

A day in the life

Each morning, Anna's alarm goes off at 6:30. It feels like a full hour passes before her body and brain are really ready to start the day, but what can she do? She has a 40-minute commute ahead of her and has to be at her desk by 8:00 a.m.

After too much time spent sitting in the car, Anna spends the entire morning sitting some more, followed by a lunch break that's much too short for anything relaxing or fun. Instead, she sits to shovel in some food, then spends the rest of the afternoon sitting mostly in one spot: at her desk. Oh, how she longs for a little fresh air! The 40-minute commute home might include a drive-thru run for dinner, which is often followed by more sitting while Anna tackles all the work she had to take home or simply collapses

in front of the TV or her smart phone.

Sound like a day in the life of a typical American working adult? Yes, but it's also the life of far too many school children.

Anna is a fifth grader.

The problem of too much sitting

Adults and children alike are spending far too much time sitting. There's a good chance that our cultural take on sitting actually dates back to our experiences as children, when sitting was most challenging. Whether it was your grade school teacher addressing a class of 30 students at 2:30 on a Friday, or your grandmother from across the dinner table, you've heard it before:

The problem is, you couldn't then, and you still aren't a pro at so much sitting. You have energy to burn and your muscles are sick and tired of being stuck in one position all day. That's because our bodies were designed for movement: there are over 600 muscles in the human body and they were all made to move.

Our ancestors, members of a hunter-gatherer society, were in a nearly constant state of motion as a matter of survival. Today, movement has been engineered out of our daily lives, and the effects are adding up in startling ways.

Sit down! Sit up straight! Sit still!

What's with all the sitting

It's no secret that kids today are not as active as previous generations. They are sitting more than ever before, whether it be at their desks while half-heartedly listening to the teacher, on the crowded school bus on their way home, or at the kitchen table with their heads bent over homework they don't understand.

The fatigue most kids – especially adolescents – experience is rooted in multiple factors. One is that the average start time for schools in the United States is 8:03 a.m., even though the Centers for Disease Control and the American Academy of Pediatrics recommend schools not start before 8:30 a.m. That's because "biological rhythms commonly shift so that adolescents become sleepy later at night and need to sleep later in the morning."¹

That same CDC study went on to explain the dangers of kids not getting enough sleep, including an increased likelihood of the child being overweight, depressed, and performing poorly in school. And yet, only 17% of public schools in the United States start after 8:30.¹ Kids are exhausted before they've even reached the bus stop in the morning.

The average adult's round-trip work commute in 2015 was 45 minutes.² Evidence indicates the school bus ride of a child may mirror, or even exceed, a similar time frame. In many rural communities, students spend as many as three to four hours on the school bus each day.³ That's a lot of time spent sitting – before the school bell has even been rung.

Activity levels don't improve when students arrive at their destination

But what about physical education? And recess? Surely they will come to the rescue, right?

Unfortunately, in recent years, schools have faced significant time constraints due to budget cuts and national curriculum standards. Teachers are finding there are not enough hours in the day to cover all the academic material they need to, and when paired with budget cuts, PE classes were one of the first things to go.

Thankfully, we'll always have recess, right? Well, maybe. The time allotted for recess is decreasing by almost 50 minutes each week, for the purpose of giving kids more time in class. That's 10 minutes less each day (almost 44 fewer hours annually) for children to expend energy with unstructured play.⁴

1 http://www.nbcnews.com/health/kids-health/us-schools-kids-start-too-early-study-finds-n405231

- 2 http://money.cnn.com/2015/06/17/pf/work-commute-time-and-money/
- 3 http://www.biofuels.coop/archive/diesel_part2.pdf
 - http://www.centerforpubliceducation.org/Main-Menu/Organizing-a-school/Time-out-Is-recess-in-danger
- 5 http://news.uga.edu/releases/article/uga-study-finds-that-physical-education-mandates-not-enough-in-most-states/

Recommended Minutes of PE per Day⁵



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Focusing solely on academics hurts both the body and brain

This overwhelming pressure to help kids succeed is leading the educational system down a path that many question. Kindergarten, a year typically used to ease children into the idea of school while also helping them learn to play and imagine, is now, in many cases, an all-day endeavor.

Schools are now promoting "'academic kindergartens' where 5-year-olds are more likely to encounter skill-and-drill exercises and nightly homework than unstructured, imaginative playtime. With so much pressure to teach essential literacy and math skills, many kindergarten (and even prekindergarten) teachers say that time for free play and exploration is increasingly limited".⁶ It's a trend that has left many wondering if kindergarten is becoming the new first grade.

And at the end of the already long day, much like their adult counterparts, children once again climb into a car or onto public transportation and prepare for a long, tiresome commute home. They are, once again, sitting in a static, sedentary position. Their backpacks, the childlike (and fashionable!) equivalent of briefcases, weigh them down, stuffed to the brim with work that has to be completed before bedtime. Kids aren't playing enough. But playing is learning. It's learning outside of the textbook, stretching the imagination, and helping kids learn to problem solve, communicate, and develop their creative thinking. Instead of being encouraged to develop these traits that foster better learning, children are being told to sit down and sit still.⁷

Average Time Spent on Devices per Day [®]



Most kids and adults alike are also surrounded by technology. They are doing homework on tablets, checking email, texting, and watching television.

