



THE
COLORADO
EDUCATION
INITIATIVE

Connecting Health
and Learning

Health is Vital for Student Success: An Overview of Relevant Research





“ No matter how well teachers are prepared to teach, no matter what accountability measures are put in place, no matter what governing structures are established for schools, educational progress will be profoundly limited if students are not motivated and able to learn. ”

—Charles Basch, 2010



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Introduction



Intelligence and skill can only function at the peak of their capacity when the body is healthy and strong. ”

-John F. Kennedy

For nearly 175 years, leaders in education believed that health and learning were deeply connected and mutually reinforcing. In the past 25 years, researchers have documented what educators and parents have always known: Students who are physically and emotionally well, present, and engaged are better learners.¹ At the same time, those with more education tend to live longer, healthier, and more productive lives.² Additionally, gaps in educational achievement fall along similar lines as disparate outcomes in health, with students of color and students from economically disadvantaged homes more likely to have negative health outcomes and lower academic outcomes.³

While educational research, practice, and institutions regularly highlight the significance of factors outside of schooling that affect students' ability to learn, these entities are less likely to intervene in issues that are described as nonacademic despite their clear impact on learning.

All in all, healthy students learn better, and although schools cannot and should not address these factors on their own, school leaders must prioritize how to use scarce resources to address health barriers to learning by implementing school health best practices into their school's systems, environments, and policies.

This document presents national, peer-reviewed literature and research linking health to indicators of academic achievement (grades, test scores, attendance, and graduation). It also includes recommended actions that can make a difference as well as success stories from Colorado schools and districts that have seen the benefits of addressing health and wellness. In addition, a summary of key findings is provided by health topic: behavioral health, nutrition, physical activity and education, school health, staff wellness, and student health services.

This resource can be used to help make the case about the connection between health and student success. Please use key facts, quotes, research, and references that are relevant to your needs and share this information with key stakeholders.

Defining Achievement

Rather than defining achievement solely in terms of academic test scores ... a successful learner is knowledgeable, emotionally and physically healthy, civically engaged, prepared for economic self-sufficiency, and prepared for the world beyond formal education.

Source: ASCD, *The Healthy School Communities Model: Aligning Health and Education in the School Setting*, 2011

The Impact of Health on Key Indicators of Academic Achievement

Grades and Test Scores

Grades and standardized test scores are clearly related to a student's likelihood to succeed and eventually graduate from high school. More stringent education accountability measures and scarce resources have also heightened the pressure for schools, students, and staff to exceed on standard indicators of school performance. While many schools may increase instructional time, research indicates that promoting student health can create gains in measures of academic achievement, such as grades and test scores. This section highlights how school health efforts influence grades and test scores by addressing physical activity, nutrition, behavioral health, and health care.

Shrinking budgets, together with the increased emphasis on academic achievement, have made it common practice to increase the amount of instructional time in schools by reducing the number of opportunities for physical education and activity, such as recess, offered to students during the week. However, several studies show that reassigning educational time for school-based physical activity has no negative effect on achievement.^{4,5,6} Educationally relevant health disparities, such as vision, asthma, teen pregnancy, aggression and violence, physical activity, breakfast, and inattention/hyperactivity, impede motivation and ability to learn through at least five causal pathways: sensory perceptions, cognition, connectedness and engagement with school, absenteeism, and dropping out.⁷

Aerobic activity has been shown to be especially important, but the actual type of aerobic-based activity does not appear to be a major factor. Many studies have used different interventions and found similar results—that moderate to vigorous physical activity was positively associated with test scores and grades,

even with as little as 45 minutes per week.⁸ Greatest gains were found among students with greater frequencies of physical activities within a week and the longest durations of activities in a week. Greatest improvements tend to occur in mathematical abilities, followed by verbal abilities and IQ.⁹ In fact, studies show that increasing moderate to vigorous physical activity during the school day is actually associated with gains in grades and standardized test scores by influencing cognitive skills, attitudes, and academic behavior.^{10,11}

Physical activity improves learning on three levels:

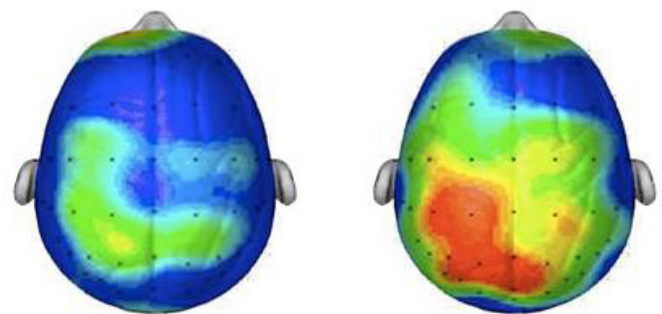
- It optimizes your mindset to improve alertness, attention, and motivation.
- It prepares and encourages nerve cells to bind to one another, which is the cellular basis for logging new information.
- It spurs the development of new nerve cells from stem cells in the hippocampus, which can help with memory forming, organizing, and storing.¹²

In addition to physical education and other physical activity, research indicates that schools have the potential to positively impact the achievement of students through gains in health.

“80% of Coloradoans think that devoting more time to physical activity during the school day will help improve academic achievement.”

