

## **Abstract**

### **PROMOTING GOOD HEALTH AND PHYSICAL ACTIVITY IN SCHOOLS**

This article submission examines the important role of school district teachers and administrators in regards to promoting good health and physical activity in the schools. The approaches that schools can take to promote physical activity are the focus of this article. These include (1) establishing policies that promote physical activity; (2) providing environments that encourage safe and enjoyable physical activity; (3) implementing quality, daily physical activity opportunities, and curricula; (4) implementing health education that provides students with knowledge and needed behavioral skills; (5) providing sufficient training for personnel involved in physical activity instruction or promotion; and (6) providing inclusive extracurricular approaches that meet the needs and interests of all students. By implementing these recommendations, schools can help guarantee that all students reach their full educational potential and good health.

**PROMOTING GOOD HEALTH  
AND PHYSICAL ACTIVITY IN SCHOOLS**

by

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## Introduction

In 2000, the Secretary of Health and Human Services and the Secretary of Education issued a report to the President on a plan to promote better health for students through physical activity (Centers for Disease Control and Prevention, 2000). This document promotes opportunities for incorporating the concept of healthy living into all aspects of the school, community, and family. Each aspect plays a tremendously important role in establishing patterns of healthy living for children. The importance of school environments that imitate healthy lifestyles will not only help current student achievement and well-being, but also have the lasting impact of developing adults that value the important role that fitness and nutrition play in their lives.

The approaches that schools can take to promote physical activity will be the focus of this article. These include (1) establishing policies that promote physical activity; (2) providing environments that encourage safe and enjoyable physical activity; (3) implementing quality, daily physical activity opportunities, and curricula; (4) implementing health education that provides students with knowledge and needed behavioral skills; (5) providing sufficient training for personnel involved in physical activity instruction or promotion; and (6) providing inclusive extracurricular approaches that meet the needs and interests of all students. By implementing these recommendations, schools can help guarantee that all students reach their full educational potential and good health.

Schools are an excellent place to teach children the importance of daily physical activity and support an active lifestyle into adulthood. Unfortunately, budget constraints and increased accountability for standardized test scores have required school districts to

question the importance of physical education and other physical activity programs (Trost, 2007). Certified elementary physical education teachers, school nurse positions, and health-related intervention programs have also been downsized in a number of public schools (The National Association of School Nurses, 2009). As states conduct standardized tests to hold schools and students accountable, content that is not tested, such as physical education, has become a lower concern (American Heart Association and the National Association for Sport and Physical Education, 2006). For example, only 8% of elementary schools provide daily physical education (150 minutes per week) for the entire school year (Burgeson, Wechsler, Brener, Young, & Spain, 2001). Also, current data show that physical activity participation in this population is declining (Oliver, Schofield, & McEvoy, 2006). This physical inactivity is a serious problem and contributes to the obesity issues in the United States (Brink, Nigg, Lampe, Kingston, Mootz, & van Vliet, 2010).

The dramatic rise of obesity in children, along with the physical, social, and economic consequences directly impacts children, their families, and the community (The Association of School Nurses, 2009). Research suggests an integrated approach to increasing consistent physical activity in children (Oliver, et al., 2006). Integrating physical activity programs can help youth meet most of their physical activity needs. Evidence exists supporting the academic and social benefits of integrating general disciplines with physical activity (Hartzler, 2000). One way to accomplish this is by schools having policies that provide time for organized physical activity and free play.

### **Programs to Promote Physical Activity and Healthy Nutrition**

Policies to integrate health awareness and physical activity school-wide are available. School administrators and teachers have the opportunity to take a proactive

rather than a reactive approach to children's health awareness. Benefits of a school centered on healthy choices are many. Research (e.g., Whitaker, Wright, Pepe, Seidel, & Dietz, 1997) demonstrates that “policies and practices that address the health and developmental needs of youth are vital components of any complete policy for improving academic performance” (p. 869). A nonprofit organization (*Action for Healthy Kids*, 2004), reports that the excessive rise in poor nutrition, physical inactivity, and weight problems are negatively affecting academic achievement of today's children.

Programs offered after school hours have been identified as one of the potentially important environments for encouraging better adolescent health choices (Coleman, Gellar, Rosenkranz, & Dzewaltowski, 2008). Some studies (e.g., Pate, Saunders, Ward, Felton, Trost, & Dowda, 2003; Stahl, Rutten, Nutbeam, & Kannas, 2001) have examined the role of after-school programs in preventing obesity and promoting healthy behaviors. These after-school programs can provide physical activity and healthy snacks for children who might not have the opportunities in their home environment. These programs may have a major impact on the choices students make in the future.

