1) **Diffusion of Evidence Based Physical Education in Elementary School Settings**

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**Background:**
School physical education (PE) is a critical source of physical activity (PA) for youth, and it is one of only five interventions strongly recommended for increasing PA by the national Task Force on Community Preventive Service (Kahn et al., 2002). Because of competing academic priorities and other reasons, PE has been compromised in many schools and numerous policy gaps and environmental barriers to the quantity and quality of PE exist. Nonetheless, evidence-based PE (EBPE) curricula have been developed, and their adoption has been shown to increase children’s PA levels in PE by as much as 18%. While some research has examined the implementation and institutionalization of EBPE, the dissemination and adoption processes are rarely investigated. Understanding the diffusion of EBPE will go a long way toward improving children’s PA.

**Objectives:**
Our first objective was to describe perceived facilitators and obstacles to the adoption of EBPE in a sample of elementary school principals and direct providers of PE (i.e., teachers). Our second objective was to compare and contrast perceived facilitators and obstacles to the adoption of evidence-based PE in elementary schools that have and have not adopted evidence-based PE.

**Methods:**
We obtained questionnaire responses from both principals and teachers from schools that adopted EBPE (i.e., adopters) and compared them with those from geographically- and demographically-matched schools that have not adopted EBPE (i.e., non-adopters). To address Objective 1, we calculated descriptive statistics appropriate for the variable type and distribution. Continuous outcomes were described using measures of central tendency and variability. Dichotomous or polychotomous categorical outcomes were described using relative percentages. To address Objective 2, we evaluated differences between adopter and non-adopter schools Continuous outcomes were compared using t-tests for matched samples and categorical outcomes were compared using chi-square.

**Results:**
To date, principals and teachers from 77 schools from 28 states completed questionnaires (33 adopter and 43 non-adopter schools). Mean student enrollment in adopter and non-adopter schools was 495 (SD=293) and 421 (SD=224), respectively. The mean annual budget for physical education in adopter schools was $1,431 and $1,125 in non-adopter schools. Adopter schools (M=51, SD=32.3) had a significantly greater proportion of students eligible for free and reduced meals than non-adopter schools (M=38, SD=24.4; t(74)= -2.03, p=.05). The PE profile in adopter and non-adopter schools was similar: both had one certified PE teacher and students received PE 2.5 days per week (principals reported slightly more days, 2.8). When asked whether their PE program followed a specific curriculum, 76% of non-adopter principals and 18% of non-adopter teachers affirmed they did. Both principals and teachers reported having decision making
responsibilities related to the adoption of EBPE, but teachers reported greater roles in curriculum and instruction and principals reported greater roles in budget and staffing. Irrespective of school status as adopter or non-adopters, more teachers (37%) than principals (25%) reported awareness of EBPE programs, however, overall awareness of EBPE programs was lacking. Teachers and principals from both adopter and non-adopter schools reported being highly satisfied with their current PE programs, but they also reported high interest (86% and 90%, respectively) in learning more about EBPE.

Conclusions:
With the exception of adopter schools having a significantly greater percentage of students eligible for free/reduced meals, these preliminary results did not find significant demographic differences between adopter and non-adopter schools relative to the adoption of EBPE. Given discrepant principal and teacher responses about their PE programs, it appears many principals are unfamiliar with the status of PE in their school and curricular/instructional needs. Overall awareness of EBPE was low, indicating that current dissemination efforts are insufficient. Because they report being involved in decision making responsibilities related to adoption of EBPE, both teachers and principals should be considered targets of social marketing and advocacy.

