Published in final edited form as:

Prev Med. 2010 January ; 50(Suppl 1): S3–S5. doi:10.1016/j.ypmed.2009.09.024.

Active communities for youth and families: Using research to create momentum for change★

Sarah M. Lee,

Division of Adolescent & School Health, Centers for Disease Control & Prevention, 4770 Buford Hwy NE, Mail stop K-12, Atlanta, GA 30341, USA

James F. Sallis, and

Active Living Research, San Diego State University, San Diego, CA, USA

Stuart J.H. Biddle

School of Sport, Exercise, and Health Sciences, Loughborough University, UK

Regular physical activity and healthy eating are essential components of a healthy lifestyle that can play a powerful role in preventing such chronic diseases as heart disease, cancer, and stroke – the three leading causes of death – as well as obesity (US Department of Health and Human Services [USDHHS], 2001; Lichtenstein et al., 2006). Obesity in children and adults has become a worldwide public health epidemic (World Health Organization, 2000). In the United States specifically, 17.0% of 6- to 11-year-olds and 17.6% of 12- to 19-year-olds are considered obese; these numbers have doubled and tripled, respectively, in the last 30 years (Ogden et al., 2008). Obese children are more likely to be at risk for heart disease than their normal-weight peers (Freedman et al., 2007). The National Health and Nutrition Examination Survey (NHANES) observed the highest prevalence of obesity among non-Hispanic black girls aged 12–19 years (27.7%) and Mexican-American boys aged 6–11 years (27.5%; Ogden et al., 2008). A greater percentage of adolescents from poor families are obese (23.3%) than are those from non-poor families (14.4%; Miech et al., 2006).

To promote normal growth and prevent obesity, an energy balance must be maintained, where energy intake is equal to energy expenditures (Institute of Medicine, 2009). Consequently, physical activity among young people plays a critical role in addressing the obesity epidemic by helping restore energy balance. Current guidelines state that school-age youth (aged 6–17 years) should be physically active for at least 60 min every day (USDHHS, 2008). According to the National Youth Risk Behavior Survey, only 17.1% of high school students meet these guidelines (unpublished data, Centers for Disease Control and Prevention [CDC], 2007). Among 9- to 13-year-olds, only 24% of blacks and 26% of Hispanics, compared to 47% of white non-Hispanics, reported participating in at least one organized activity during the past 7 days (CDC, 2003). When physical activity has been

★The findings and conclusions in this report are those of the author(s) and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Corresponding author. bvv5@cdc.gov.

Conflict of interest statement

All authors declare that there is no conflict of interest.

measured with accelerometers, prevalence rates for youth meeting guidelines are much lower, ranging from 49% to 3% depending on age and sex, and prevalence rates for adults are 5% or less (Troiano et al., 2007).

Active Communities for Youth and Families: Broadening the Approach to Research

The study of physical activity in young people is not new. However, the emphasis has diversified in recent years. In the past, physical activity was frequently viewed as structured exercise or sports participation, with clear but limited roles for adults as coaches and teachers. More recently, physical activity has come to be seen as much broader than this (e.g., active travel, active recreation, and play without adult supervision), and the role of adults is seen as more than just supervisory (e.g., parental support and facilitation). An important implication of such shifts is that adults who consider themselves uninterested in sports, or who have little expertise or interest in structured exercise, can now play a role as advocates of activity-friendly physical and social environments. For example, it has become clear that parents need to encourage their children to walk or cycle to school and other destinations, whenever feasible, while working with schools and transportation officials to ensure that routes are safe. Numerous approaches to promote active transportation for youth have been evaluated, with evidence of success (NICE Public Health Collaborating Centre—Physical Activity, 2008), so parents can advocate for evidence-based strategies.

These trends toward broader views of youth physical activity are reflected in recent reviews on the correlates of physical activity in youth. Sallis et al.'s (2000) review found that environmental variables of access to facilities, time outdoors, and opportunities to exercise were all positively associated with physical activity. Ferreira et al.'s (2006) review of environmental correlates of physical activity in youth confirmed the importance of “time outdoors” but also identified the importance of lower local crime rates, as did Davison and Lawson (2006). Interpretations of such findings include the possibility that time outside both precludes sedentary behaviors and generally encourages more movement. Lower crime rates or perception of crime, which make parents more comfortable allowing children to be on their own outdoors, might be associated with more walking and use of open spaces.

