

## PHYSICAL EDUCATION AS A PRIORITY

Mental health is a serious public health issue. Approximately 20% of school-age children have a diagnosable mental health disorder in the United States (US Public Health Service 2000). The Tacoma School District initiated The Whole Child Initiative in 2009 to address the concern of social emotional learning and how it impacts academic performance on many levels. The 8 components of the Whole Child Initiative have had a positive impact on how students see themselves, interact with others, show empathy and make responsible decisions. Three of the components of the initiative are “Social Emotional Learning”, Positive Behavioral Supports and Interventions”, and “Physical and Mental Wellness”. The physical education programs at all Tacoma Elementary Schools plays a huge role in impacting these components. Students learn SEL in their classrooms, small groups with the counselor, music and physical education. PE is the perfect place for 24-28 students, who have diverse levels of motor and athletic skills, coordination, and game strategy to come together and work individually, with a partner, or in 4-6 small groups, or 1-2 big groups. Students learn the importance of, and apply the skills of communication, managing emotions, working together, giving each other constructive feedback, giving each team member a chance to shine, stepping out of the box (comfort zone), self-reflection, grit, and empathy for others in cooperative and sometimes competitive situations. These are skills that PE teachers have been instilling in our students for decades. The research supports the importance of physical education. Physical activity has most often been shown to reduce symptoms of depression and anxiety and improve mood<sup>1,2,3</sup>. Researchers also found that regular physical activity may help prevent the onset of these conditions<sup>1</sup>. Studies have shown the positive side effects of physical activity: fewer emotional barriers, general well-being, improved life satisfaction, self-worth, and quality of life <sup>1,2,3,4,15</sup>. Another component of mental wellness is self-esteem. A meta-analysis of 38 studies involving 2,991 students on physical activity and self-esteem found that physical activity is associated with increased self-concept and self-worth in children and adolescents <sup>1</sup>.

The research in the previous paragraph addresses the importance of physical education not only from the standpoint of Whole Child, but also how these social, emotional, and mental factors are critical in enabling students to contribute to a changing and diverse community and world as stated in the Tacoma School District mission and vision statements. In addition, students won't be able effectively contribute to an ever-changing community and world without the ability to work as a team. There is no better training ground for developing teamwork than in physical education.

The Center for Disease Control estimates that 11% of children between the ages of 4-17 have Attention Deficit Hyperactivity Disorder (ADHD). According to the science, physical exercise tempers ADHD by increasing the neurotransmitters dopamine, norepinephrine, and serotonin, which play leading roles in regulating the brains attention system. The result is an improvement of neurobehavioral functions such as reduced impulsivity and hyperactivity,

improved attention, and enhanced performance on executive functioning tasks.<sup>7,8,9,10</sup> The conclusion of a meta-analysis of 14 studies involving 574 children showed physical exercise resulted in significant improvement in anxiety and depression, aggressive behaviors, thought and social problems among children suffering from ADHD<sup>11</sup>. Exercise results in no side effects, while Ritalin and Adderall, which are used to treat ADHD because they increase the neurotransmitters as exercise does have a potentially long list of side effects. Katz<sup>12</sup> in 2010 showed in a study that providing some additional physical activity was associated with reduced use of medicine for ADHD. By providing additional exercise for children with ADHD through their IEP's or 504 plans we are, as it states in the mission and vision statements, individualizing their programs so they can contribute to their community and a changing and diverse world.

Students come to school to learn. The TPS mission statement states, "we will provide a comprehensive educational experience that is rigorous and individualized", The TPS vision statement states, "we will be an outstanding school district in which all students exhibit high standards of achievement and critical thinking skills". We know from our training in "whole child" that our children have a range of ACE's that affect their social and emotional health. The whole child program has a comprehensive strategy in place to address these issues, which result in increased academic performance. TPS provides interventions and accommodations that help students achieve academic success. The research (provide in the above paragraphs) regarding exercise and its impact on mental health, psychosocial health, and ADHD is well documented. Physical education is another tool in the tool kit that will positively impact our children and help achieve the TPS mission and vision statements.

As it states in the mission statement, "we will provide a comprehensive educational experience that is rigorous, individualized, and enables students to contribute to a changing and diverse world. Also, "students exhibit high standards of achievement and critical thinking skills". I believe the district has implemented a multi-pronged approach to achieve the mission and vision statements as it pertains to academics. However, I do believe the district has overlooked to a large degree the one variable that can assist students in reaching the high achievement standards in Tacoma. That variable is physical activity.

