

Case Study Conducted on an Innovative Philadelphia Out of School Time Program Reports Promising Results and Raises Questions

A study was conducted on 87 participants attending the Zhang Sah after school program during the 2015-2016 school year using participants' outcome data to ascertain if relationships could be demonstrated between physical fitness levels, socio-emotional learning, literacy and academic achievement. Zhang Sah is a sports-based after school program intended, in part, to help Philadelphia youth increase their physical fitness, thereby helping to reduce obesity. The program is also intended to increase socio-emotional learning (i.e. develop resilience), literacy levels and academic achievement among participants. The study indicated a disparity between the citywide youth and the participants of the Zhang Sah program, with Zhang Sah participants studied having higher levels of fitness and academic achievement.

The chart below illustrates the wellness (fitness) and academic outcomes comparison of the Zhang Sah participant group to citywide data regarding children of the same age group in Philadelphia. The (Y) axis represents academic achievement ranging from low achievement levels to high. The Philadelphia School District published the data presented with regards to PSSA results. The participant group of this case study did not have an adequate number of students that took the PSSA in 2015-2016 therefore the comparison data used to measure the academic achievement outcomes was taken from student grades on their most recent report card. Research suggests that grades can predict standardized test score results (Thacker, Dickinson, & Kogen, 2004). The bottom left quadrant represents low achievement levels (below basic and basic) and the upper left quadrant represents higher achievement levels (proficient and advanced). The (X) axis represents wellness ranging from less to more well. Philadelphia's Department of Health published data (Mallya, 2011) and it is presented here with regard to obesity indicators of Body Mass Index and adiposity (body fatness). The lower left side quadrant represents less well (high BMI or adiposity %) and the right side represents more well (low BMI or adiposity %).

Academic Achievement	High	<p>Zhang Sah Participants (grades K-8)</p> <p>Average grades*</p> <ul style="list-style-type: none"> ✓ Reading B ✓ Science B+ ✓ Math B <ul style="list-style-type: none"> ✓ 68% Reading independently on grade level (k-8th) ✓ 94% achieve Health Fitness Zone™ Body fatness (adiposity)
	Low	<p>Phila. School District 3-8th grade</p> <p>PSSA Performance 2015-2016</p> <ul style="list-style-type: none"> ✓ ELA 68% below basic / basic ✓ Science 62% below basic / basic ✓ Math 82% below basic / basic <ul style="list-style-type: none"> ✓ 38% Reading on grade level <p>Phila. Youth citywide</p> <ul style="list-style-type: none"> ✓ 41% Overweight / obese
		Wellness
		Less More

The chart above illuminates the disparity of outcomes between the citywide youth and the participants of the Zhang Sah program. Youth citywide are reported to be achieving at lower levels academically and being less well. Participants in the Zhang Sah program are reported in this study to be achieving at better levels academically and being well. The promotion of wellness and fostering academic achievement among our youth is a good and necessary goal that apparently eludes the masses. The participant group may provide insight with regard to cultivating characteristics or experiences that benefit youth citywide.

Further research is needed in order to investigate causal relationships and broaden our understanding of the participants' backgrounds and experiences. Investing resources to further this research could yield answers that can be used to address big

issues in youth development and education that have plagued the City of Philadelphia for decades.

While additional research is needed, this initial study tells us, that the individual outcomes reported by Zhang Sah participants are promising. It is too early to state whether or not the Zhang Sah after school program has produced these results. We know that the average participant reported spending 450 hours in the program during the 2015-2016 school year. This is a heavy dosage and doesn't leave much time in the day during the school year for anything other than school.

Background

Life can be challenging for Philadelphia youth with regards to achieving positive development outcomes. There is a confluence of factors that continually place youth at-risk and present barriers to achieving positive outcomes. Philadelphia is the most impoverished large city in the U.S. and the First Congressional District in Philadelphia has the highest rate of food insecurity among all congressional districts. 41% of the population is reported to be overweight and obese. . In 2009, Philadelphia was ranked number one among the ten most populous cities in the USA having the highest rate of obese adolescents (17.4%) and the second highest rate of overweight adolescents (19.4%) (Mallya, 2011). Research from 2011 shows over 25% of Philadelphia's youth between the ages of 6 and 17 are obese (Mallya, 2011). Health risks associated with obesity are not the only problems Philadelphia youth face. There is a prevalence of maladaptive and high risk behaviors that also present challenges. The Center for Disease Control's (Center For DiseaseControl and Prevention, 2012) High School Youth Risk Behavior Survey for Philadelphia reported that 15.1% of Philadelphia youth had engaged in sexual intercourse, 21.1% drank alcohol (beyond a few sips) and 9.9% had experimented with smoking cigarettes before the age of 13 (Center For DiseaseControl and Prevention, 2012).The School District of Philadelphia reports (School District of Philadelphia, 2015) that 60% of the children in third grade read below grade level. According to the Juvenile Judges Court Commission's 2010 Report (Center for Juvenile Justice Training and Research, 2010), the city of Philadelphia has the highest rate of juvenile delinquency dispositions of any county in the state of Pennsylvania. In 2010 Philadelphia juveniles between the ages of 10 and 17 accounted for 35.2% of detention admissions statewide.