Children's use of physical activity environments is likely to interact with two key factors. One is local built and social environments, which are shaped by geo-political history. For example, this supplement contains papers from North America (US and Canada) and Europe (Belgium). Cities in these countries have, in many cases, developed quite differently, and thus the “walkability” or ease of cycling and the social expectations surrounding active travel are quite different. These factors cannot be ignored in our research. Put simply, promoting cycling to school in Houston or Atlanta will pose different challenges than in Ghent or Amsterdam. Parents are the second key factor interacting with children's use of physical environments: parental support is a consistent correlate of physical activity (Sallis et al., 2000; van der Horst et al., 2007; Gustafson and Rhodes, 2006; Ferreira et al., 2006). However, there needs to be more clarity in identifying the mechanisms responsible for the parent–child link in physical activity. Parental support may come in different forms,

including logistic support (e.g., transport to facilities) and emotional support. Further research could ascertain how these types of support might change over time, with the age of the child, or with the type of activity promoted, and could therefore lead to improved interventions.

Emerging research in behavioral nutrition (Kremers et al., 2003) shows that parenting styles might influence their child's dietary behaviors. These findings indicate that parenting style might also be a potential influence on a child's physical activity behavior. Recognition of the changes in parental influence that occur during the transition from childhood to adolescence and across the adolescent years is also important. Thus, the home environment (parental support, access to sedentary behaviors, etc.) is likely to interact with the wider social and physical environment. The nature of this interaction will change as the child ages. For example, physically active outdoor play will reduce as the child ages, and hence the role of the parents will change as they try to encourage and support other physical activities and advocate for pro-activity environments and policies.

The 2009 Active Living Research Conference

Active Living Research (ALR), a national program funded by The Robert Wood Johnson Foundation (RWJF), supports research on many of the topics discussed above. In particular, ALR research focuses on the ways in which a wide variety of environments and policies influence active living for children and their families, thereby providing evidence to support their commitment to reverse childhood obesity by 2015 (Sallis et al., 2009). RWJF's research and prevention efforts target communities of color and low-income populations, which are at highest risk for childhood obesity and sometimes neglected in research and policymaking.

To provide a forum for researchers to share findings and to learn about the latest thinking, methods, and research on policy and environmental issues related to active living, ALR convenes an annual conference. The theme of the sixth annual Active Living Research Conference was "Active Communities for Youth and Families: Creating Momentum for Change." This supplement to *Preventive Medicine* highlights recent advances in research presented at the conference on the multiple policy and environmental strategies for increasing physical activity, especially among high-risk population groups, and shows how compelling research results can be used to educate policymakers about promising policy changes to increase physical activity among children and adolescents.

The ALR Annual Conference was held February 18–20, 2009, in San Diego, California. The program was designed to feature research of greatest relevance to physical activity promotion and obesity prevention among youth. During the conference, information was conveyed through a variety of formats, such as keynote, workshop, and panel presentations. Lawrence Selzer of The Conservation Fund delivered the keynote speech. Mr. Selzer spoke about the importance of contact with nature in promoting children's health and physical activity. Workshop presentations focused on preparing participants to more strongly link research and policy change; for example, one workshop provided researchers the opportunity to interact with policy makers and staff. Abstracts and slides from oral presentations are available online (<http://www.activelivingresearch.org/conference/2009>).

Two panels were held during the conference. Presenters on the first panel summarized strategies for creating activity-friendly cities for children from Canada, Denmark, and Brazil. The second panel focused on the economics of active living. Panel presenters discussed how to integrate economists and economic methods into active living research in order to catalyze policy and environmental change.

In addition to presentations, ALR also awarded the second “Translating Research to Policy Award” during the conference. The award is designed to recognize groups or individuals engaged in innovative policy and/or advocacy work that has used research to catalyze policy or environmental changes related to youth physical activity, sedentary behavior, or obesity prevention. A summary of the winning project is published in this supplement (Burbidge, 2010).