Source: Kaiser Permanente Childhood Obesity Survey, 2013

Twenty Student Brains Taking the Same Test



After sitting quietly

After 20 minute walk

Research/Scan compliments of Dr. Chuck Hillman University of Illinois

Jump-starting Students' Brains

Members of the Physical Education Department at Naperville Central High School in Chicago believed that increasing the amount of physical activity students received might have an impact on learning, so they decided to jump-start students' brains. After implementing a morning exercise routine, reading scores went up nearly twice as much and math scores went up by a factor of 20. Students are reporting that the exercise is helping them stay alert and focused.



Research also indicates that schools have the potential to positively influence student achievement through gains in health.

- One study found that after implementing a program to improve nutrition and physical activity, an elementary school reported a year-over-year decrease in the number of counseling and disciplinary referrals per 100 students and an increase in standardized test scores.¹³
- Another study found that students with low nutrient intake were more likely to be absent, experience behavioral trouble in school, and get poorer grades compared to their nutritionally adequate peers. However, six months after implementation of a universal school breakfast program, absenteeism declined, grade-point averages (GPAs) improved, and student- and parent-reported hunger decreased.¹⁴
- Researchers generally find that a higher quality diet is associated with better performance on exams. Other studies find that improving the quality of students' diets leads to students being on task more often, increases math test scores, possibly increases reading test scores, and increases attendance.^{15,16}
- Nearly 2 million—or one in 10—U.S. youths ages 12 to 17 had a major depressive episode; 60 percent of these youths did not receive any treatment.¹⁷ Students who experience symptoms of depression, anxiety, or substance abuse are more likely to report difficulty concentrating in class and completing homework.¹⁸ Conversely, students who receive social and emotional learning instruction have academic achievement scores an average of 11 percentage points higher than students who do not participate in social and emotional learning programs.¹⁹
- Today's adolescents are chronically sleep-deprived. Those who sleep more, on average, have higher grades and better behavior in school.²⁰ One in four students regularly falls asleep in class and an additional one in five falls asleep while doing homework.²¹ One study found that when students cut into their sleep for extra study time, they have more trouble understanding material taught in class and are more likely to struggle with an assignment or test the following day.²²

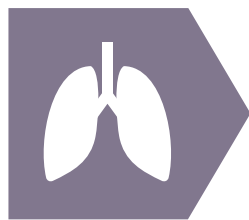
Attendance

Students who regularly attend school have higher GPAs, standardized test scores, and graduation rates. In fact, a recent review of research found that “academic achievement from kindergarten to high school graduation, and postsecondary enrollment are all highly sensitive to absenteeism. Missing even some school can have negative effects, especially for students who live in or near poverty. Missing a lot of school, at any time, throws students completely off track to educational success.”²³ Chronic absenteeism, generally defined as missing 10 percent or more during the school year, is of greatest concern. Data analyses from multiple states and school districts have consistently found chronic absenteeism to be among the strongest predictors of dropping out of high school—stronger even than suspensions, test scores, and being overage for grade, after having controlled for student demographics and backgrounds.²⁴

While absenteeism is a complex issue rooted in individual, environmental, and social factors, health-related issues can be major barriers to students’ ability to make it to school.



Tooth decay is the single most common childhood chronic disease—five times more common than asthma. More than 51 million hours of school time are lost each year to dental disease, with students from economically disadvantaged homes bearing the greatest burden.²⁵ Approximately one in five students in Colorado has untreated dental decay. Pain from cavities, abscesses, and toothaches often prevents children from being able to focus in class, and in severe cases, can lead to chronic absenteeism.²⁶ In fact, a recent study found that children who reported good, fair, or poor oral health were nearly three times more likely than their peers with very good or excellent oral health to miss school because of dental pain or infection.²⁷



Asthma is a leading chronic disease among school-age youths and a leading cause of absenteeism, accounting for 10.5 million missed school days.²⁸ In schools that invested in school nurses, absenteeism due to asthma decreased, while comparison schools that did not invest in nurses saw their absenteeism rate increase over the same time period.²⁹



Students with diagnosed behavioral health issues miss three times as many school days as those without behavioral health challenges. Additionally, students who perceive school to be physically or emotionally unsafe often choose to avoid school altogether. For example, youths who are bullies or are victims of bullies are more likely to miss school.³⁰ The relationship is similar for students experiencing cyberbullying and face-to-face bullying.³¹

Kentucky School Improves Attendance

In Kentucky, Breathitt County Schools needed to improve attendance for the 2013-2014 school year. After the district placed a school nurse in every school and established a school policy that all students had to be evaluated by the school nurse before leaving school early because of illness, the number of student absences decreased by 52 percent from the same period of the 2012-2013 school year. This increased attendance also led to a corresponding 3 percent increase in state education funding for the school district.

Reducing Violence One Classroom at a Time

The superintendent of schools in Kansas City, Mo., decided to establish daily physical education throughout the district after seeing how it reduced violence and improved test scores nearly overnight at one of his inner-city elementary schools.