The combination of poverty, low access to healthy food, limited access to resources or high quality opportunities tend to also create negative fitness, emotional, and academic outcomes within many Philadelphia communities. The big question that educators, economists and policy makers are grappling with is how you achieve positive outcomes with children and youth that are continually placed at-risk due to the confluence of negative forces acting upon them. This paper seeks to contribute to the conversation in support of finding ways to improve our community.

About Zhang Sah

Zhang Sah means “brave scholar” in Korean and is a non-profit organization whose mission is to use martial arts traditions and practices to achieve Positive Youth Development (PYD) results for participants, including, among other things, increased literacy rates and academic achievement. The program innovation combines child care, sports-based youth development (martial arts) and project-based learning. Founded in 1997, Zhang Sah operates two community-based facilities in Philadelphia, Pennsylvania. The flagship program of Zhang Sah is an Out of School Time (OST) afterschool program that serves children in grades K-8 who primarily attend Philadelphia public and charter schools.

Study Results

Demographics

There are similarities and disparities between the participant group and citywide school district demographics. It is fair to state that that the Zhang Sah participants are comprised of a diverse group with regard to ethnicity, gender, socio-economic status, and students requiring educational supports. The participant group is not a perfect match as a microcosm of the entirety of Philadelphia public schools. However, many of the primary demographic elements important for comparisons of school communities are present with the exception of English Language Learners.

The table below illustrates the demographic comparison between the participant group (N=87) and Philadelphia School District data for 2015-2016:

2015-2016 Indicator	Phila. SD	Participants
Economically Disadvantaged	94%	60%
Gender (M/F)	52% / 48%	62% / 38%
Ethnicity		
Black / Hispanic	70%	58%
White	14%	20%
Asian	8%	13%
IEPs	14%	12%

Corollary Findings

The study reported significant socio-emotional learning results consistent with research findings with physical fitness supporting mental well-being (Folkins & Sime, 1981). There were four significant correlations, all with Body Mass Index; students with higher Body Mass scores have higher scores on Problem Solving Skills, Initiative, Communication and Homework. This result is surprising and is counter to what I know about BMI. This result is important because BMI is a correlated calculation for body fat and related health issues (Morrison, 2015; Mustillo, 2003; Opel, 2015).

There were three significant correlations between fitness measures and grades: a positive correlation between flexibility and science grades and two negative correlations with Adiposity (Math and Science). The findings are consistent with other fitness and academic achievement studies (Chomitz, 2009; Castelli, 2007). The negative correlations between adiposity and math and science grades are also interesting. These results are in alignment with other research that investigates how obesity impedes academic achievement (Mustillo, et al., 2003); (Opel, et al., 2015).

Consistent with previous results, and extant research (Scales, Benson, Roehlkepartian, Sesma, & Van Dulman, 2006; Stavinsky, 2015), the participants who demonstrate a higher level of socio-emotional learning are also reading at higher levels. The strongest correlation is with homework, a result that conforms to conventional wisdom. The results also indicate 68% of the Zhang Sah participants read at or above grade level.

Interventions to support student development often focus on only a single dimension of education or development. Given the expectation that fitness, emotional, and academic outcomes are correlated, student programs may be more effective if they address the holistic developmental needs of students. In other words, applying a strategy that brings a confluence of positive inputs to counteract the confluence of detractors might be more effective than singular approaches.

This study found academic achievement associated with non-academic instructional elements related to fitness and socio-emotional learning. This suggests a focus on instructional supports for academic achievement alone could have the potential to overlook ways in which non-instructional elements support academic achievement. Investing resources in supporting children developing competencies in the areas of fitness, socio-emotional learning, and academic achievement combined is a worthy consideration.

The results of the Zhang Sah Case Study prompt more questions. There are many future research considerations beyond this initial case study. The SAYO survey retrospective on social skills and leaning results present questions about the potential causality of the variables investigated. A qualitative study on participants' experience at the Zhang Sah program could potentially assess on the impact of socio-economic status, gender and ethnical equity, among other variables not considered in this case study. Further study is necessary to understand how BMI results could positively be associated with academic achievement. Does the BMI to academic achievement relationship observed in this study exist with children who are underweight and the opposite for overweight and adipose?