Dr. Scott McGinnis, professor of Neurology at Harvard Medical School states, "Exercise boosts your memory and thinking through both direct and indirect means. The direct means include physiological changes such as reducing insulin resistance, reducing inflammation, and stimulating the production of growth factors, which are chemicals in the brain that affect the health of brain cells, the growth of new blood vessels in the brain, and even the abundance and survival of new brain cells. Indirectly, exercise boost memory by improving mood and sleep, and by reducing stress and anxiety".

A research brief was published in 2015 in Active Living Research. This meta-analysis was titled Active Education: Growing Evidence on Physical Activity and Academic Performance. The author's findings indicated that physical activity can have both immediate and long-term benefits on academic performance. Almost immediately after engaging in physical activity,

children are better able to concentrate on classroom tasks, which can enhance learning. Over time, as children engage in developmentally appropriate physical activity, their improved physical fitness can have additional positive effects on academic performance in mathematics, reading, and writing. Recent evidence shows how physical activity's effect on the brain may create these positive outcomes.<sup>14</sup>

In 2015 the Center of Disease Control published "Comprehensive School Physical Activity Programs", which recommends a comprehensive approach for addressing physical education and physical activities in schools. In this recommendation the CDC states that students who are physically active tend to have better grades, school attendance, cognitive performance and classroom behaviors. In addition, they state that higher physical activity and physical fitness levels are associated with improved cognitive performance among students.<sup>16,17</sup>

In 2011 Fedewa and Ahn conducted a meta-analysis of 59 studies published over the previous 60 years. They found that physical activity has a decidedly positive effect on children's achievement and cognitive outcomes with aerobic exercise having the greatest effect<sup>15</sup>.

Finally, the largest study to evaluate the relationship between physical fitness and academic achievement occurred in California in 2002. The 884,715 subjects were 5<sup>th</sup>, 7<sup>th</sup>, and 9<sup>th</sup> graders in California public schools. Academic achievement was measured utilizing the Stanford Achievement Test 9<sup>th</sup> edition (math and reading). The physical fitness test involved aerobic capacity, body composition, trunk strength, upper body strength, and flexibility. The results indicated a consistent positive relationship between overall fitness and academic achievement. As overall fitness improved, mean achievement scores improved. In this study mean achievement scores increased at a greater rate for females than males.

In the TPS vision statement it states that, "all students will exhibit high standards of achievement". There is no doubt that developing relationships with students, improved instructional strategies, student engagement, and intervention programs contribute to students achieving high standards of achievement. The research has made a direct connection between academic achievement and physical activity, thus bolstering the importance of physical education. Nationally, physical education classes are being reduced or eliminated across the country. The number 1 argument given by administrators and educators is that physical education takes away from important classroom instruction. Studies have found the exact opposite. A review of large-scale studies found that academic performance is maintained or enhanced by an increase in a student's level of physical activity, despite a reduction in the time for the study of academic material<sup>18,19</sup>. On the other hand, adding time to "academic" or "curricular" subjects by taking time from physical education programs does not enhance grades in these subjects and may be detrimental to health<sup>20</sup>.

As stated in the mission and visions statements, Tacoma Public Schools are preparing students to contribute to a changing and diverse world and become contributing members in

the community. We want them to have the knowledge and skills to make good choices and to be successful in all their endeavors. If Tacoma Public Schools wants to be successful in achieving the mission and vision statements, then their needs to be more emphasis on physical education and health. Buddha once said, "To keep the body in good health is a duty...otherwise we shall not be able to keep our mind strong and clear". Good health is the critical component for quality of life. This is the area that can have an enormous impact on the other areas of their lives. We are experiencing the greatest challenge in more than a century: COVID 19. Over 530,000 lives lost so far. In addition, it is estimated that 40% of those who recover from COVID 19 experience "long haulers syndrome", which range in symptoms from chronic fatigue, to brain fog, to blood clotting, which impact function and quality of life. The medical experts have said if everybody had been wearing masks, social distancing, and washing our hands we would have had many fewer deaths, which is true. However, COVID 19 targets underlying medical conditions. The CDC has identified those underlying conditions. These conditions include Chronic Kidney disease, COPD, Immunocompromised state, Sickle Cell Syndrome, and Downs Syndrome. These are conditions that are beyond our control. The remaining underlining conditions are; however, are largely under our control. They are obesity, high blood pressure, smoking, type 2 diabetes, and heart disease all of which are considered lifestyle related diseases. If anything, this pandemic has not only highlighted the deficiencies in our health care system, it has shown a bright light on the short comings of our educational system as it pertains to physical education, fitness, and health.