High School Graduation

Graduating from high school is a major determinant of both future health and prosperity. In general, adults who do not earn a high school diploma tend to have lower paying jobs and are at greater risk for living in poverty, lacking health insurance, being incarcerated, and having poor health outcomes.^{32,33,34}

Only 78.2 percent of American students graduate from high school on time³⁵ and less than 40 percent of 25- to 34-year-olds have a postsecondary degree.³⁶ The likelihood of attaining a high school diploma is not equally distributed among youths. Students of color, from economically disadvantaged backgrounds, with disabilities, and those who are English Language Learners, migrant, or homeless are less likely to graduate from high school in four years and also experience increased health problems.

Student health problems associated with dropout include substance use; teen pregnancy; and psychological, emotional, and behavioral problems.³⁷

- 30 percent of teen girls who have dropped out of high school cite pregnancy or parenthood as a key reason. Rates are even higher for African-American and Latino girls—38 percent and 36 percent, respectively.³⁸ Children of teen parents also start school at a disadvantage, including having lower levels of school readiness at kindergarten.³⁹
- A national survey found that youths who had dropped out of school were more likely than youths of similar age who were still in school to engage in current cigarette use, alcohol use, binge alcohol use, marijuana use, nonmedical use of psychotherapeutic drugs, and use of any illicit drugs.⁴⁰
- One study found that emotional health challenges influence school completion as early as primary school, and the relationship was even greater in high school. Students with emotional health challenges (anxiety, depression, and conduct disorders) and substance use, abuse, or dependence were more likely to drop out of high school. In fact, students who used drugs or alcohol were nearly three times more likely to drop out of school.⁴¹

Removing Health Barriers Increases Learning Success

Research confirms that health is a vital learning support, but the sheer number of challenges facing students may seem insurmountable for some schools. However, research from Washington found consistent and strong associations between a number of health factors and student achievement.

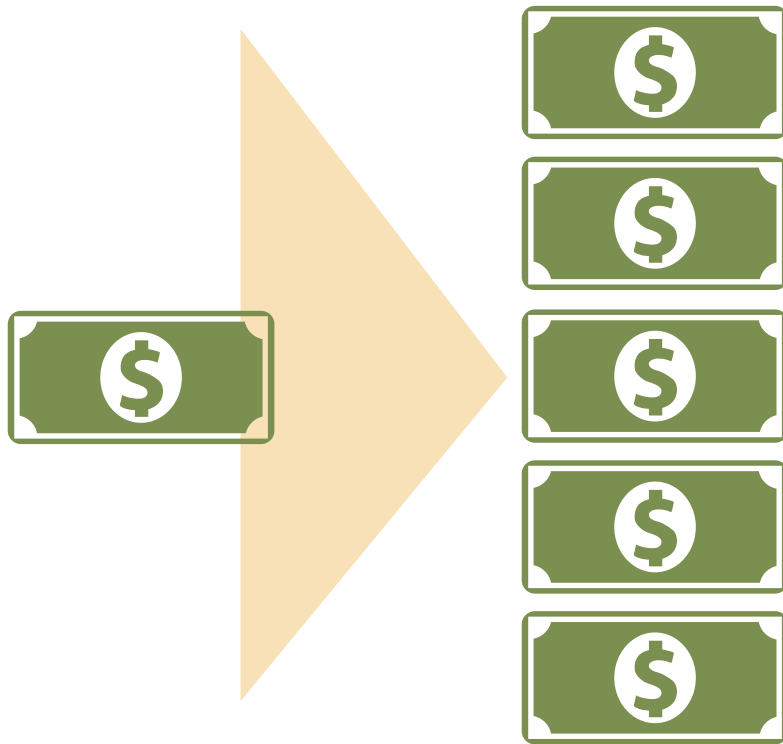


Staff Retention and Wellness

Schools are not only important settings for the health of students, but for adults in the building as well. In the United States, public schools employ more than 6.7 million people.⁴² The conditions in schools that influence the health and achievement of students also affect school staff.

Protecting the physical and mental health of school employees is integral in protecting the health of students and supporting their academic success.⁴³ School employee wellness programs can improve staff productivity, reduce absenteeism, and decrease employee health costs.⁴⁴

In fact, school employee wellness programs are a smart financial investment. Research indicates that for every \$1 spent on employee wellness programs, an average of \$5 is saved.⁴⁵



School Climate and Staff Retention

A 2006 Duke University study looked at first- and second-year teachers in a small urban school district related to teacher retention. Findings suggested that beginning teachers' decisions to remain at their school site and in the school district were strongly associated with the school climate.

Recommendations: Things We Can Do to Make a Difference



While many schools are implementing evidence-based health-promoting programs, they are not implemented consistently in the education system. Leaders in education research and policy, as well as parents and students, have called for health to be integrated into the core mission of schools.⁴⁶ At the same time, high school graduation has emerged as a key priority in health and had been identified as a leading health indicator.^{47,48}

Schools are not expected to address all of the health needs of students alone. Collaboration, coordination, and co-action are required at the federal, state, and local levels among partners in education, public health, health services, and community organizations.⁴⁹ There is a broad consensus among education and health stakeholders that a multicomponent, coordinated approach that includes policy, programs, and practices is necessary to effectively address health-related barriers to learning.⁵⁰ Indeed, capacity is an often-cited need for schools to adequately address the health needs of students.