Youth played a critical role throughout the conference, serving as plenary and workshop presenters and activity leaders. In addition, as is customary for ALR conferences, physical activity was integrated into the meeting. Activity breaks were led by Dr. Toni Yancey and SPARK, a public health organization that implements programs to promote lifelong wellness. In recognition of the growing literature documenting negative health consequences of extended sitting (Owen et al., 2009), all presenters were given standing ovations, which benefited both presenters and the audience.

Overview of this Supplement to *Preventive Medicine*

Most of the papers in this *Preventive Medicine* supplement were selected from abstracts that received the highest ratings from blinded peer review. Of the 124 abstracts submitted, 91 were accepted for oral or poster presentation, and 15 are published in this supplement (including one commentary). We thank the multidisciplinary program committee for their thoughtful contributions to the Conference: Cristina Barroso, Terry Huang, Sarah Lee (Program Chair), Russ Lopez, Christine Shenot, Celeste Torio, Xuemei Zhu, and James Sallis. All the papers in this supplement are freely accessible to the general public at www.activelivingresearch.org, as are papers from all ALR-sponsored journals.

Each article was reviewed by a *Preventive Medicine* editor, the supplement guest co-editors, and multiple peer reviewers. The commentaries were reviewed by the journal editors and guest co-editors. The guest co-editors thank the *Preventive Medicine* editors and staff and the peer reviewers. Special appreciation goes to Amanda Wilson of Active Living Research, who expertly managed the entire process.

The papers in this supplement target the spectrum of environments and policies that are important for youth physical activity. Several studies of active travel of children and families provide evidence that can guide policy change to recapture this once-common form of physical activity (McDonald et al., 2010; Tilt, 2010). Two prospective studies directly linked transportation factors with childhood obesity (Jerrett et al., 2010; Pabayo et al., 2010). Guo and Gandavarapu (2010) estimated the cost effectiveness of building sidewalks as an environmental intervention to promote physical activity. Parks and youth sports are common venues for youth activity, and three papers in this issue explored relevant environments,

policies, programs, and social factors (Cohen et al., 2010; Fernandes and Sturm, 2010; Shores and West, 2010). Three papers examined how neighborhood characteristics were related to physical activity of youth (Deforche et al., 2010; Yan et al., 2010) and adults (Van Dyck et al., 2010). Other papers provided valuable information on community collaboration to prevent childhood obesity (Huberty et al., 2010), evaluated measures of rural active living environments (Yousefian et al., 2010), and introduced a measure of indicators of healthy communities (Kim et al., 2010). Together, these papers advance science, provide results of relevance to policymakers and practitioners, and demonstrate the increasing sophistication of transdisciplinary active living research, especially as it relates to youth.

The empirical papers are complemented by commentaries that illustrate how countries outside the US have creating active living communities for youth (Price and Reis, 2010); demonstrate the value of evaluation results from an innovative community intervention (Economos and Curtatone, 2010); and describe how a foundation in Missouri is building capacity among community groups for physical activity promotion and obesity prevention (Stringer Hessel et al., 2010). Two papers were commissioned by ALR to stimulate more research on relatively neglected topics. Frank and colleagues (2010) showed how active transportation can be an important part of efforts to reduce greenhouse gases and slow climate change. Pucher and colleagues (2010) conducted a systematic review of bicycle promotion interventions using data from around the world.

This supplement to *Preventive Medicine* demonstrates the multiple evidence-based strategies for making communities more activity friendly for youth. We invite researchers and advocates to find ways to communicate these and other relevant findings to decision makers working in transportation, parks and recreation, education, urban planning, and other fields to help them use research as important factor in policy decisions. The evidence base for strategies to promote health and prevent obesity is growing rapidly in quantity, quality and relevance. The childhood obesity epidemic creates an urgency to implement these evidence-based policies and practices.

We hope the papers in this supplement further broaden and strengthen the examination of potential influences on youth physical activity. In these studies of transportation policies, economics, community design, and community collaborations, there are new ideas to inform a wide array of policies, programs, and interventions. The commentaries on international lessons and the work of a statewide foundation are likely to generate ideas for new research projects. This “virtuous cycle” of policymaker and practitioner input into research questions, with results communicated quickly to those who can put them into practice, could lead to rapid progress in creating active communities for youth and their families.