Cardiovascular disease (CVD) is the leading cause of death in the United States with 809,046 dying in 2019 (CDC data). Clinical manifestations of CVD occur in middle adulthood; however, studies have shown that atherosclerosis has its origins in childhood and adolescence<sup>21,22,23</sup>. CDC studies on students aged 6-17 indicate that 16% have high blood pressure, 18.5% (6-17) are obese, 20.6% (6-11) and 20.6% (12-19) are overweight. Less than 24% of children ages 6-17 are physically active. The CDC has also found between 2002-2015 type 2 diabetes increased at a rate of 4.8%/year. This highlights the importance of its prevention during childhood and adolescence<sup>24</sup>. Physical education is critical for the development of skills that allow children and adults to participate in individual and team sports. Physical education and health give students the knowledge and develop those critical thinking skills that allows students to make decisions about diet, stress, smoking, and exercise that will improve their health and function based on facts, not fiction. A review of retrospective and longitudinal studies reported that physical activity and sports participation in childhood and youth represents a significant predictor of later activity. These studies also show how strongly inactivity in youth tracks to adulthood<sup>25</sup>.

In 2019 the United States spent \$3.8 trillion dollars on healthcare. Several organizations, including the Peter G. Peterson Foundation have projected from healthcare costs will grow at an annual rate of 5.7% and reach \$6.0 trillion by 2027. The Lancet has estimated that physical inactivity accounts for 25% of healthcare costs in the United States<sup>26</sup>. The American Journal of Preventive Medicine published a paper in 2004 showing that 12% of depression and anxiety,

and 31% of colon cancer, heart disease, osteoporosis, and stroke cases were attributed to physical inactivity<sup>27</sup>. Physical education teachers in Tacoma also have the responsibility of teaching health, which includes nutrition concepts and making good food choices. A study by the National Heart, Lung, and Blood Institute, which is a division of the National Institute of Health found that bad eating habits add \$50 billion annually to healthcare costs associated with heart disease, stroke, and type 2 diabetes (cancer cost not evaluated in this study).

The mean individual income in the United States is currently \$35,977/year. The average out of pocket expenses healthcare costs per person during their lifetime is \$316,000. If you assume no increase in wages or healthcare costs, then a person working for 45 years will earn \$1.6 million. That means that 20% of their wages over their lifetime will go to covering healthcare costs.

The research presented has shown that physical activity has positive impacts on social emotional learning, self-esteem, self-concept, teamwork, depression, anxiety, mood, general quality of life. In addition, physical activity has the same impact on ADHD as Ritalin and Adderall without the side effect. Cognitive function is improved through moderate to vigorous physical activity, resulting in increased academic performance. I have highlighted the financial cost to individuals and the country resulting from inadequate physical activity and poor nutritional choices and how focusing more on physical activity and nutrition of our youth can impact their health behaviors as adults.

In 2017 I had the honor of working with a group of K-12 physical education teachers to establish PE & Health Standards for Tacoma School District using National Common Core Standards. The learning outcomes established in the standards give students the knowledge to make healthy choices and apply the principles of physical education and health to achieve and maintain a health enhanced level of physical fitness and health throughout their lifetime. Depending on the grade level the range of learning outcomes are 84 (Kindergartners) to 108 (5<sup>th</sup> Graders). Overall, there are 13 standards and Tacoma School District is focusing on only 5 of the standards. Physical Education and Health are like many other subject areas. You need to learn the basics prior to learning the more advanced concepts within the subject. The problem with elementary physical education and health is we have the students for 1 hour per week and there is no way to address all the learning outcomes in that time frame, let alone the 5 standards (41-46 learning outcomes, depending on grade) and provide the students with adequate moderate to vigorous physical activity.

The National Institute of Health and the Center for Disease Control have set guidelines for physical activity for children ages 6-17. The guidelines state that children need 60 minutes of moderate to vigorous physical activity daily. When I talk with parents, teachers and administrators and ask them if their students or children get 60 minutes of moderate to vigorous physical activity daily, most don't know the requirements and those who do, say the students or their children don't meet that requirement. Only 15% of elementary schools nationally require students to take physical education classes 3 days/week (2014 School Health