To help schools make their environments, staff, and students healthier, numerous stakeholders are engaged in Colorado Healthy Schools Collective Impact. Partners in this work align efforts and resources to help students reach their full potential in school and life. Learn more at coloradoedinitiative.org.

State Actions

- Continue state-level health and education partner co-action to support dissemination of best practices, professional development standards, and inclusion of health and wellness as a priority for grant programs.
- Continue to increase access to evidence-based school health services, which have all been found to give students care when they need it, keeping them in school and out of more costly care settings (like emergency rooms).⁵¹
- Integrate school health practices, programs, and policies into education accountability measures (for example, using health data to inform the Unified Improvement Plans and updating the school accountability measures for health and wellness).
- Continue to enhance the collection of health and wellness data in schools, like the Healthy Kids Colorado Survey, and other school health needs assessments and measures through the new Colorado Healthy Schools Smart Source and recognition of the Colorado Healthy School Champions.

District and School Actions

- Identify resources to support a district or school health coordinator. Having a person responsible for this work has shown to help obtain additional funds; update and implement local wellness policies; and support partnerships with families, students, and the community.
- Reach out to community organizations, local public health organizations, local mental health centers, local businesses, and parents to build mutually beneficial partnerships that reinforce, enhance, and support school health efforts.
- Work with a district or school team to regularly assess student and school health needs.
- Develop annual goals, strategies, or plans to address the school's greatest health needs based on data, and link to the Unified Improvement Plan or other accountability systems.
- Implement and evaluate the plans regularly with the district or school team.



Teachers Understand Social and Emotional Connection to Student Achievement

A national survey of teachers found that three out of four teachers believe social and emotional learning will improve student academic achievement. Those who reported successful social and emotional learning programs in their schools were half as likely to say their school has a negative school climate.

Source: Collaborative for Academic, Social, and Emotional Learning (CASEL), *The Missing Piece: A National Teacher Survey on How Social and Emotional Learning Can Empower Children and Transform Schools*, 2013



Linking Health and Learning Success Stories

Center Consolidated Schools: San Luis Valley, Colorado

Center Consolidated Schools, located in Colorado's San Luis Valley, has collected student health and risk behavior data for over a decade. Knowing that teen pregnancy and drug and alcohol abuse rates were high, the district started a youth engagement process to give all students a voice in health and wellness. Students focused on bettering the school climate, which included addressing bullying, and made great strides.

Reports of bullying on school property decreased from **33%** to **18%** (2007 to 2012)

Students reporting a low commitment to school decreased from **65%** to **30%** (2007 to 2012)

The graduation rate increased from **81%** to **90%** (2010 to 2012)

Students reporting being absent from school because of safety concerns decreased from **12%** to **4%** (2007 to 2012)

Rangeview High School: Aurora, Colorado

Rangeview High School in Aurora, Colo., has worked hard to become a No Place For Hate® school. Its student body was growing more and more diverse, and data showed students had a decreased connection to school. To ensure all students felt accepted and respected, the school expanded a student club, the Diversity Student Alliance, to a credit-bearing class in multiculturalism. Students design and deliver lessons in religious tolerance, the power of words to hurt and heal, understanding sexuality and gender nonconformity, personality differences and understanding life for students with disabilities.

Students also lead professional development sessions with teachers and organize monthly activities that culminate in students pledging to respect and celebrate diversity. The school has earned a 9News Health Advocacy Award for the student-led Find Your Voice Campaign.

Students feeling safe at school increased by **15%** (2007 to 2011)

Cultural-based harassment decreased by **17%** (2007 to 2011)

The dropout rate decreased from **7%** to **4%** (2007 to 2011)

The graduation rate increased to **79%** (2007 to 2011)