Proper nutrition plays a key role in the health and wellness of today's students. The goals of the United States Department of Agriculture (USDA) Food and Nutrition Service (2010) is to support child nutrition programs through training and technical assistance for foodservice, nutrition education for children and their caregivers, and school and community support for healthy eating and physical activity. There are several programs that can provide helpful guidelines for school districts to implement health and wellness education. These programs include the National School Lunch Program, School Breakfast Program, and Fresh Fruit and Vegetables Program (USDA, 2010).

Many of the USDA program student participants come from low-income families (Cullen, Watson, & Fithian, 2009). These students consume at least 50% of their daily food intake at school. Edmunds, Waters, and Elliott (2001) suggest that such children are more likely to face obesity during adolescence than those from higher socioeconomic environments, confirming the importance of wellness programs within the schools.

In 2005, the North Carolina State Board of Education updated the state's Healthy Active Children Policy to include a requirement that all children kindergarten through eighth grade received at least thirty minutes of moderate-to-vigorous physical activity each school day through physical education, recess, and other classroom approaches (Evenson, Ballard, Lee, & Ammerman, 2009). North Carolina school districts report numerous positive effects of the policy. These effects included increased focus on school work, physical activity participation, awareness of healthy habits, alertness, enjoyment, and even higher staff involvement. With this information, schools should promote partnerships among students, parents, and community organizations and members to improve the safety of the school environment.

### **Providing Environments that Encourage Safe and Enjoyable Physical Activity**

Identifying the factors in the school and community environment that are associated with student's physical activity can reveal promising determinants and lead to more effective intervention strategies (Sallis, Bauman, & Pratt, 1998). School environments with high levels of supervision and equipment have been shown to increase physical activity in both girls and boys (Sallis, Conway, Prochaska, McKenzie, Marshall, & Brown, 2001; Haug, Torsheim, Sallis, & Samdal, 2010).

Physical activity promotes health; therefore, schools and communities must build environments that support active living and reduce barriers to physical activity (Bennett, Wolin, Puleo, & Emmons, 2006). Nichol, Pickett, and Janssen (2009) examine the relationships between school recreational environments and adolescent physical activity. These researchers find that students at schools with more recreational features and opportunities report higher rates of class-time and free-time physical activity.

An interesting study by Beighle, Morgan, Masurier, and Pangrazi (2006) examined the specific amount of physical activity children accumulated at recess and outside of school by using a pedometer to measure the amount of steps taken during these periods. Results indicated that children spent the majority (60%) of their recess engaged in physical activity and a smaller portion (20%) of their outside of school time in activity. Boys accumulated more steps than girls. The environment of the playground and its relationship to activity preferences, however, could explain the difference. During recess, most boys were engaged in kickball, soccer, basketball, and football. The most popular activity for girls was handball.

Similar studies have been conducted using a pedometer to measure physical activity. In 2004 for example, seventy-eight elementary students from a public school in New Zealand participated in a study to integrate physical activity into the curriculum (Oliver, et al., 2006). Students participated in virtual walks around New Zealand. Subjects incorporated were English, Social Studies, Math, Statistics, and Physical Education. The virtual walks unit was taught over four weeks. What was interesting about this study was that the researchers took the first three days worth of data and used them as a baseline for the rest of their research. There seemed to be a novelty factor in wearing the pedometers the first few days because step counts were very high.

Eighty percent of students were already meeting the recommended daily step counts.

Unfortunately, researchers felt some children might have been experiencing a "ceiling effect" and had very little room to increase their activity any further. This approach, however, provided children with the opportunity to be active in the classroom and physically see their activity accumulating to become more aware of their own activity levels. All of the parts of the physical activity program helped the youth explore different physical activities and give them the chance to learn and practice the skills to establish physically active lifestyles.