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2) Examining Sport Participation Constraints among Middle School Children

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Background:
Sport participation offers children a viable means to acquire the recommended level of PA (Katzmarzyk & Malina, 2000). However, sport participation declines significantly among both boys and girls during middle school years (Hedstrom & Gould, 2004). Despite the decline in sport participation associated with middle school children, little research has examined patterns in sport and physical activity participation and the setting in which it occurs (Hawkins & Mulkey, 2005; McKenzie, 2001). Furthermore, there has been very little research examining constraints particularly among non-participants. Constraints research investigates factors that are perceived or experienced by individuals inhibiting participation and enjoyment in leisure activities (Jackson, 2000). This study examined the role of perceived constraints specific to sport participation among middle school students, including those that have never played sport. The study findings are of particular importance because they provide evidence for policy changes that can reduce the impact of constraints and enhance opportunities for increased activity among children.

Objectives:
The objectives of this study were to (1) examine and compare perceived constraints to sport participation in relation to respondents’ reported sport participation; and (2) compare constraints based on salient demographics (i.e., race/ethnicity, SES, and gender).

Methods:
This study was part of a larger project examining the impact of middle school extracurricular sport policies. Study participants (n = 2439) were recruited from four public middle schools in a southeastern United States city. Students completed a web-based questionnaire at the beginning of the school year.

The leisure constraints instrument (Alexandris & Carroll 1997; Carroll & Alexandris, 1997; Crawford & Godbey, 1987) was used. This instrument includes 25 items assessing seven constructs of perceived constraints to sport participation (accessibility, facilities, interest, knowledge, partners, psychological, and time). Constructs within this measure have been validated in sport (Alexandris & Stodolska, 2004), outdoor recreation (Shores, Scott, & Floyd, 2007), and urban parks settings (Stanis, Schnieder, & Anderson, 2009). Based on respondent self-report sport participation, they were categorized into 6 groups: 1) never played sports (n = 167); 2) intramural-only (n = 135); 3) interscholastic-only (n = 123); 4) outside of school (n = 1667); 5) intramural/outside combination (n = 193); interscholastic and outside combination (n = 154). Scale assessment using confirmatory factor analysis found acceptable factor loadings (> .60) and constructs showed acceptable internal reliability (alpha > .70). Separate ANOVA’s were used to compare constraints based on previous participation and race/ethnicity, while t-tests were used to determine differences based on SES and gender. Due to multiple ANOVA’s, an adjusted significance level of p < .01 was utilized.
Results:
The majority of respondents (69%) indicated that they would like to play sports more often. Although students reported low perceived constraints (construct means < 2.50 on a 5-point scale), analysis based on participation found significant difference based on participation type for each of the constraint constructs (F-values between 6.13 - 26.75; p-values <.001). Not surprisingly, non-sport respondents reported significantly (p < .01) higher perceived constraints compared to all other groups. Students who only participated in school sport (intramural and/or interscholastic) reported higher constraints than those who only participated in sport outside of school. Interscholastic and outside sports participants reported the lowest levels of constraints overall.

Students who reported no sport participation reported significantly higher psychological (p < .001), knowledge (p < .01), and accessibility (p < .001) constraints than sport participants. Most active sport participants (those that participated in school and community-based sport) reported the lowest knowledge and accessibility constraints. Comparisons of intramural versus interscholastic sports found no significant differences for all constructs.

Demographic comparisons found no significant differences based on race/ethnicity with the exception of Hispanics who reported significantly (p < .01) higher knowledge and accessibility constraints. Females reported significantly (p < .01) higher psychological, time, partners, and interest constraints. SES comparisons found significant differences for all constructs except time (t = 1.44; p = .15) and interest (t = 1.43; p = .15).

Conclusions:
This study showed the importance of two major constraints: accessibility and lack of knowledge. This was especially true for non-sport participants, girls and Hispanic children. Hispanics reported greater accessibility and knowledge constraints suggesting the need for greater outreach efforts to inform parents (and their children) about sport opportunities and benefits available to them. Efforts to get middle-school-age children involved should focus on these two factors. An important finding is that students who played a combination of school and community sport perceived the lowest constraints. Having access to a combination of community-based sport (including places for informal sport participation) and school sport resulted in higher levels of participation. Identifying specific constraints enable policy-makers and administrators to be more deliberate in targeting non-participants. For example, policy strategies could include partnerships and joint-use agreements to increase accessibility or more coordinated efforts to market, educate, and reach out to non-users particularly groups who perceive the highest constraints.

