

MEMORANDUM

TO: ARLINGTON SCHOOL BOARD

FROM: HEALTH AND PHYSICAL EDUCATION ADVISORY COMMITTEE

DATE: DECEMBER 17, 2014

SUBJECT: RECOMMENDING YEAR REPORT

Introduction

The Health and Physical Education Advisory Committee (HPEAC) reviews the elementary, middle, and high school health and physical education programs and focuses on curriculum content and how effectively the delivery of instruction is meeting the needs of Arlington students.

The HPEAC recommends strongly that Arlington Public Schools adopt four recommendations aimed to motivate and provide opportunities for students to be physically active. By approving these recommendations, the Arlington County School Board will display community leadership in wellness. The outcome of these recommendations may have substantial positive impact on Arlington County students including:

- increased physical activity during the school day
- every PE student experiencing “best practice” PE curriculum
- improved academic and physical fitness success
- pride in physical fitness participation and achievements

The HPEAC recommendations:

1. A requirement that students be moderately to vigorously active for a minimum of 50% of each Physical Education class
2. Implementation of physical activity during classroom instruction throughout the school day with a pilot study in selected schools and grades
3. Improved consistency in the Physical Education curriculum across the county
4. Launch an elementary school incentive program called APS FitKids Recognition Program

Background and details of the recommendations can be found in this report. The Health and Physical Education Advisory Committee (HPEAC) submits this report and recommendations to the Arlington Public Schools (APS) Advisory Council on Instruction (ACI) for review and subsequent submission to the Arlington County School Board.

Background

The [*Physical Activity National Guidelines for Americans*](#) recommends that school-aged children engage in a minimum of 60 minutes of physical activity, 5 days a week. School-aged children spend half of their day in school and therefore should get 30 minutes of

their daily physical activity time during the school day⁴. Students benefit from physical activity during the school day in many ways:

- A study published by the University of Illinois at Urbana, Champaign found that getting kids to move helps to strengthen and stimulate their brains: increased fitness equals improved academics. After 30 minutes on the treadmill, students solve problems up to 10 percent more effectively.
- Data from a study that included three million children in schools across California and Texas showed a strong correlation between higher fitness scores and higher academic scores. (see diagram A)
- In 2012 JAMA Pediatrics reviewed 14 studies and stated *“Physical activity and sports are generally promoted for their positive effect on children’s physical health; regular participation in physical activity in childhood is associated with decreased cardiovascular risk in youth and adulthood. There is also a growing body of literature suggesting that physical activity has beneficial effects on several mental health outcomes, including health-related quality of life and better mood states.”*
- The World Health Organization states that appropriate practice of physical activity assists young people to:
 - develop healthy musculoskeletal tissues
 - develop a healthy cardiovascular system
 - develop neuromuscular awareness
 - maintain a healthy body weight
 - psychological benefits including control over anxiety and depression
 - have more confidence and an opportunity for self-expression
 - improved social interaction and integration
 - readily adopt other healthy behaviors (e.g. avoidance of tobacco, alcohol and drug use)

Recommendation #1

The HPEAC recommends that the curriculum goal for Physical Education (PE) in grades K-12 require all students enrolled in PE participate in moderate to vigorous physical activity (MVPA) for a minimum of 50% of each PE class.

The HPEAC also recommends that the PE curriculum follow two key strategies to increase student time in moderate to vigorous physical activity during PE class: 1) implement a well-designed curriculum, 2) provide teachers with appropriate training and supervision.