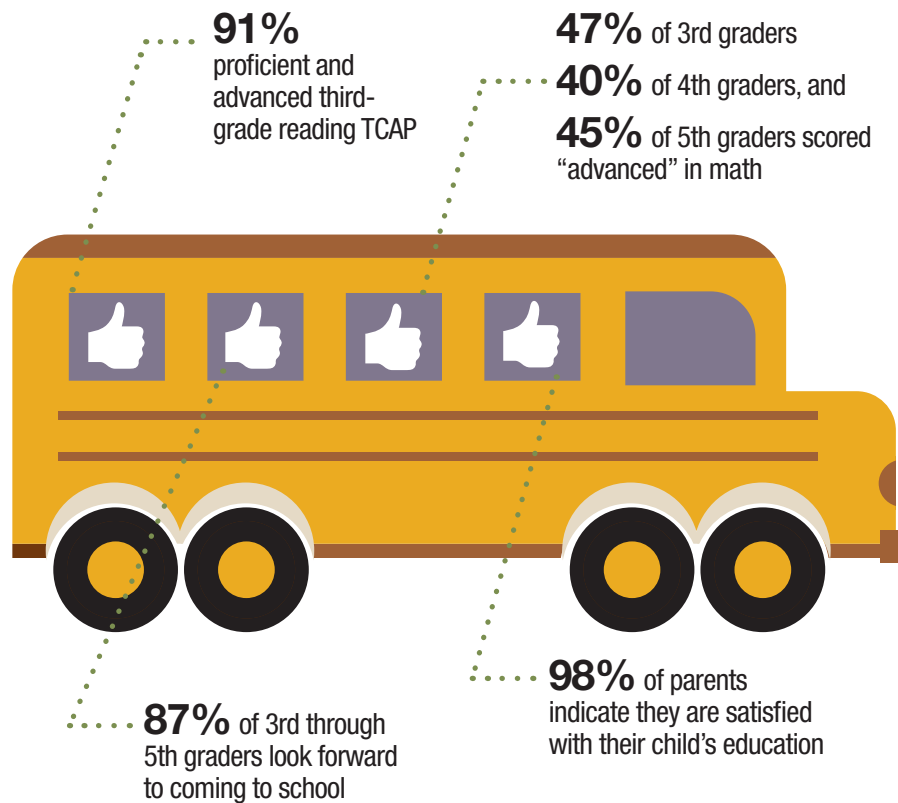
A Broader Definition of Achievement

Rather than defining achievement solely in terms of academic test scores, a successful learner is knowledgeable, emotionally and physically healthy, civically engaged, prepared for economic self-sufficiency, and prepared for the world beyond formal education.

Source: ASCD, *The Healthy School Communities Model: Aligning Health and Education in the School Setting*, 2011

Red Hawk Elementary School: Erie, Colorado

Red Hawk Elementary School in Erie, Colo., is committed to improving student health and ensuring physical activity is a part of every day for every student. In addition to providing daily recess and physical education, Red Hawk uses a movement calendar and includes physical activity breaks in the master schedule. Students gain an extra 40 minutes of moderate to vigorous physical activity daily.



Pueblo City Schools: Pueblo, Colorado

Pueblo City Schools (PCS) and partners from community mental health centers, the police department, justice systems, community organizations, and families used a Safe Schools/Healthy Students federal grant to create the System of Care.

PCS bolstered its behavioral health services by placing school-based mental health therapists at four wellness centers—two at middle schools and two at high schools in the district. School leaders trained staff to implement Positive Behavioral Interventions and Supports (PBIS) and a bullying prevention program. Through the PBIS efforts, schools reduced office discipline referrals significantly, which increased student classroom time and reduced administrative time spent on discipline issues.

Over 600 students received services per year during approximately 3,000 encounters. The number of youth clients at the community mental health centers and other community-based outpatient facilities did not decrease, indicating that the services in the school reached a population of youths who were not previously accessing services. The system also saved the community an estimated \$239,000 because of decreased visits by students to emergency rooms.