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3) Communicating Research to School Decision-Makers to Strengthen Physical Activity Policies

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Background:
Schools are in a unique position to provide physical activity opportunities before, during and after the school day. Increasing physical activity among school-age children requires school leaders to take a comprehensive and coordinated approach, ideally informed by evidence-based strategies. School board members play an important role in providing physical activity opportunities through the adoption, monitoring and evaluation of local board policies. The purpose of this project is to support school board members in improving opportunities for physical activity in California schools.

“Strengthening Physical Activity and Physical Education in Schools” is a joint project of The California School Boards Association (CSBA) and California Project LEAN (Leaders Encouraging Activity and Nutrition) (CPL), funded by The California Endowment (TCE). This project builds upon CSBA and CPL’s multi-year partnership utilizing policy tools, community mobilization, marketing and trainings to educate school decision-makers on the critical link between health and academic achievement.

Objectives:
This presentation will highlight CSBA and CPL’s partnership to address the barriers and opportunities that school districts face in establishing and sustaining improved physical activity and physical education (P.E.) for California students. School board members identified useful resources, trainings and materials relevant to developing collaborative and comprehensive approaches to strengthen physical activity in schools.

Methods:
CSBA and CPL developed an environmental scan of current physical activity and P.E. resources and created a statewide advisory group of key stakeholders to ensure coordination and collaboration of statewide efforts to increase school-based physical activity. The advisory group brought together leaders working to improve physical activity in California schools from organizations including government health and education departments, universities, the state legislature, state and community initiatives, as well as school administrators, the teachers association, teacher credentialing commission and physical educators.

A school board survey was developed based on formative research, and also informed by a systematic review of evidence-based strategies and prioritized policy recommendations for improving P.E. conducted as part of a previous TCE-funded project. The survey, “Physical Activity and Physical Education in California Schools,” provided quantitative and qualitative data about what school districts need to move forward with adopting, implementing, monitoring and evaluating policies to improve physical activity in the school setting.
Results:
In January 2009, an online survey was sent to 2,669 California school board members, yielding 339 responses for a response rate of 13 percent. Response rates were affected by an unforeseen budget crisis in California schools competing for board members’ immediate attention. The survey data included responses from districts of various sizes and income levels in every CSBA region in California.

Key findings:
School board members held a prevailing belief that physical activity positively impacts a variety of student health and academic outcomes. Over 90% of respondents indicated that physical activity has a moderate to high positive impact on student fitness levels, academic performance and lifetime physical activity behaviors.

Board members identified superintendents, principals and P.E. teachers as the top three school stakeholders that influence district decision-making about physical activity and P.E. Respondents identified three barriers as being significant challenges to addressing physical activity and P.E. at the district level: impact on the budget, limited time in a school day and competing district priorities.

The top board policy opportunities for addressing physical activity and P.E. that emerged include:

- Ensure students engage in moderate to vigorous physical activity 50% of P.E. time
- Have a system to monitor compliance with state-required P.E. instructional minutes
- Provide focused, ongoing professional development for all teachers who instruct P.E.
- Ensure all elementary school students have at least 20 minutes of daily supervised recess
- Integrate physical activity into the classroom by establishing physical activity breaks during class or adopting physically active teaching materials
- Support safe walking, bicycling and other active transport to/from school
- Support access to indoor and outdoor physical activity facilities outside school hours
- Integrate physical activity into before/after school programs and activities

The majority of respondents indicated that case studies of other successful school districts, cost-benefit analyses of policies, and research on the link between physical activity and academic performance would help them address physical activity and P.E. in their district.