Policies and Practice Study: SHPPS). All Tacoma elementary schools have a lunch recess (20-25 minutes) and an additional recess (15-20 minutes) each day. If I take the higher number in the recess ranges, Tacoma students get 45 minutes of recess each day. Here is the problem, not all physical activity is moderate to vigorous. A study of elementary children found that boys and girls spent about 33% & 23% of their total recess time engaged in moderate to vigorous physical activity respectively<sup>28</sup>. That means the average amount of moderate to vigorous physical activity at recess daily (includes lunch and additional recess) in Tacoma schools is 15 minutes (boys) and 10.5 minutes (girls). Studies have also shown that given the skills, strategies, and concepts taught in physical education classes, that students spend between 10%-40% of their time performing activities at the moderate to vigorous level<sup>29,30,31</sup>. Tacoma students have PE 2x/week for 30 minutes/session. If we assume that students spend 35% of their time physically active at the moderate to vigorous level, then our elementary students are getting 21 minutes/week of moderate to vigorous activity. This averages out to 4.2 minutes per day. This all means that Tacoma elementary students are receiving on the average 19.2 minutes (boys) and 14.7 minutes (girls) of moderate to vigorous physical activity each day. These numbers represent only 32% (boys) and 24.5% (girls) of the recommended guidelines.

The 2018 United States Report Card on Physical Activity for Children and Youth<sup>32</sup> have given a grade of D- to physical education programs. Some of the reasons listed for the D- grade include: 1). Not meeting state mandated requirements for physical education, 2). Not providing certificated physical education teachers, 3). High school students receiving waivers to exempt them from physical education, and 4). Not providing adequate amount of moderate to vigorous physical activity during PE classes. Physical education is required by the State of Washington, "Pursuant to RCW28A.230.040, an average of at least one-hundred instructional minutes per week per year in physical education shall be required of all pupils in common schools in the grade school program (grades 1-8)." The RCW goes on to say, "students can be excused on account of physical disability, religious beliefs, or participation in directed athletics."

On December 15, 2015, President Obama signed Every Student Succeeds Act (ESSA). This act states that health and physical education is recognized as a critical component of a student's well-rounded education. These subjects should play an integral role in the educational experience of all students. Finally, the Institute of Medicine recommends that elementary students receive 30 minutes of physical education daily and PE should be designated as a core subject like math and reading.

Prior to the pandemic I saw all the students at Lowell (420) twice each week. I know that if I want to have a positive impact on my students, I need to develop a positive relationship with them. I also realize that I need to develop a positive relationship with the teachers at my school and my school principal. I know building relationships is a high priority with the district, otherwise we would not have whole child, PLC's twice each month, or the district wouldn't be using the 5D's to evaluate teachers. All 3 have strong relationship components. I know this year is an aberration due to the pandemic. When PE deployments came out last May, Lowell

was classified as a .8 school. When I received my deployment, I was at Lowell .6 and Fawcett .4. The day I wasn't at Lowell, the PE teacher from Washington (1.0) covered for me at Lowell, and the PE teacher from Mann covered for her at Washington while she was at Lowell. How is that good for building relationship?

Finally, I would like to say that Physical Education and Music are the 2 programs that do the best job of establishing a sense of community within elementary schools, because of all of the inclusive activities we do throughout the school year to bring all students together, whether it is before the day starts, during the day, or after the school day is over.

I believe in the research and data. My experience has taught me that the most effective way to impact the health and wellness is to start when children are young. It is much easier to establish a behavior than it is to change one. Especially if you have had that behavior for years or decades. The research I presented speaks for itself, and I believe I have presented information that makes physical education a priority in the Tacoma School District. I have referenced national medical and public health organizations who are strongly recommending that elementary schools increase their physical education classes to meet the minimum of 3 days per week. Physical education and physical activity play a huge role in social emotional learning, academic success, reducing health risks, and giving students the tools to maintain and achieve a high quality of life. Elementary students are in school 6.5 hours per day. If you subtract lunch and lunch recess and one additional recess, that leaves 27.1 instructional hours/week. Physical education is 1 hour per week, which equals 3.7% of the total instructional time. Considering the impact from an academic, social-emotional, and health standpoint the 3.7% it is hard to justify as being adequate.

I believe each elementary school should have a full time PE teacher. If a school is less than a 1.0 FTE, then the principal should decide how that PE teacher should be used. An example would be providing additional PE times on a rotating basis to all classrooms as a way to move the amount of PE time closer to the state mandate of 100 minutes per week, which would allow for more health content and/or moderate to vigorous physical activity, to support the academic success, and/or the social emotional learning of the students.

I have two final thoughts. First, we need to be proactive and give students the knowledge and tools to make positive lifestyle decisions will not only improve the quality of their lives, it will also have a positive impact on their wallet. As a society we have the tendency to address problems by kicking them down the road to address at a later date. That always makes the situation worse. Last thought, we have finally come to the point in our country's history that this generation of students today will have a life expectancy that will be shorter than their parents, because even though we have made great medical advances, we continue to make lifestyle decisions that shorten our lifespan.

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