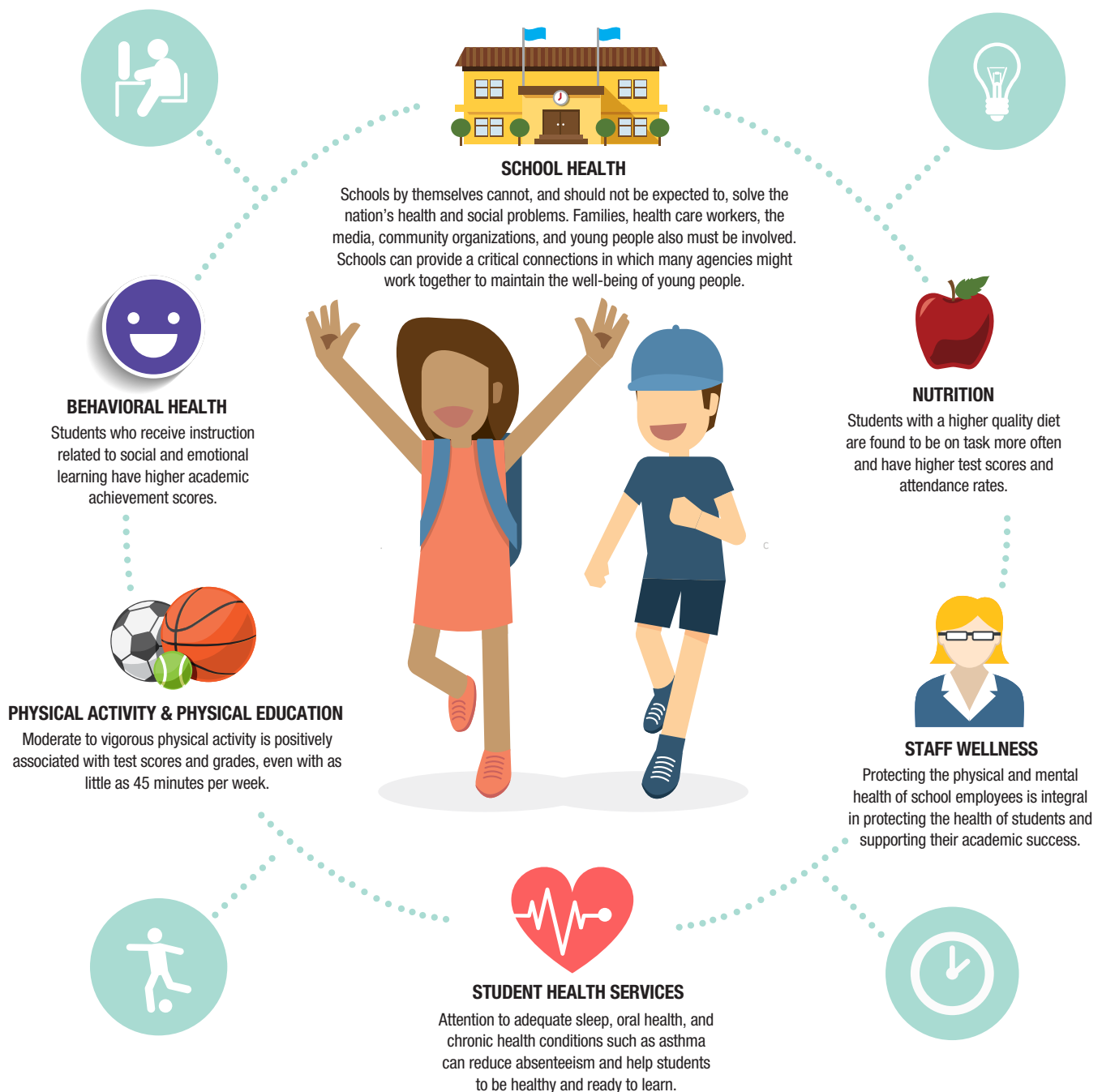


Connecting Health and Learning

Health is Vital for Student Success: A Summary of Relevant Research

If we are going to see significant improvement in the learning success of Colorado students, we must pay careful attention to research that is making the clear connection between student health and academic performance. The following key facts make the case for action to ensure healthy schools, communities, and children.

Students who are physically and emotionally well, present, and engaged, are better learners.



Connecting Health and Learning

Talking Points You Should Use to Make the Case

Behavioral Health

- Students with diagnosed behavioral health issues miss three times as many school days as those without behavioral health challenges.³⁰
- Students with emotional health challenges (anxiety, depression, and conduct disorders) and substance use, abuse, or dependence were more likely to drop out of high school. Students who used drugs or alcohol were nearly three times more likely to drop out of school.⁴¹
- Nearly 2 million—or one in 10—U.S. youths ages 12 to 17 had a major depressive episode; 60 percent of these youths did not receive any treatment.¹⁷ Students who experience symptoms of depression, anxiety, or substance abuse are more likely to report trouble concentrating in class and completing homework.¹⁸ Conversely, students who receive social and emotional learning instruction have academic achievement scores an average of 11 percentage points higher than students who do not participate in social and emotional learning programs.¹⁹

Nutrition

- Students with low nutrient intake were more likely to be absent, experience behavioral trouble in school, and get poorer grades compared to their nutritionally adequate peers. However, six months after implementation of a universal school breakfast program, absenteeism was reduced, GPAs improved, and student- and parent-reported hunger decreased.¹⁴
- A higher quality diet is generally associated with better performance on exams. Other studies find that improving the quality of students' diets leads to students being on task more often, increases math test scores, possibly increases reading test scores, and increases attendance.^{15,16}

Physical Activity & Physical Education

- Physical activity improves learning on three levels: First, it optimizes your mindset to improve alertness, attention, and motivation; second, it prepares and encourages nerve cells to bind to one to another, which is the cellular basis for logging in new information; and third, it spurs the development of new nerve cells from stem cells in the hippocampus.¹²

- After implementing a program to improve nutrition and physical activity, an elementary school reported a year-over-year decrease in the number of counseling and disciplinary referrals per 100 students and an increase in standardized test scores.⁶

School Health

- Research confirms that health is a vital learning support, but the sheer number of challenges facing students may seem insurmountable for some schools. However, research from Washington state show that there are consistent and strong associations between a number of health factors and achievement.⁵²

Staff Wellness

- School employee wellness programs can improve staff productivity, reduce absenteeism, and decrease employee health costs.⁴⁴ In fact, school employee wellness programs are a smart financial investment. Research indicates that for every \$1 spent on employee wellness programs, an average of \$5 is saved.⁴⁵

Student Health Services

- Adolescents today are chronically sleep-deprived. Those who sleep more, on average, have higher grades and better behavior in school.²⁰ One in four students regularly falls asleep in class and an additional one in five falls asleep while doing homework.²¹
- Tooth decay is the single most common childhood chronic disease—five times more common than asthma. More than 51 million hours of school time are lost each year to dental disease, with students from economically disadvantaged homes bearing the greatest burden.²⁵ Approximately one in five students in Colorado has untreated dental decay.
- Asthma is a leading chronic disease among school-age youths and a leading cause of absenteeism, accounting for 10.5 million missed school days.²⁸