### **Implementing Quality Physical Activity Opportunities and Curricula**

Integrating physical activity into a total learning experience can influence healthy behaviors and lifetime choices for students at any grade level (Weinstein & Rosen, 2000). The National Association for Sport and Physical Education (2002) study suggests sixty minutes of physical activity per day, which is more than the prearranged time for most physical education programs. Realizing the limited time allowed for physical education classes, school districts have examined methods for participating in physical activity throughout the day (Gaus & Simpson, 2009). Some general education teachers add movement and stretching activities to classroom instruction, while others have a hard time making the connection between teaching their subjects and incorporating physically active skills. Simply adding a number of five to ten minute sessions of activity throughout the day, however, will accumulate and provide health benefits equal to one sixty minute session (Blair & Connelly, 1996). In addition, studies (e.g., Carlson, Fulton, Lee, Maynard, Brown, & Kohl, 2008; Raviv & Low, 1990) have shown that time spent during the school day on physical education does not take away from academic performance.



The relationship between physical activity and improved academic performance is strengthened by research from Chomitz, Slining, McGowan, Mitchell, Dawson, and Hacker (2009). Results indicate statistically significant relationships between physical fitness and academic achievement. Yet, there is a trend in public schools to cut recess and gym time in favor of more academic class time (Ahamed, MacDonald, Reed, Naylor, Liu-Ambrose, & McKay, 2007). Today's reality is that educators must incorporate physical activity in various ways throughout the school day.

Regular activity breaks during the school day may help students think, focus on their school work, and improve their on-task behavior (Raviv & Low, 1990). When children are given these mental breaks where they are allowed to move, stretch, and socialize, they physiologically feel better (Mahar, Murphy, Rowe, Golden, Shields, & Raedeke, 2006). They are better able to concentrate when their studies resume. Research (e.g., Flook, Repetti, & Ullman, 2005) also show physical activity is related to higher levels of self-esteem and lower levels of stress and anxiety; each of which has been linked with improved academic performance for students at every education level. Therefore, promoting fitness by increasing opportunities for physical activity during physical education class, recess, and out-of-school time may support a number of healthy lifestyle factors (Chomitz, et al., 2009).

Schools need to develop physical education curricula that speak to these apparent benefits. To increase female physical activity, strategies should focus on activities to reduce stress and promote self-esteem (Tergerson & King, 2002). Examples of stress-reducing activities include bike riding, walking, running, dancing, and playing active games like tag, soccer, and basketball. Examples of activities to promote self-esteem

include hopping, skipping, jumping, running, and sports like gymnastics, basketball, and tennis. To increase male physical activity, strategies should focus on activities that are competitive and build strength. Examples of muscle-strengthening activities for adolescent males include push-ups, pull-ups, and weightlifting exercises. Creating activities that address gender-related differences may, in turn, address gender-specific physical activity differences (DeBate, McDermott, Baldwin, Bryant, Courtney, Hogeboom, Nickelson, Phillips, & Alfonso, 2009). In addition, the activities children learn and enjoy will carry-on with them into adulthood.

### **Implementing Health Education that Provides Students with Knowledge and Needed Behavioral Skills**

Physical activity is well-associated with better health. Among school-aged children, physical activity programs can also help develop social skills, improve mental health, and reduce risk-taking behaviors (Podulka-Coe, Pivarnik, Womack, Reeves, & Malina, 2006). Physical activity also decreases the likelihood of developing obesity and risk factors for diseases like type II diabetes and heart disease (Chomitz, et al., 2009). A number of school-based interventions aimed at promoting healthy eating and/or physical activity are having a positive impact on childhood obesity (Gortmaker, Peterson, & Wiecha, 1999). Still, school-based obesity prevention programs face challenges due to the lack of physical education programs offered in public schools.

Commitment to high-quality, health-related physical education programs for all levels of education is an essential strategy to having a positive influence on the health of students nationwide. Research (e.g., Tassitano, Barros, Tenorio, Bezerra, Florindo, & Reis, 2010) predicts that higher levels of enrollment in physical education classes can

play a role in the promotion of health-related behaviors among high school students. Further, physical education classes can promote knowledge and positive attitudes relating to a healthy lifestyle (Fairclough & Stratton, 2005).

Research (e.g., Delisle, Werch, Wong, Bian, & Weiler, 2010) suggests a relationship between frequency and intensity of physical activity and health behaviors of adolescents. Results of Delisle, et al.'s research show that adolescents engaged in vigorous physical activity use drugs less often, and consume greater amounts of healthy carbohydrates and healthy fats in their diets. Adolescents also use stress management techniques more often and report higher levels of sleep than those engaged in low levels of physical activity. The documented benefits of physical activity should motivate school districts, along with community support, to design and implement health and physical education programs (Fairclough, Stratton, & Butcher, 2008). Such programs need to meet the needs of all students and be an enjoyable experience as well.