By the time the work is done and the technology is put away, they've missed their bedtime. Another night will come and go when they won't get that recommended eight to nine hours of sleep, and the cycle will begin again.

⁶ http://www.scholastic.com/teachers/article/what-happened-kindergarten

⁷ http://www.npr.org/sections/ed/2016/02/09/465557430/what-kids-need-from-grown-ups-but-arent-getting

⁸ http://abcnews.go.com/WN/kids-electronics-study-shows-kids-spend-hours-day/story?id=9616699

This generation's 1 mile run is almost 90 seconds longer than their parents' times were at the same age.



The less kids move, the more the consequences add up

As performance standards continue to rise, they're taking a physical toll on kids.

Sadly, the **life expectancy of today's children is five years less than that of their parents'.**⁹ This is the first time in over two centuries that a generation's lifespan is expected to be shorter than previous generations. And experts have identified one main culprit: obesity.

Childhood obesity has tripled in the last 30 years. One in three children and adolescents are now considered overweight or obese. Four in five children do not reach the daily activity requirements (at least 60 minutes of moderate exercise) recommended by the Centers for Disease Control. And, when running the dreaded mile in the PE classes that do still exist, this generation's time is almost 90 seconds longer than their parents' times were at the same age.

The threat? In the short-term, obese children are more likely to suffer from high blood pressure and/or high cholesterol. In fact, 70% of obese children have at least one risk factor for heart disease. They are also more likely to be diagnosed with prediabetes which can lead to the development of type 2 diabetes in adulthood.¹⁰

The long-term health effects of childhood obesity are even more sobering. Obese children and adolescents are more likely to be obese adults, which predisposes

them to a higher risk of osteoarthritis, heart disease, stroke, and many types of cancer.¹⁰

When kids sit more and move less, it sets them up for years of potentially dangerous pitfalls. The CDC explains that "Children and adolescents who are obese are at greater risk for **bone** and **joint problems**, **sleep apnea**, and **social** and **psychological problems** such as stigmatization and poor self-esteem."¹⁰

9 http://www.nytimes.com/2005/03/17/health/childrens-life-expectancy-being-cut-short-by-obesity.html

10 http://www.cdc.gov/healthyschools/obesity/facts.htm

How physical concerns play out in the classroom

Health issues also play out in the classroom, where increased obesity and increased sedentary behavior threaten the ability of a student to listen and learn. The irony surrounding our nation's increased focus on testing standards is that kids today are lacking what is known as physical literacy.

Physical literacy, defined by the Pacific Institute for Sport Excellence, is "the mastering of fundamental movement skills and fundamental sport skills that permit a child to read their environment and make appropriate decisions, allowing them to move confidently and with control in a wide range of physical activity situations."¹¹ Put simply, it's the ability of a child to understand basic movement and to apply that understanding to his or her environment.

Children lacking physical literacy often have an underdeveloped core. A weak core leads to poor development of fine and gross motor skills. Poor development of fine and gross motor skills can lead to a multitude of difficulties in the classroom.

If the core muscles are weak or undeveloped, the body is easily fatigued while sitting. When children are forced into chairs for extended periods of time, after just a few minutes their core muscles can become tired. When this happens, the body's natural response is to move around. But most schools are not giving students the opportunity to move as frequently as needed. While their adult counterparts have the luxury of self-guided mini-breaks when sitting becomes impossible, children generally do not have that freedom.

Ohio State Pediatrician Bob Murray put it best: "If you want a child to be attentive and stay on task, and also if you want them to encode the information you're giving them in their memory, you've got to give them regular breaks."¹² So, all of this extra time spent in the classroom focusing on any number of lessons is all for naught if kids aren't absorbing it (and chaining students to their desks is a surefire way to make certain they won't).

Evidence from a study performed by the CDC supports this hypothesis. The study found that students who are more physically active have better grades, better attendance, and are generally better behaved.¹³



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... lacking fundamental movement & sport skills which leads to ...

. . . an underdeveloped core which leads to . . .

... an inability

to listen

& learn

?!?!

while sitting which leads to . . .

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11 http://piseworld.com/physical-literacy/

¹² http://www.npr.org/sections/ed/2016/01/03/460254858/turns-out-monkey-bars-and-kickball-are-good-for-the-brain

¹³ http://www.cdc.gov/healthyyouth/health_and_academics/pdf/health-academic-achievement.pdf

Designing the fidget-friendly classroom

Today's educators place significant emphasis on the need for flexible furniture configurations that allow them to shift the focus to the learner, while also designing the classroom in a way that best supports the day's lesson.¹⁴

Forever fidgeting.

In spite of all the sitting they're expected to do, students are finding their own ways of keeping their bodies and brains active. Despite centuries of admonishments against it, kids are still experts at fidgeting. They're staying focused by rocking in their chairs (ill-designed for the purpose), tapping their pencils (much to the annoyance of their neighbor), or kicking the desk in front of them (catching the wrath of the student sitting at said desk).