End Notes

- ¹Bradley BJ, Greene AC. (2013). Do health and education agencies in the United States share responsibility for academic achievement and health? A review of 25 years of evidence about the relationship of adolescents' academic achievement and health behaviors. *Journal of Adolescent Health*, 52(5): 523-532.
- ²Cutler DM, Lleras-Muney A. (2006). Education and health: Evaluating theories and evidence. NBER Working Paper No. 12352. Cambridge, MA: National Bureau of Economic Research. Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=913315.
- ³Freudenberg N, Ruglis J. (2007). Reframing school dropout as a public health issue. *Preventing Chronic Disease: Public Health Research, Practice and Policy*, 4(4): 1-11.
- ⁴Carlson SA, Fulton JE, Lee SM, et al. (2008). Physical education and academic achievement in elementary school: Data from the Early Childhood Longitudinal Study. *American Journal of Public Health*, 98: 721-727.
- ⁵Reed JA, Einstein G, Hahn E, et al. (2010). Examining the impact of integrating physical activity on fluid intelligence and academic performance in an elementary school setting: A preliminary investigation. *Journal of Physical Activity and Health*, 7(3): 343-351.
- ⁶Nansel TR, Huang TK, Rovner AH, Sanders-Butler Y. (2010). Association of school performance indicators with implementation of the Health Kids, Smart Kids program: Case study. *Public Health Nutrition*, 13(1): 116-122.
- ⁷Basch, C. (2010). Healthier students are better learners: A missing link in school reforms to close the achievement gap. *Equity Matters: Research Review* No. 6.
- ⁸Lees C, Hopkins J. (2013). Effects of aerobic exercise on cognition, academic achievement, and psychosocial functioning in children: A systematic review of randomized control trials. *Preventing Chronic Disease: Public Health Research, Practice and Policy* 10.
- ⁹Hollar TL. (2013). The relationship between academic achievement and physical activity. In *Encyclopedia of School Health*, David Wiley and Amy Cory, eds. Thousand Oaks, CA: Sage Publications.
- ¹⁰Centers for Disease Control and Prevention. (2010). The association between school based physical activity, including physical education, and academic performance. Atlanta, GA: U.S. Department of Health and Human Services.
- ¹¹Tomprowski PD, Davis CL, Miller PH, Naglieri JA. (2008). Exercise and children's intelligence, cognition and academic achievement. *Educational Psychology Review*, 20(2):111-131.
- ¹²Ratey J, Hagerman, E. (2008). *Spark: The revolutionary new science of exercise and the brain*. New York: Little, Brown.
- ¹³See note 6.
- ¹⁴Kleinman RE, Hall S, Green H, et al. (2002). Diet, breakfast, and academic performance in children. *Annals of Nutrition & Metabolism*, 46 (Suppl 1): 24-30.
- ¹⁵Florence M, Asbridge M, Veugelers P. (2008). Diet quality and academic performance. *Journal of School Health*, 78, 209-215.
- ¹⁶Powell C, Walker S, Chang S, Grantham-McGregor S. (1998). Nutrition and education: A randomized trial of the effects of breakfast in rural primary school children. *American Journal of Clinical Nutrition*, 68: 873-879.
- ¹⁷Substance Abuse and Mental Health Services Administration. (2011). The NSDUH Report: Major depressive episode and treatment among adolescents: 2009. Available at <http://www.samhsa.gov/data/2k11/NSDUH009/sr009-adolescent-depression.pdf>.
- ¹⁸Joe S, Joe E, Rowley LL. (2009). Consequences of physical health and mental illness risks for academic achievement in grades K-12. In *Review of Research in Education*. V L Gadsden, JE Davis, and AJ Artiles, eds. 33(1): 283-307.
- ¹⁹Durlak J, Weissberg R, Dymnicki A, Schellinger K. (2011). The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. *Child Development*, 82(1), 405-432.
- ²⁰Shochat T, Cohen-Zion M, Tzischinsky O. (2014). Functional consequences of inadequate sleep in adolescents: A systematic review. *Sleep Medicine Reviews*, 18(1): 75-87.
- ²¹National Sleep Foundation (2006). *Sleep in America poll: Summary of findings*. Available at www.sleepfoundation.org/article/sleep-america-polls/2006-teens-and-sleep.
- ²²Gillen-O'Neel C, Huynh VW, Fuligini AH. (2013). To study or to sleep? The academic costs of studying at the expense of sleep. *Child Development*, 84(1): 133-142.
- ²³Balfanz R, Byrnes V. (2012). *Chronic absenteeism: Summarizing what we know from nationally available data*. Baltimore, MD: Johns Hopkins University Center for Social Organization of Schools.
- ²⁴Byrnes V, Reyna R. (2012). *Summary of state level analysis of early warning indicators*. Everyone Graduates Center, Baltimore, MD. Available at <http://www.every1graduates.org>.
- ²⁵U.S. Department of Health and Human Services. (2000). *Oral health in America: A report of the Surgeon General—executive summary*. Rockville, MD: U.S. Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health.
- ²⁶The Pew Center on the States. (2010). *The cost of delay: State dental policies fail one in five children*. Washington, D.C.: The Pew Charitable Trusts.
- ²⁷Jackson SL, Vann WF, Kotch JB, Pahel BT, Lee JY. (2011). Impact of poor oral health on children's school attendance and performance. *American Journal of Public Health*, 101(10): 1900-1906.
- ²⁸U.S. Department of Health and Human Services. (2012). *National surveillance of asthma: United States, 2001-2010*. Hyattsville, MD: U.S. Department of Health and Human Services. Available at http://www.cdc.gov/nchs/data/series/sr_03/sr03_035.pdf.