Rationale: The national standard for physical education frequency is 150 minutes per week in elementary school and 225 minutes per week in middle school and high school.¹ The same standards recommend that students spend at least 50% of physical education course time in moderate to vigorous physical activity. The U.S. Department of Health and Human Services (HHS) recommends that young people participate in at least 60 minutes of moderate to vigorous physical activity (MVPA) daily to obtain multiple health benefits, such as improved concentration,²⁻³ memory,⁴ and classroom behavior.⁵⁻⁶ Regular physical activity also is associated with improved academic performance, focus, and better behavior in the classroom.⁷

Healthy People 2020 published a National Physical Activity Plan based on recent research indicating that schools are under intense pressure to improve academic standards. These pressures, combined with the trend toward children being driven to school and other factors, have reduced the amount of time children and adolescents are physically active during the school day. Studies have shown that physical activity has a positive impact on academic performance and standardized test scores.⁸

The first U.S. report card on physical activity for children and youth, which was released in April 2014 by the National Physical Activity Plan Alliance and the American College of Sports Medicine, found that only about a quarter of children ages 6 to 15 meet that recommendation.⁹ According to the report, America earned a D- for overall physical activity, a C- for school-based physical activity and an F for active transportation, which primarily assessed the percentage of students who walk or bicycle to school. At the national level, schools across the country have been decreasing the amount of time dedicated to physical activity over several decades. Efforts to provide physical education and increase physical activity often focus on schools because that is where school-age children spend a significant portion of their day.¹⁰

Using well-structured physical education programs within the curriculum for each grade level at APS may result in an increase of physical activity for students. The Presidential Youth Fitness Program provides a model for fitness education that helps physical educators assess, track and recognize youth fitness and physical activity. The program provides resources and tools for physical educators to improve their current process.¹¹ Many school districts across the nation, have included physical activity initiatives such as classroom “brain breaks” or added recess to their school day. The use of pedometers with careful tracking of moderate to vigorous physical activity (MVPA) have been successfully implemented to assist with these initiatives. Several schools within Jeffco County, CO launched a new initiative based on the work of Harvard psychiatry professor John Ratey, who wrote, “Spark: The Revolutionary New Science of Exercise and the Brain.”¹² Ratey details the science behind the intuition, describing how exercise affects neurotransmitters and brain infrastructure to facilitate learning.¹³ The pedometers provide instant feedback on exercise intensity, but it was found that the students gained at least as much inspiration from the recognition provided by the PE teachers. *(See Recommendation #4 for our suggested recognition program.)*

Budgetary Implication: The HPEAC recommends that APS utilize the current inventory of pedometers already purchased for PE classes throughout many schools and grade levels and invest in more pedometers to provide an adequate amount for every student enrolled in a PE class. The pedometers will encourage and enable students to track their MVPA. A set of 15 pedometers cost approximately \$400, therefore, dependent on the current APS supply, the total cost to supplement each school would be minor. To offset these costs, school administrators would work with PE departments at each school to rotate and share these pedometers. There are other low-cost ways to incorporate MVPA into the PE curriculum, such as requiring students to

sprint in between activities or creating circuit stations while students focus on a specific lesson plan.

Committee Vote:

Recommendation #1 References:

1. 2008 [2008 Physical Activity Guidelines for Americans](#). In U.S. Department of Health and Human Services (accessed October 2014)
2. Centers for Disease Control and Prevention. The association between school, based physical activity, including physical education, and academic performance. U.S. Department of Health and Human Services; 2010
3. Budde H, Voelcker-Rehage C, Pietrasyk-Kendziorra S, Ribeiro P, Tidow G; Acute coordinative exercise improves attentional performance in adolescents; <http://www.sciencedirect.com/science/article/pii/S0304394008008483>, June 2008
4. Caterino MC, Polak ED. Effects of two types of activity on the performance of second-, third-, and fourth-grade students on a test of concentration. *Percept Mot Skills* 1999;89(1):245-8.
5. Dwyer T, Blizzard L, Dean K. Physical activity and academic performance in children. *Nutr Re.* 1996;54(4):S27-31.
6. [Presidential Youth Fitness Program:About](#). In *Presidential Youth Fitness Program* (accessed June 2014)
7. Jarrett OS, Maxwell DM, Dickerson C, Hoge P, Davies G, Yetley A. Impact of recess on classroom behavior: group effects and individual differences. *J Educ Res* 1998;92(2):121-6.
8. Barros RM, Silver EJ, Stein RE. School recess and group classroom behavior *Pediatrics* 2009;123(2):431-6.
9. Physical Activity, Emerging Issues in Physical Activity [Healthy People 2020](#), (accessed October 2014)
10. 2014 US Report Card on Physical Activity for Children and Youth, [The U.S. National Physical Activity Plan](#), (accessed September 2014)
11. [Presidential Youth Fitness Program](#) under- About and Assessment, (accessed November 2014)
12. Ann Schimke, Chalkbeat Colorado, February 2014, [Transforming P.E. and maybe test scores too](#),
13. John Ratey, Spark: The Revolutionary New Science of Exercise and the Brain, [The New P.E.](#) (accessed September 2014)

