activity] program.”⁶ However, a CATCH study concluded that only 21 percent of U.S. schools meet this minimum guideline.⁷

How to Increase Both Time and Intensity

Many schools have shown creativity in increasing physical activity by incorporating movement into classroom settings and providing it in short bursts during the school day. This certainly helps with the time side of the equation, and with the right activity selection, it can help with the intensity side, too.

The “activity break” at the end of Part II is an example of a brief, moderate-intensity activity that can be easily per-

formed in a classroom. Another example, called “Zero In,” incorporates math and is appropriate for kids aged eight to eleven. A student volunteer stands at the front of the class, facing the rest of the students as the teacher holds up a card with a problem behind her head so only her classmates can see it. (Let's say it's 210 divided by 3.) Then the teacher says, “Everyone help her find this number, which is between 0 and 500.” If the volunteer guesses a number that is too high, the other students (and the volunteer) all do squats; if the volunteer guesses a number that is too low, everyone does jumping jacks, thereby helping her “zero in” on the correct answer of 70. Thus, in a few short minutes, it is possible for everyone to practice division and also get an activity break that stimulates and then settles their mind for further learning. A striking piece entitled “This Is Your Brain on Exercise” shows the dramatic increase in brain activity in someone who has just taken a walk compared to someone who has been sitting quietly.⁸ Which kid do you want in your classroom?

Another way to increase PA across the student population is to limit exemptions that allow students to skip it in favor of a non-active extracurricular pursuit, to let them make up missed academic work, or as a form of discipline for an infringement. Schools need to adopt a culture in which physical activity is for everybody every day, rather than something that's discretionary, tailored for athletes, or a reward for good behavior.

By far the most powerful solution for increasing PA is

to ensure that anyone leading it, be they a classroom teacher or a specialist, receives regular and pertinent professional development with a focus on: 1) increasing students' MVPA; and 2) making PA varied and fun to help create lifelong positive attitudes about it. Just as improving your cooking involves both learning techniques and expanding your repertoire of recipes, improving PA requires that teachers learn specific class-management skills and also be exposed to new activities they can lead. Examples of techniques taught in PA training include keeping kids active during transitions, delivering concise instructions and signals, and including all students through offering non-elimination games and providing adaptations for those with special needs.

The importance of these basic practices in leading PA for kids reflects the fact that much valuable activity time can be wasted on class management. Too often, a teacher will start activity time like this, "OK, everyone, sit down and be quiet so I can explain today's activity." Kids have already been sitting quietly for hours when they finally get to the gym, and being sedentary is exactly what they're dying to get away from. So it is easy for their restlessness to translate into acting out, further prolonging the time allotted for delivering directions in an escalating cycle.

PA leaders can be taught to more effectively manage this transition time by making it active. For example, they can start class by having everyone "hit the track," walking or jogging around the perimeter of the gym while

instructions are given. Teachers can also learn to give more concise signals and involve students in delivering them. For example, instead of clapping and imploring, "Everyone please be quiet now and listen," a teacher can say, "If you can hear me clap once," then clap once in unison with the kids, and then say slightly louder, "If you can hear me, clap twice," then clap twice in unison with the kids. This approach brings the class to attention with remarkable speed.

A third vital technique for leading PA to maximize MVPA is to ensure that all kids are included all of the time. This means making sure that the general population of kids—not just the athletes—are participating fully. It also extends to children with intellectual and physical disabilities whose needs are more complex. Practices for fostering full participation include adjustments such as changing "freeze tag" (which involves kids ceasing movement when tagged) to "jumping jack tag" (which has them stop running but still keeps them moving when tagged). Adaptations for special-needs kids may be more significant, like replacing jumping rope with simple hopping or even squatting.



Making PA participatory, vigorous, and fun at Jefferson Elementary School, Edinburg, Texas! (Photograph by CATCH Global Foundation. Used with permission.)