- ²⁹Rodriguez E, Rivera DA, Perloth D, Becker E, Wang NE, Landau M. (2013). School nurses' role in asthma management, school absenteeism, and cost savings: A demonstration project. *Journal of School Health*, 83(12): 842-850.
- ³⁰Srabstein J, Piazza T. (2008). Public health, safety and educational risks associated with bullying behaviors in American adolescents. *International Journal of Adolescent Medicine and Health*, 20(2): 223-233.
- ³¹Kowalski RM, Limber SP. (2013). Psychological, physical, and academic correlates of cyberbullying and traditional bullying. *Journal of Adolescent Health*, 53(1 Suppl): S13-S20.
- ³²Sum A, Khatiwada I, McLaughlin J, Palma S. (2009). The consequences of dropping out of high school: Joblessness and jailing for high school dropouts and the high cost for taxpayers. Center for Labor Market Studies Publications, Paper 23.
- ³³Kaiser Commission on Medicaid and the Uninsured/Urban Institute. (2009). Uninsured adults vs. all adults, by education, 2008. In *Health insurance coverage in America, 2008*. Menlo Park, CA: Kaiser Family Foundation.
- ³⁴Wirt J, Choy S, Rooney P, Provasnik S, Sen A, Tobin R. (2004). *The condition of education 2004 (NCES 2004-077)*. Washington, D.C.: U.S. Department of Education, National Center for Education Statistics.
- ³⁵Balfanz R, Bridgeland J, Buce M, Fox J. (2013). *Building a grad nation: Progress and challenge in ending the high school dropout epidemic, annual update*. Washington, D.C.: Civic Enterprises.
- ³⁶Harvard Graduate School of Education, Pathways to Prosperity Project. (2011). *Pathways to prosperity: Meeting the challenge of preparing young Americans for the 21st century*. Cambridge, MA: Harvard College.
- ³⁷See note 3.
- ³⁸Shuger L. (2012). *Teen pregnancy and high school dropout: What communities can do to address these issues*. Washington, D.C.: The National Campaign to Prevent Teen and Unplanned Pregnancy.
- ³⁹The National Campaign to Prevent Teen Pregnancy. (2007). *Why it matters: Teen pregnancy and overall child well-being*. Washington, D.C.: The National Campaign to Prevent Teen Pregnancy.
- ⁴⁰Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality. (2013). *The NSDUH Report: Substance use among 12th grade aged youths by dropout status*. Rockville, MD: Substance Abuse and Mental Health Services Administration.
- ⁴¹Breslau J, Lane M, Sampson N, Kessler RC. (2008). Mental disorders and subsequent educational attainment in a US national sample. *Journal of Psychiatric Research*, 42(9): 708-716.
- ⁴²U.S. Department of Education, National Center for Education Statistics. (2005). *Digest of Education Statistics Tables and Figures*. Washington, D.C.: U.S. Department of Education. Available at http://nces.ed.gov/programs/digest/d05/tables/dt05_001.asp.
- ⁴³Directors of Health Promotion and Education. (Undated). *School employee wellness: A guide for protecting the assets of our nation's schools*. Available at http://dhpe.site-ym.com/members/group_content_view.asp?group=87568&id=124831.
- ⁴⁴Centers for Disease Control and Prevention. *Guideline 8: Provide a school employee wellness program that includes healthy eating and physical activity services for all school staff members*. In *School Health Guidelines to Promote Healthy Eating and Physical Activity*, 60(5): 45. Available at <http://www.cdc.gov/healthyyouth/npao/schoolemployee.htm>.
- ⁴⁵Chapman LS. (2005). The art of health promotion: Meta-evaluation of worksite health promotion economic returns studies: 2005 update. *American Journal of Health Promotion*, 19, (6).
- ⁴⁶See note 7.
- ⁴⁷See note 3.
- ⁴⁸Healthy People 2020. Available at www.healthypeople.gov/2020/topicsobjectives2020/.
- ⁴⁹Healthy Schools Campaign/Trust for America's Health. (2012). *Health in mind: Recommendations to the U.S. Department of Education and the U.S. Department of Health and Human Services*. Washington, D.C.: Trust for America's Health.
- ⁵⁰Valois RF, Slade S, Ashford E. (2011). *The Healthy School Communities Model: Aligning health and education in the school setting*. Danvers, MA: ASCD.
- ⁵¹See note 26.
- ⁵²Dilley, J. (2009). *Research review: School-based health interventions and academic achievement*. Available at http://here.doh.wa.gov/materials/research-review-school-based-health-interventions-and-academic-achievement/12_HealthAcademic_E09L.pdf

“ In the great work of education, our physical condition, if not the first step in point of importance, is the first in order of time. On the broad and firm foundation of health alone can the loftiest and most enduring structures of the intellect be reared. ”

-Horace Mann, 1843





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The Colorado Education Initiative is an independent nonprofit working in partnership with the Colorado Department of Education to unlock the unique potential of every student by incubating innovation, shining a spotlight on success, and investing in sustainable change that improves outcomes for all students. CEI envisions that every student in Colorado is prepared and unafraid to succeed in school, work, and life, and ready to take on the challenges of today, tomorrow, and beyond.

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