Recommendation #2

The HPEAC recommends that APS support an Academic Achievement and Physical Activity Across the Curriculum pilot study for selected schools and grades, that incorporates physical activity during classroom instruction in suggested time increments throughout the school day.

A trial protocol used in a US NIH Clinical Trial would be beneficial to pilot in our elementary schools. The trial, called Academic Achievement and Physical Activity Across the Curriculum (A + PAAC), assesses the impact of a program titled, “Physical Activity Across the Curriculum” (PAAC) on academic achievement. The primary aim of this pilot is to evaluate the differences in academic achievement in students who receive physically active lessons and students in control schools who receive regular academic lessons. If implemented successfully, the PAAC approach could be easily and inexpensively utilized in APS elementary schools to improve the quality of education and health of the children.

The impact of PAAC is two 10 minute lessons/day, 5 days per week and delivers academic lessons using physical activity. There is no reduction in academic instruction time. The results of this pilot would be shared across the county and may even be of interest to the National Physical Activity Plan or other organizations.

Rationale: Both improving academic achievement and reducing the rates of obesity in elementary schools are of interest to administrators, teachers, parents and students.

A study done in October 2014 looked at the effect of aerobic exercise on cognition, academic achievement, and psychosocial function in children. ²Of the 87 articles assessed, 79 were excluded. Eight studies were analyzed in a systematic review. Each study had differing aerobic physical activity interventions but all used a moderate to vigorous intensity level. All studies demonstrated that “aerobic physical activity had a generally positive effect on children” with no reported negative effects of aerobic physical activity. The effect on cognitive performance varied from significant to non-significant results, yet overall the aerobic physical activity group performed better than controls. The effect on mental health was found to reduce depression and increased self-esteem.

One of these studies from the University of Kansas in 2009 was a randomized controlled trial to promote physical activity and diminish obesity in elementary school children. The 24 participating elementary schools had significant improvement in daily physical activity and academic achievement scores. ³

This 2009 study caught the attention of the US National Institutes of Health. The NIH Clinical trial involved seventeen elementary schools that were cluster randomized to an A + PAAC or control group for a period of 3 years. Typical PE schedules in both schools remained the same. The study began in the fall of 2011. Classroom teachers were trained to deliver academic instruction through moderate-to-vigorous physical activity with a target of 100+ minutes of A + PAAC activities per week.⁴ On completion of training, teachers have the skills and knowledge to reduce lesson planning time, make smooth transitions to incorporate physical activity into the curriculum, and be active role models for physical activity. The Weschler Individual Achievement Test - 2nd Edition was given at baseline and at the end of year 3 in a random, sub-sample of students in Grades 2 and 3. Significant improvements were shown for all academic areas for students participating in PAAC. *Go to 29:40 in the video found at vimeo.com/32209633 to see a sample of the teacher training.*

Budgetary Implication: Academic Achievement and Physical Activity Across the Curriculum (A + PAAC) is budget-neutral. Classroom teachers who are selected to be part of the pilot can be trained in the teacher in-service setting.