More research on the Zhang Sah program is warranted and forthcoming in order to determine if there are causal relationships or predictors of academic success beyond pedagogy. Opportunities may exist to bring together research and expertise to support the strategy of using out of school time, physical education, and socio-emotional learning as an academic support.

ABSTRACT

The study involved 87 school-age participants in the Zhang Sah afterschool program located in Philadelphia, PA during the 2015-2016 school years. The study sought to identify if relationships exist between the participants' results for physical competency as measured by Fitnessgram™, socio-emotional competency as measured by SAYO™, and cognitive competency as measured by school report card grades and literacy levels. The study's findings revealed participants' achieving levels of

competency in fitness, socio-emotional learning and academic achievement. The most significant variables related to the participants' results were adiposity, Body Mass Index, and low socio-economic status. The older school-age participants' results revealed few significant associations between fitness and socio-emotional learning except for associations between core body strength and leadership, and resilience and science grades. The young school-age participants' results revealed significant associations between flexibility and science grades, as well as socio-emotional learning and grades and reading level.

Email for more information: ssandone@zhangsah.org

The full case study is available through ProQuest: www.ProQuest.com

Works Cited

- Castilli, D., Hillman, C., Buck, S., & Erwin, E. (2007). Physical Fitness and Academic Achievement in Third- and -Fifth Grade Students. *Journal of Sport & Exercise Psychology, 29*, 239-252.
- Center For DiseaseControl and Prevention. (2012, October 5). *CDCYRBSS*. Retrieved from Youth Risk Behavior Surveillance System: (<http://apps.nccd.cdc.gov/youthonline/App/Default.aspx>)
- Center for Juvenile Justice Training and Research. (2010). *Juvenile Court Dispositions*. Shippensburg University, Center for Juvenile Justice Training and Research Information and TechnologyDivision. Shippensburg: PA Juvenile Court Judges' Commision.
- Chomitz, V. e. (2009). Is There a Relationship Between Physical Fitness and Academic Achievement? Positive Results from Public School Children from Northeastern United States. *Journal of School Health, 79*(1), 30-38.
- Folkins, C. H., & Sime, W. E. (1981). Physical FitnessTraining and mental Health. *American Psychologist, 37*3-389.
- Mallya, G. (2011). *Overview of Chronic Disease and Healthy Eating and Active Living Indicators for Philadelphia Adults and Children*. Philadelphia: Philadelphia Department of Public Health.
- Morrison, K., Shin, S., Tarnapolski, M., & Taylor, V. H. (2015). Association of depression &health related quality of life with body composition in children and youth with obesity. *Journal of Affective Disorders, 172*, 18-23.

- Mustillo, S., Worthman, C., Alaattin, E., Keeler, J., Angold, A., & Costello, E. J. (2003). Obesity and Psychiatric Disorder: Developmental Trajectory. *Pediatrics*, *111*(4), 851-859.
- Opel, N., Redlich, R., Grotegerd, D., Dohm, K., Heindel, W., Kugel, H., . . . Dannlowski, U. (2015). Obesity and major depression: Body-mass index (BMI) is associated with a severe course of disease and specific neurostructural alterations. *Psychoneuroendocrinology*, 219-226.
- Scales, C., Benson, P. L., Roehlkepartian, E. C., Sesma, A., & Van Dulman, M. (2006). The role of developmental assets in predicting academic achievement: A Longitudinal Study. *Journal of Adolescence*, 691-708.
- School District of Philadelphia. (2015, October 9th). *Philadelphia School District about Schools*. Retrieved from Philadelphia School District: <http://www.phila.k12.pa.us/about/#schools>
- Stavsky, S. (2015). *Measuring Social and Emotional Learning with the Survey of Academic and Youth Outcomes (SAYO)*. Wellesley MA: National Institute of Out of School Time Wellesley Centers for Women.
- Thacker, A., Dickinson, E., & Kogen, M. (2004). *Relationships Among the Pennsylvania System of School Assessment (PSSA) Scores, SAT Scores, and Self-Reported High School Grades for the Classes of 2002 and 2003*. Louisville, KY: Human Resources Research Organization.
- Thacker, A., Dickinson, E., & Koger, M. (2004). *Relationships Among the Pennsylvania System of School Assessment (PSSA) and Other Commonly Administered Assessments*. Louisville, KY: Human Resources Research Organization.