It all seems potentially annoying on the surface, but fidgeting certainly burns more calories than sitting still, and a study in 2008 confirmed that fidgeting might actually lead to higher focus.¹⁵ Could it be? And if so, is there a way to capitalize on the power of fidgeting? been discouraged – has benefits for the body and mind. The possibility that fidgeting could be harnessed for good in the classroom opens up a multitude of new possibilities. If kids are going to be sitting more and more at school, can we design a setting that brings more flexibility into this static environment? An environment that infuses subtle movement into the

Researcher's are beginning to suggest that fidgeting – which has long

classroom and encourages fidgeting in ways that are healthy and acceptable to others sharing the space?

LS3P, an architecture firm based in the southeastern United States, conducted research about the 21st century classroom design that best supports the education environment. They formed a variety of conclusions reflecting trends in education today, most notably that the design of the classroom has shifted from being teacher-focused to learner-focused.

Furniture should support how students learn, rather than how teachers teach. In other words, furniture is no longer viewed as just furniture; instead, it's considered a "learning tool." 14



tap tap tap tap tap

¹⁴ http://www.ls3p.com/wp-content/uploads/2013/08/21C-Schools_Furniture.pdf

¹⁵ http://www.nea.org/tools/47003.htm

Active seating: A restless body's dream come true

Another trend in 21st century classroom design focuses on active seating which engages the core, promoting better focus in students. Classroom furniture that allows for subtle movement and fidgeting, like standing height desks or seating that encourages an engaged core, does more than just activate muscles fatigued from too much sitting. It also gives students a secondary distraction, allowing their primary focus to be the teacher's lesson and the academic subject at hand.

Dr. Mark Rapport, a professor of psychology at the University of Central Florida, reiterates the need to move when working on more complex subjects: "The children in the study – especially those with attention deficit/hyperactivity disorder (ADHD) – fidgeted more when a task required them to store and process information rather than just hold it." ¹⁵

So... fidget-friendly furniture? Bring it on! Four-legged chairs become exercise balls and backless stools. Desks become team tables on casters that can be easily reconfigured. Break-out spaces are filled with bean bags and comfy oversized chairs. This new kind of furniture gives kids choices and lets them mix up the monotony of their everyday routines. Suddenly, with just a few small changes, the classroom becomes a more dynamic place that offers variety and embraces the movement our children are begging for.¹⁶

Fidgeting burns between 300-500 calories each day



In addition to boosting concentration, fidgeting has great physical benefits as well. Did you know fidgeting burns between 300-500 calories each day? With the right seating and other classroom design features, the student who can't burn that in a long gym class run can at least be afforded the opportunity to fidget his or her way to a little bit of fitness throughout the day.¹⁷

"Children learn best when their individual differences are taken into consideration."

¹⁶ http://www.ls3p.com/wp-content/uploads/2013/08/21C-Schools_Furniture.pdf

¹⁷ https://www.fitnessblender.com/blog/how-many-calories-does-fidgeting-burn-fidgeting-for-weight-loss

¹⁸ http://www.naesp.org/resources/2/Research_Roundup/2005/RR2005v22n1a2.pdf

Positive changes are afoot, inside and out

Furniture alone can't revolutionize the classroom. Thankfully, greater attention has recently been placed on bringing physical education back into the curriculum and protecting the invaluable playground time and learning that takes place there. For instance, at one school in Fort Worth, Texas, students are given four recess breaks each day! The teachers admit they had some concerns about including all of the recess while also teaching to the curriculum, but one teacher points out that halfway through the school year, her students are ahead of schedule.¹⁹

The Let's Move! Active Schools organization focuses on introducing students and faculty to healthy habits they can maintain for a lifetime. School systems looking for resources or grants can partner with them to create district-wide plans for success. Various programs can be customized to include recess, PE classes, and afterschool programs that all help to cultivate a healthier lifestyle in the classroom and beyond. One school was even able to purchase exercise bikes to place in classrooms for children who just couldn't sit still!²⁰



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Making movement our mantra

Although the pressures of national education standards and increased performance have continued to press into every available time slot in a child's day, there is hope! Just as workplaces are gradually realizing that wellness-focused design creates healthier and happier workers, schools are realizing that healthier schools are creating happier, more engaged students who ultimately learn more.

As a result, classrooms are becoming more engaging spaces where furniture supports the variety of ways different students learn. Recess is even experiencing resurgence, and the importance of physical education is finally starting to resonate with educators.

As teachers, family members, designers and cheerleaders for the next generation, we are all called to take an active (there's that word again!) role in encouraging movement in the lives of youth.

So, let's lead by example. Let's make movement our mantra, make learning our life-long goal, and infuse variety into our routine. And let's make it contagious, helping children build healthy habits that will last them a lifetime (a lifetime that includes those five extra years)!



Weebles aren't the only things that are made to move.







Engaging Bodies to Engage Minds How designing movement into classrooms boosts learning ©2016 DOTTIOFFWHITE