Committee Vote:

Recommendation #2 References:

1. Donnelly, JE, Greene, JL, Gibson, et al. Physical activity and academic achievement across the curriculum (A + PAAC): rationale and design of a 3-year, cluster-randomized trial.
2. Lees, C, Hopkins, J. Effect of Aerobic Exercise on Cognition, Academic Achievement, and Psychosocial Function in Children: A Systematic Review of Randomized Control Trials. *Prev Chronic Dis.* 2013;10:130010. DOI: <http://dx.doi.org/10.5888/pcd10.130010>
3. Donnelly, JE, Greene, JL, Gibson, CA, et al. Physical Activity Across the Curriculum (PAAC): A randomized controlled trial to promote physical activity and diminish overweight and obesity in elementary school children. *Preventive Medicine.* 2009; 336-341.
4. vimeo.com/32209633

Recommendation #3

The HPEAC recommends that APS assess the consistency with which the Physical Education (PE) curriculum is implemented across the county. The results of the assessment will be used to bring all programs into alignment and will be shared, along with (evidence-based practice) best practice models, across the county.

To ensure that all students are receiving consistent curriculum, the HPEAC recommends that APS conduct an observational analysis. The analysis will be conducted by the Health and PE staff. A rubric will be used to determine the degree to which staff are meeting PE goals and objectives for the curriculum across schools. PE teachers' year-long plans will be evaluated for consistency at specific grade levels.

Rationale: Although all schools in the APS system follow Virginia guidelines and benchmarks towards Standards of Learning for PE, teachers have flexibility in their implementation of the curriculum and helping students meet those standards. As a result of this flexibility, schools have variability, sometimes great, in how the PE curriculum is delivered. Currently, it is unclear what the variability in curriculum delivery is and its impact on students.

Budgetary Implication: This PE consistency and measurement recommendation is budget-neutral and would be aligned with normal programmatic reviews by staff. This analysis would simply provide a different lens through which programs are reviewed and assessed by staff.

Committee Vote:

Recommendation #4

The HPEAC recommends APS implement an incentive program within each elementary school in the county: The *APS FitKids* Recognition Program. This new county initiative aims to promote the health and well-being of its students. The program emphasizes the need for elementary school age children to participate in physical activity and to learn ways in which to remain active and fit for a healthy lifestyle which is in conjunction with the Presidential Youth Fitness Club and Awards program.

To help motivate students and individual schools to meet the challenges, a reward system would be designed that would encourage participation and give recognition to schools whose students, at all grade levels, participate and excel. Examples of recognition would include school banners, social media announcements, and the other media coverage.

Rationale: Government supported programs to encourage and reward youth for being active and physically fit have a long standing history. The first of such programs, entitled *The President's Council on Youth Fitness*, was founded on July 16, 1955. The program, designed by then President Dwight D. Eisenhower, was developed to encourage American youth to be healthy and active, after a study showed American adolescents were less physically fit than their European counterparts. In 1963, President Kennedy

changed the council's name to the *President's Council on Physical Fitness* to reflect its role to serve all Americans. In 1966, President Lyndon B. Johnson created the *Presidential Physical Fitness Award*, the name of which was later changed to the *President's Challenge Youth Physical Fitness Awards Program*. In 1968, the council's name was changed to the *President's Council on Physical Fitness and Sports* to emphasize the importance of sports in life and in 1972, the *Presidential Sports Award Program* was created. Demonstrating national importance again, the U.S. Congress declared May as *National Physical Fitness and Sports Month* in 1983. And in June 2010, President Barack Obama renamed the federal agency the *President's Council on Fitness, Sports and Nutrition*, with a new emphasis on nutrition as an element of fitness as part of its overall goal to help end the epidemic of childhood obesity.

The Presidential Youth Fitness Club and Awards program, part of the newest President's Council initiative, was developed to promote and enhance regular physical activity, fitness, sports participation, and good nutrition on a national level. With the increase in childhood obesity in America, this initiative is of great significance to help end its occurrence.