School policy and environments can provide a positive influence on student behaviors. Required school health education and supportive school policies are associated with less soda consumption, decreased inactivity, and decreased tobacco use (O'Brien, Polacsek, MacDonald, Ellis, Berry, & Martin, 2010). By caring for students each day, schools can play an important role in student health.

### **Providing Sufficient Training for Personnel Involved in Physical Activity**

#### **Instruction or Promotion**

Changes in society necessitate an increase of previously defined roles of the classroom teacher. A partnership between the classroom teacher, who will generally have a strong content area focus, with a physical education teacher, who will have skills

in sport and exercise instruction, may lead to a relatively basic approach to integrating physical movement into daily academic instruction (Gaus & Simpson, 2009). Vail (2006, p.14) suggests that "learning through physical activity, whether in the physical education classroom or in the regular education classroom, helps students who have trouble concentrating, sitting still, and paying attention."

Schools and teachers need adequate planning time and support to create a kind of "action plan" to increase the opportunities for physical activity and healthy eating (Naylor, Scott, Drummond, Bridgewater, McKay, & Panagiotopoulos, 2010). Districts should also provide teachers with continuing in-service training in physical activity promotion, and coaches with appropriate coaching competencies. Additionally, districts should make certain that every physical education class is taught by a qualified teacher with a degree in physical education (Sherman, 2008).

Teaching physical education often consists of a single college course or a several-hour seminar, or is ignored completely (McKenzie, Sallis, Kolody, & Faucette, 1997). Fortunately, and with good results, researchers (e.g., Sherman, Tran, & Alves, 2010) and practitioners have investigated methods and benefits of training and supporting classroom teachers to deliver developmentally-appropriate physical education. Despite these efforts, classroom teachers continue to be challenged with the often overwhelming task of delivering consistent physical education to their students (Ennis, 2006). A possible aide to this situation may be to encourage and support students to participate in extracurricular sports.

## **Providing Inclusive Extracurricular Approaches that meet the Needs and Interests of all Students**

Physical activity and sports-team participation may be associated with higher academic achievement (Fox, Barr-Anderson, Neumark-Sztainer, & Wall, 2010). Also, sports-team participation may be the major outlet by which adolescent students are physically active. Additionally, students who have positive attitudes towards physical activity are more likely to exercise (Fahlman, Hall, & Lock, 2006). To ensure positive attitudes, schools must address and overcome barriers to exercise in health and physical education programs (Daley & Buchanan, 1999).

Physical education classes should also focus on lifetime activities such as swimming, jogging, and biking to establish a pattern of healthy behavior. These classes can support students in choosing a wide variety of activities in which to participate. Targeting various interests and ability levels (Biddle & Goudas, 1996) will encourage students and spark an interest to participate. These physical education classes will also need to meet regularly throughout the school year to help establish a regular pattern of activity for students.

Adolescence is the period of development when the introduction of physical activity programs is most likely to be successful and sustained into adulthood (President's Council on Physical Fitness and Sports, 2008). Therefore, efforts to increase physical activity should be concentrated on this age group. To do that, it is important to determine adolescents' perceived reasons to engage or not to engage in physical activity (Tappe, Duda, & Ehrnwald, 2009). These characteristics may also differ between males and

females. One study (Tergerson & King, 2002) finds adolescent females prefer having a friend to exercise with to stay in shape. Males also prefer having a friend to exercise with, but to become strong.

One study (by Cohen, Taylor, Zonta, Vestal, & Schuster, 2007) surveyed Los Angeles County public high schools to examine the availability of and student participation in extracurricular sports programs. Cohen et al. also examined school characteristics and related community data on youth activity associated to risky behavior. The researchers found both availability and participation were limited.

The results of one study (Simons-Morton, Parcel, Baranowski, Forthofer, & O'Hara, 1991) suggest that school is an important place for improving children's diet and physical activity. In the researchers' experience, however, schools did not adjust their policies readily, and substantial staff training needs to accompany policy changes regarding healthful school lunch and vigorous physical education. Before widespread implementation of these changes occurs, effectiveness studies with larger numbers of schools are needed to determine the ability to generalize these approaches and to assess cost effectiveness. Nevertheless, there are still available strategies schools can implement now to help students become and/or remain physically healthy.