References

- Burbidge SK. Merging long range transportation planning with public health: A case study from Utah's Wasatch Front Prev. Med. 2010:S6–S8. [PubMed: 19744512]
- Centers for Disease Control and Prevention (CDC). Physical activity levels among children aged 9–13 years—United States, 2002 MMWR. 2003; 52:785–788. [PubMed: 12931076]
- Cohen D, Marsh T, Williamson S. Parks and physical activity: Why are some parks used more than others? Prev. Med. 2010:S9–S12. [PubMed: 19850067]

- Davison K, Lawson C. Do attributes in the physical environment influence children's physical activity? A review of the literature *Int. J. Behav. Nutr. Phys. Act.* 2006 Available at <http://www.ijbnpa.org/content/3/1/19>.
- Deforche B, Van Dyck D, Verloigne M, De Bourdeaudhuij I. Perceived social and physical environmental correlates of physical activity in older adolescents and the moderating effect of self-efficacy *Prev. Med.* 2010:S24–S29. [PubMed: 19818363]
- Economos CD, Curtatone JA. Shaping up Somerville: A community initiative in Massachusetts *Prev. Med.* 2010:S97–S98. [PubMed: 19897065]
- Fernandes M, Sturm R. Facility provision in elementary schools: Correlates with physical education, recess, and obesity *Prev. Med.* 2010:S30–S35. [PubMed: 19850074]
- Ferreira I, van der Horst K, Wendel-Vos W, Kremers S, van Lenthe FJ, Brug J. Environmental correlates of physical activity in youth: a review and update *Obes. Rev.* 2006; 8:129–154.
- Frank LD, Greenwald MJ, Winkelman S, Chapman J, Kavage S. Carbonless footprints: Promoting health and climate stabilization through active transportation *Prev. Med.* 2010:S99–S105. [PubMed: 19850071]
- Freedman DS, Mei Z, Srinivasan SR, Berenson GS, Dietz WH. Cardiovascular risk factors and excess adiposity among overweight children and adolescents: The Bogalusa Heart Study *J. Pediatr.* 2007; 150:12–17. [PubMed: 17188605]
- Guo JY, Gandavarapu S. An economic evaluation of health-promotive built environment changes *Prev. Med.* 2010:S44–S49. [PubMed: 19840817]
- Gustafson SL, Rhodes RE. Parental correlates of physical activity in children and adolescents *Sports Med.* 2006; 36:79–97. [PubMed: 16445312]
- Huberty JL, Balluff M, O'Dell M, Peterson K. From good ideas to actions: A model-driven community collaborative to prevent childhood obesity *Prev. Med.* 2010:S36–S43. [PubMed: 19769997]
- Institute of Medicine (IOM), 2009 Local Government Actions to Prevent Childhood Obesity. The National Academies Press, Washington, DC.
- Jerrett M, McConnell R, Chang CCR. Automobile traffic around the home and attained body mass index: a longitudinal cohort study of children aged 10–18 years *Prev. Med.* 2010:S50–S58. [PubMed: 19850068]
- Kim S, Adamson KC, Balfanz DR. Development of the Community Healthy Living Index: A tool to foster healthy environments for the prevention of obesity and chronic disease *Prev. Med.* 2010:S80–S85. [PubMed: 19744511]
- Kremers SPJ, Brug J, de Vries H, Engels RCME. Parenting style and adolescent fruit consumption *Appetite.* 2003; 41:43–50. [PubMed: 12880620]
- Lichtenstein AH, Appel LJ, Brands M. Diet and lifestyle recommendations revision 2006: a scientific statement from the American Heart Association nutrition committee *Circulation.* 2006; 114:84–96.
- McDonald NC, Deakin E, Aalborg AE. Influence of the social environment on children's school travel *Prev. Med.* 2010:S65–S68. [PubMed: 19796654]
- Miech RA, Kumanyika SK, Stettler N, Link BG, Phelan JC, Chang VW. Trends in the association of poverty with overweight among US adolescents, 1971–2004 *JAMA.* 2006; 295:2385–2393. [PubMed: 16720824]
- NICE Public Health Collaborating Centre—Physical Activity, 2008 Promoting Physical Activity for Children: Review 5—Children and Active Travel. NICE, London <http://www.nice.org.uk/guidance/index.jsp?action=download&o=43035>.
- Ogden CL, Carroll MD, Flegal KM. High body mass index for age among US children and adolescents, 2003–2006 *JAMA.* 2008; 299:2401–2405. [PubMed: 18505949]
- Owen N, Bauman A, Brown W. Too much sitting: a novel and important predictor of chronic disease risk? *Br. J. Sports Med.* 2009; 43:81–83. [PubMed: 19050003]
- Pabayo R, Gauvin L, Barnett TA, Nikiéma B, Séguin L. Sustained active transportation is associated with a favorable body mass index trajectory across the early school years: Findings from the Quebec Longitudinal Study of Child Development birth cohort *Prev. Med.* 2010:S59–S64. [PubMed: 19769996]
- Price G, Reis R. Making kid-friendly cities: Lessons from two cities *Prev. Med.* 2010:S95–S96. [PubMed: 19879221]