In 2012, Arlington was named Virginia's second healthiest county in the Commonwealth. The rankings, developed by the Robert Wood Johnson Foundation in collaboration with the University of Wisconsin Population Health Institute, assessed the health of most counties in the nation. The rankings measure health behavior, clinical care, social and economic factors, and physical environment. Arlington was ranked high for its transit-oriented development to encourage people to bike, walk, or take transit to get around as well as its bike trails, walkable sidewalks and open spaces to encourage people to get outdoors. Arlington also provides a number of initiatives that promote a healthy and fit community including FitArlington, BikeArlington, WalkArlington, and Partnerships for a Healthier Arlington.

Budgetary Implication: The APS FitKids program would be developed by current staff who would determine the specific rewards and acknowledgement items for schools and students. Initial estimates suggest a yearly investment ranging \$400-\$1000.

Committee Vote

Recommendation #4 References:

[i] <http://www.whitehouse.gov/the-press-office/executive-order-presidents-council-fitness-sports-and-nutrition>

[ii] <https://www.presidentschallenge.org/challenge/pyfp.shtml>

[iii] <http://news.arlingtonva.us/releases/arlington-county-ranked-2nd-healthiest-231572>

Past Recommendations

Status:

Strategic Plan Alignment:

ACI Vote:

Budgetary Implications:

Past Recommendation #2:

Continue to update all HPE curriculum (elementary through high school) to reflect the current “state of knowledge” regarding the negative effects of drug and alcohol use on the brain development of adolescents and teenagers – with the goal of making primary and secondary school curricula consistent and equally up-to date (e.g., APS staff recently updated the “Too Smart To Start” curriculum for primary school students).

Rationale: The current state of knowledge in this field is growing rapidly, and the APS curriculum needs to reflect it – from primary through secondary school. Currently, we feel the secondary curriculum (in particular) needs an update.

Budgetary Implication: \$2,600

We estimate this effort would take about 100 teacher hours (10 teachers, 10 hours each) to complete at a cost of \$26/hour.

ACI Vote: Yes (22) No (0) Abstaining (0)5

Staff Response: Staff will continue to update and/or develop age-appropriate curriculum on the negative effects of drug and alcohol use on the brain development of adolescents and teenagers.

Status: Implemented

Recommendation #3:

Incorporate homework assignments into the HPE curriculum –specifically at the secondary level – that require discussion between students and parents. The goal should be to promote dialog between students and parents, and to engage parents more directly in the HPE curriculum – not create “busy work”.

Rationale: Parental involvement often drops off significantly in the middle school and high school years. However, parental involvement is critical to any successful AOD prevention program.

Budgetary Implication: \$2,600

We estimate this effort would also take about 100 teacher hours (10 teachers, 10 hours each) to complete at a cost of \$26/hour.

ACI Vote: Yes (12) No (6) Abstaining (4)

Staff Response: Staff will review curriculum to identify opportunities appropriate for encouraging the dialogue between students and their parents.

Status: Partially implemented.

Recommendation #4:

Enhance the effort to “strengthen family bonds and reinforce skills at home”, as advocated by the current “Too Good for Drugs” curriculum,

Rationale: While existing APS curriculum material is often very good, the distribution of the material could be improved. We specifically believe this to be the case for the “Too Good for Drugs” program.

Budgetary Implication: No cost

We suggest implementing this effort through “electronic” means – using the APS website and email newsletters – as opposed to printing and mailing material. In addition, we expect to use materials that already exist or will be created as part of existing programs. Consequently, the primary “costs” of this effort come from uploading the material to the APS site and electronic distribution of newsletters. However, these should be relatively minor efforts and will incur no significant cost.

ACI Vote: Yes (21) No (0) Abstaining (1)

Staff Response: Staff will post the Too Good for Drugs “Bring It Home” activities on the APS website and will explore ways to increase distribution of newsletters and information more broadly regarding the dangers of adolescent alcohol and drug use.

Status: Implemented.

Committee Members:

Kristen Bruce, Dana Carr, Sheila Cordaro, Alisa Cowen, Dawn Heyn, Kim McCormick, Jana Meltzer, Joan Mountain, Marianne Talbot

APS Staff Liaison: Deborah DeFranco, Supervisor, Health, Physical and Driver Education & Athletics

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