## **Conclusion**

Students spend a significant portion of the day at school. School-based physical activity and health education programs have the potential to positively influence childhood health indicators (Sallis, et al., 2001). Advocating quality health and physical education programs serves the needs of all students. Educators can positively impact students' mental, emotional, and physical health. If time and energy are devoted to

establishing physical and social environments that encourage and facilitate physical activities and nutritional diets, the life expectancies of today's inactive children certainly may be extended. Because of the enhanced quality of life resulting from physical activity, those charged with effecting change have the power to engage students in measures certain to obtain endless benefits.

Although children and adolescents are more physically active than adults, many young people do not engage in moderate or vigorous physical activity at least three days a week. Physical activity among both girls and boys tends to decline steadily during adolescence (Nichol, et al., 2009). What school districts need to accomplish is a balance between physical activity and academic learning.

Research shows that academic achievement is positively affected by additional time spent in physical activity and health education. Positive self-esteem and lower levels of stress are also benefits of physical activity and health education (Flook, et al., 2005). If teachers are given the resources, along with planning, implementation, and professional development time to effectively integrate physical activity into the classrooms, student success can only improve. There is nothing to lose by investing time and resources to help young people make better choices for their health and well-being.

## **References**

Action for Healthy Kids. (2004). The learning connection: The value of improving nutrition and physical activity in our schools. Skokie, IL: Action for Healthy Kids Report.

- Ahamed, Y., MacDonald, H., Reed, K., Naylor, P.J., Liu-Ambrose, T., & McKay, H. (2007). School-based physical activity does not compromise children's academic performance. Medicine and Science in Sports and Exercise, *39* (2), 371-376.
- American Heart Association and the National Association for Sport and Physical Education. (2006). 2006 shape of the nation report: Status of physical education in the USA. Reston, VA: NASPE Report.
- Beighle, A., Morgan, C. F., Masurier, G., & Pangrazi, R. P. (2006). Children's physical activity during recess and outside of school. Journal of School Health, *76* (10), 516-520.
- Bennett, G.C., Wolin, K.Y., Puleo, E., & Emmons, K.M. (2006). Perceptions of neighborhood safety and pedometer-determined activity among low-income housing residents. Medicine and Science in Sports and Exercise, *38* (5), 5539-5540.
- Biddle, S. & Goudas, M. (1996). Analysis of children's physical activity and its association with adult encouragement and social cognitive variables. Journal of School Health, *66* (2), 75-81.
- Blair, S. & Connelly, J. (1996). How much physical activity should we do? The case for moderate amounts and intensities of physical activity. Research Quarterly for Exercise and Sport, *67* (2), 193-205.



- Brink, L.A., Nigg, C.R., Lampe, S.M.R., Kingston, B.A., Mootz, A.L., & van Vliet, W. (2010). Influence of schoolyard renovations on children's physical activity: The learning landscapes program. American Journal of Public Health, 100 (9), 1672-1678.
- Burgeson, C.R., Wechsler, H., Brener, N.D., Young, J.C., & Spain, C.G. (2001). Physical education and activity: Results from the school health policies and programs study, 2000. Journal of School Health, 71 (7), 279-293.
- Carlson, S.A., Fulton, J.E., Lee, S.M., Maynard, L., Brown, D., & Kohl, H. (2008). Physical education and academic achievement in elementary school: Data from the early childhood longitudinal study. American Journal of Public Health, 98 (4), 721-727.
- Centers for Disease Control and Prevention. (2000). Promoting better health for young people through physical activity and health. A report to the President from the Secretary of Health and Human Services and the Secretary of Education. Morbidity and Mortality Report, 57, 1-16.
- Chomitz, V.R., Slining, M.M., McGowan, R.J., Mitchell, S.E., Dawson, G.F., & Hacker, K.A. (2009). Is there a relationship between physical fitness and academic achievement? Positive results from public school children in the northeastern United States. Journal of School Health, 79 (1), 30-37.

Cohen, D., Taylor, S., Zonta, M., Vestal, K.D., & Schuster, M.A. (2007). Availability of high school extracurricular sports programs and high-risk behaviors. Journal of School Health, 77 (2), 80-86.

Coleman, K., Geller, K., Rosenkranz, R., & Dzewaltowski, D. (2008). Physical activity and healthy eating in the after-school environment. Journal of School Health, 78 (12), 633-640.