Students playing at Bridgedale Elementary School, Metairie, Louisiana (Photograph by CATCH Global Foundation. Used with permission.)

These PA management skills take time and practice to learn and perfect, and they are typically outside of the training and experience of a general classroom teacher.

That’s a big part of the reason that three-quarters of U.S. schools deliver PA using certified specialists.⁹ Although training can help academic teachers meet MVPA minimums, it cannot fully close the gap with specialists in this area. Nor can it arm generalists with an equal range of activities (for kids, variety is fun), or enable them to teach lifelong physical skills like locomotor movement, ball handling, and agility. Unfortunately, the facts that 25 percent of schools leave teaching physical activity entirely to general classroom teachers and that 41 percent of schools don’t require any continuing education for physical educators, mean that kids in close to half of all U.S. schools are getting physical activity led by someone with no credentials or up-to-date training.¹⁰

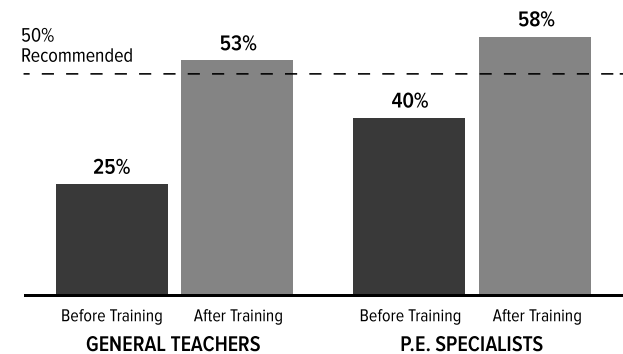


Figure 8: Portion of Structured Activity Time Children Spent in MVPA, Before and After Teacher Training¹¹

How Higher PA Intensity Creates More Time

Figure 8 illustrates the cumulative impact that teacher specialization and training can make on kids’ ability to attain the level of PA intensity required for good health.

Hiring credentialed teachers and training them regularly provides students with the most appropriate activities and has been found to increase kids' exercise intensity from an average of 40 percent MVPA to 58 percent MVPA.¹² That level of improvement offers the same aerobic benefit as lengthening an activity period from 30 minutes to 43 minutes, but without actually adding a single minute to the school schedule!

Let's stop thinking only about the first half of the minutes-*times*-intensity physical activity equation, which values effort without regard for results. We need to shift the debate from the number of PA minutes we can squeeze into a crowded school schedule to how to maximize the minutes we already have. Schools should ensure that the time allotted to PA produces moderate-to-vigorous physical activity for all kids, just as the time allotted to math is expected to produce moderate-to-vigorous multiplication activity for all kids.

Summary

The educational system can help students by shifting its focus from the amount of time devoted to physical activity to the amount of physical activity performed, which is the product of time and intensity. Simple, regular training can enable both general teachers and physical education specialists to provide more aerobic value, and thus more health and academic value, from the physical activity minutes already on school schedules.

Recommended Actions

Parents of school-age children: Ask your school how they train PA leaders and measure PA intensity to ensure that all kids are getting the minimum recommended aerobic activity dose.

Teachers: Seek opportunities to add activity breaks to the classroom and (in younger grades) to transition time.

Principals: Be resourceful in meeting or exceeding district guidelines, ensuring 24 hours of health education per year and 30 minutes of moderate-to-vigorous physical activity per day for every child. Use before-school time and minutes already allocated to PE, lunchroom, homeroom, and/or advisory group meetings. Encourage classroom teachers to add activity breaks, which can reinforce learning to their routine.

School boards, superintendents, and district administrators: Require letter-grade PE classes that include at least 30 minutes per day of moderate-to-vigorous intensity physical activity for every student. Ensure regular professional development for anyone leading physical activity.

Lawmakers and education policy makers: Fund health and physical activity with accountability for outcomes (such as activity levels) not process (such as minutes spent).