- Pucher J, Dill J, Handy S. Infrastructure, programs, and policies to increase bicycling: An international review *Prev. Med.* 2010:S106–S125. [PubMed: 19765610]
- Sallis JF, Linton LS, Kraft MK. The Active Living Research Program: six years of grantmaking *Am. J. Prev. Med.* 2009; 36(2Suppl2):S10–S21. [PubMed: 19147053]
- Sallis JF, Prochaska JJ, Taylor WC. A review of correlates of physical activity of children and adolescents *Med. Sci. Sports Exerc.* 2000; 32:963–975. [PubMed: 10795788]
- Shores KA, West ST. Rural and urban park visits and park-based physical activity *Prev. Med.* 2010:S13–S17. [PubMed: 19744513]
- Stringer Hessel A, Marshall JW, Brown W, Sabina AB, DeForest K. Healthy & Active Communities Initiative: A foundation's response to the obesity epidemic *Prev. Med.* 2010:S93–S94. [PubMed: 19850065]
- Tilt JH. Walking trips to parks: Exploring demographic, environmental factors, and preferences for adults with children in the household *Prev. Med.* 2010:S69–S73. [PubMed: 19744514]
- Troiano RP, Berrigan D, Dodd KW, Masse LC, Tilert T, McDowell M. Physical activity in the United States measured by accelerometer *Med. Sci. Sports Exerc.* 2007; 40:181–188.
- U.S. Department of Health and Human Services, 2001 The Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity. US Department of Health and Human Services, Public Health Service, Office of the Surgeon General, Rockville, MD.
- U.S. Department of Health and Human Services, 2008 Physical Activity Guidelines for Americans. U.S. Department of Health and Human Services, Washington, DC.
- van der Horst K, Chin A, Paw MJ, Twisk JWR, Van Mechelen W. A brief review on correlates of physical activity and sedentariness in youth *Med. Sci. Sports Exerc.* 2007; 39:1241–1250. [PubMed: 17762356]
- Van Dyck D, Cardon G, Deforche B, Sallis JF, Owen N, De Bourdeaudhuij I. Neighborhood SES and walkability are related to physical activity behavior in Belgian adults *Prev. Med.* 2010:S74–S79. [PubMed: 19751757]
- World Health Organization, 2000 Obesity: Preventing and Managing the Global Epidemic. WHO Technical Report Series 894. WHO, Geneva.
- Yan AF, Voorhees CC, Clifton K, Burnier C. “Do you see what I see?”—Correlates of multidimensional measures of neighborhood types and perceived physical activity-related neighborhood barriers and facilitators for urban youth *Prev. Med.* 2010:S18–S23. [PubMed: 19799931]
- Yousefian A, Hennessy E, Umstattd MR. Development of the rural active living assessment tools: Measuring rural environments *Prev. Med.* 2010:S86–S92. [PubMed: 19818362]