Cullen, K.W., Watson, K.B., & Fithian, A.R. (2009). The impact of school socioeconomic status on student lunch consumption after implementation of the Texas public school nutrition policy. The Journal of School Health, 79 (11), 525-531.

Daley, A. & Buchannan, J. (1999). Aerobics, dance, and physical self-perceptions in female adolescents: Some implications for physical education. Research Quarterly for Exercise and Sport, 70 (2), 196-200.

DeBate, R.D., McDermott, R.J., Baldwin, J.A., Bryant, C.A., Courtney, A.H., Hogeboom, D.L., Nickelson, J., Phillips, L.M., & Alfonso, M.L. (2009). Factors associated with tweens' intentions to sustain participation in an innovative community-based physical activity intervention. American Journal of Health Education, 40 (3), 130-139.

Delisle, T., Werch, C., Wong, A.H., Bian, H., & Weiler, R. (2010). Relationship

- between frequency and intensity of physical activity and health behaviors of adolescents. Journal of School Health, 80 (3), 134-140.
- Edmunds, L., Waters, E., & Elliott, E.J. (2001). Evidence based management of childhood obesity. British Medical Journal, 232 (7318), 916–919.
- Ennis, C.D. (2006). Curriculum: Forming and reshaping the vision of physical education in a high need, low demand world of schools. Quest, 58, 41-59.
- Evenson, K.R., Ballard, K., Lee, G., & Ammerman, A. (2009). Implementation of a school-based state policy to increase physical activity. Journal of School Health, 79(5), 231-238.
- Fahlman, M.M., Hall, H., & Lock, R. (2006). Ethnic and socioeconomic comparisons of fitness, activity levels, and barriers to exercise in high school females. Journal of School Health, 76 (1), 12-17.
- Fairclough, S. & Stratton, G. (2005). Physical education makes you fit and healthy. Physical education's contribution to young people's physical activity levels. Health Education Research, 20 (1), 14-23.
- Fairclough, S.J., Stratton, G., & Butcher, Z.H. (2008). Promoting health-enhancing physical activity in the primary school: A pilot evaluation of the BASH health related exercise initiative. Health Education Research, 23 (3), 576-581.
- Flook, L., Repetti, R.L., & Ullman, J.B. (2005). Classroom social experiences as predictors of academic performance. Developmental Psychology, 41 (2), 319-327.

- Fox, C.K., Barr-Anderson, D., Neumark-Sztainer, D., & Wall, M. (2010). Physical activity and sports-team participation: Associations with academic outcomes in middle school and high school students. Journal of School Health, 80 (1), 31-37.
- Gaus, M. & Simpson, C. (2009). Integrating physical activity into academic pursuits. Kappa Delta Pi Record, 45 (2), 88-91.
- Gortmaker, S., Peterson, K., & Wiecha, J. (1999). Reducing obesity via a school-based interdisciplinary intervention among youth: Planet health. Archives of Pediatric Medicine, 153 (4), 409-418.
- Hartzler, D.S. (2000). A meta-analysis of studies conducted on integrated curriculum programs and their effects on student achievement. Dissertation Abstracts International, September.
- Haug, E., Torsheim, T., Sallis, J.F., & Samdal, O. (2010). The characteristics of the outdoor school environment associated with physical activity. Health Education Research, 25 (2), 248-256.
- Mahar, M.T., Murphy, S., Rowe, D.A., Golden, J., Shields, T., & Raedeke, T.D. (2006). Effects of a classroom-based program on physical activity and on-task behavior. Medicine and Science in Sports and Exercise, 38 (12), 2086-2094.
- McKenzie, T.L., Sallis, J., Kolody, B., & Faucette, N. (1997). Long-term effects of a

- physical education curriculum and staff developed SPARK. Research Quarterly for Exercise and Sport, 68 (4), 280-291.
- National Association for Sport and Physical Education. (2002). Shape of the nation report: A survey of physical education requirements. The Journal of Physical Education, Recreation, and Dance, 73, 10-12.
- Naylor, P.J., Scott, J., Drummond, J., Bridgewater, L., McKay, H.A., & Panagiotopoulos, C. (2010). Implementing a whole school physical activity and healthy eating model in rural and remote first nations schools: A process evaluation of Action Schools! BC. Canadian Journal of Public Health, 10 (2), 12-16.
- Nichol, M., Pickett, W., & Janssen, I. (2009). Associations between school recreational environments and physical activity. Journal of School Health, 79 (6), 247-254.
- O'Brien, L., Polacsek, M., MacDonald, P.B., Ellis, J., Berry, S., & Martin, M. (2010). Impact of a school health coordinator intervention on health-related school policies and student behavior. Journal of School Health, 80 (4), 176-185.
- Oliver, M., Schofield, G., & McEvoy, E. (2006). An integrated curriculum approach to increasing habitual physical activity in children: A feasibility study. Journal of School Health, 76 (2), 74-79.
- Pate, R.R., Saunders, R.P., Ward, D.S., Felton, G., Trost, S.G., & Dowda, M. (2003).

- Evaluation of a community-based intervention to promote physical activity in youth: Lessons from active winners. American Journal of Health, 17 (3) 171-182.
- Podulka-Coe, D., Pivarnik, J.M., Womack, C.J., Reeves, M.J., & Malina, R.M. (2006). Effect of physical education and activity levels on academic achievement in children. Medicine and Science in Sports and Exercise, 38 (8), 1515-1519.
- President's Council on Physical Fitness and Sports. (2008). Adolescence: A risk factor for physical inactivity. President's Council on Physical Fitness and Sports Research Digest, 9 (3), 1-8.
- Raviv, S. & Low, M. (1990). Influence of physical activity on concentration among junior high school students. The Journal of Psychology, 70, 67-74.
- Sallis, J.F., Bauman, A., & Pratt, M. (1998). Environmental and policy interventions to promote physical activity. American Journal of Preventative Medicine, 15, 379-397.
- Sallis, J.F., Conway, T.L., Prochaska, J.J., McKenzie, T.L., Marshall, S.J., & Brown, M. (2001). The association of school environments with youth physical activity. American Journal of Public Health, 91 (4), 618-620.
- Sherman, C. (2008). Training elementary classroom teachers to lead developmentally

- appropriate physical education: In absence of credentialed specialists, how can schools improve the teaching of physical education? Journal of Physical Education, Recreation, and Dance, 79 (9), 33-39.
- Sherman, C., Tran, C., & Alves, Y. (2010). Elementary school classroom teacher-delivered physical education: Costs, benefits, and barriers. The Physical Educator, 67, 2-17.
- Simons-Morton, B.G., Parcel, G.S., Baranowski, T., Forthofer, R., & O'Hara, N. (1991). Promoting physical activity and a healthful diet among children: Results of a school-based intervention study. American Journal of Public Health, 81 (8), 985-991.
- Stahl, T., Rutten, D., Nutbeam, D., & Kannas, L. (2001). The importance of the social environment for physically active lifestyle--results from an international study. Social Science and Medicine, 52, 1-10.
- Tappe, M.K., Duda, J.L., & Ehrnwald, P.M. (2009). Perceived barriers to exercise among adolescents. Journal of School Health, 59 (4), 153-155.
- Tassitano, R.M., Barros, M., Tenorio, M., Bezerra, J., Florindo, A.A., & Reis, R.S. (2010). Enrollment in physical education is associated with health-related behavior among high school students. Journal of School Health, 80 (3), 126-

133.

Tergerson, J.L. & King, K.A. (2002). Do perceived cues, benefits, and barriers to physical activity differ between male and female adolescents? Journal of School Health, 72 (9), 374-380.

The National Association of School Nurses. (2009). SCOPE childhood obesity prevention report. The Journal of School Nursing, 26 (5), 15-17.

Trost, S. (2007). Physical education, physical activity, and academic performance. Active Learning Research, Fall 2007, 2-5.

United State Department of Agriculture. (2010). Nutrition education and promotion: The role of Food Nutrition Services in helping low-income families make healthier eating and lifestyle choices. Alexandria, VA: Food and Nutrition Services Office of Research and Analysis.

Vail, K. (2006). Is physical fitness raising grades? Education Digest, 71 (8), 13-19.

Weinstein, E. & Rosen, E. (2000). Teaching children about health: A multidisciplinary approach. Englewood, CO: Morton Publishing Company,

Whitaker, R.C., Wright, J.A., Pepe, M.S., Seidel, K.D., & Dietz, W.H. (1997). Predicting obesity in young adulthood from childhood and parental obesity. New England Journal of Medicine, 337, 869-873.