Conclusions:
The results of the formative research and survey contributed to the development of board policy opportunities addressed in school district governance trainings, policy briefs, sample policies and other communication pieces. Expected outcomes from trainings and resources provided to California school board members include: elevated importance of physical activity and P.E.; stronger evidence and tools to improve physical activity and P.E. in schools; and an increased number of school districts establishing policies and improving implementation and monitoring of existing policies to support physical activity and P.E. This project illustrates how state-level health and education organizations can partner to engage school leaders in implementing effective strategies to improve school-based physical activity.

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4) Community Differences in Supportive Environments for Extracurricular Physical Activity in North Carolina Middle Schools

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Background:
Adolescents who live in rural areas may be less likely to have access to supportive environments that promote physical activity than youth in more urban communities. For rural adolescents, schools represent an important setting for interventions to increase leisure-time physical activity (LTPA). Research has shown that well-designed extracurricular sport and physical activity programs in schools can improve the physical activity levels and social well-being of adolescents (Cohen et al., 2007; Wechsler et al., 2000). An investigation of disparities in access to school-sponsored LTPA environments is important to building an understanding of the opportunities rural children have to be physically active.

Objectives:
The objectives of this study were (1) to determine whether differences existed in access to supportive environments for extracurricular school physical activity for middle-school aged adolescents in North Carolina based on community type, and (2) examine how school composition, contextual financial resources, and social functioning influenced levels of supportive environments across communities.

Methods:
The units of analysis for this study were 325 public middle schools in North Carolina. Multiple sources of data were integrated. Data on schools and communities were collected through a self-administered web-based questionnaire adapted from School Health Policies and Program Study 2006 (SHPPS) with a response rate of 75%. Additional data were acquired from the National Center for Educational Statistics, North Carolina Department of Public Instruction, and the U.S. Census Bureau. Aggregating environmental supports (programs, facilities, inclusive policies, and partnerships), a composite index for environmental support (ES) for each school was created to use as the dependent variable (Young et al., 2007). Using multi-level modeling techniques to control for non-independence of schools clustered within school districts and to compare school/community-level (Level 1) and district-level (Level 2) influences on environmental support, random intercept models predicting environmental support from school compositional factors (i.e., school demographics, grade composition), community contextual resources (i.e., district per pupil expenditure, median household income) and collective social functioning (i.e., racial heterogeneity) were generated.

Results:
Study findings indicated that adolescents who lived in rural areas had fewer environmental supports for extracurricular physical activity at their schools. Fixed effects estimates (β = 3.73) of preliminary statistical models indicated that schools in rural communities (γ = -.563, SE = .224, p < .05) had significantly lower ES scores than schools in urban communities. There were no significant
differences in ES scores between rural fringe (γ = -.043, SE = .212) or suburban (γ = -.303, SE = .247) schools and urban schools in this sample. The introduction of community type into the unconditional means model explained 23.4% of variance between school districts and less than 1% of variance between schools. This result suggested that place disparities in ES related to rural and urban differences may be more related to factors in school districts rather than in individual schools.

A theoretical model was estimated to evaluate explanatory variables and community type. Examination of the Type III tests of fixed effects (β = 3.42) showed that rural school deficits in ES compared to urban schools (γ = -.386, SE = .224) were no longer statistically significant. Controlling for all other variables in the model, on average, schools in this sample configured as extended elementary schools (γ = -.570, SE = .194, p < .01) and located in racially heterogeneous school districts (γ = -1.53, SE = .350, p < .001) had less environmental support for extracurricular sport and physical activity. Conversely, schools in this sample located in districts with high local per pupil expenditure in $1000 (γ = .469, SE = .140, p < .01) and within communities with residents with higher median household incomes in $1000 (γ = .017, SE = .007, p < .01) demonstrated higher levels of environmental support for extracurricular sport and physical activity. These school and community characteristics were more prevalent in rural areas in this sample. As a measure of overall model effect size, pseudo-R² was calculated at .189 for the theoretical model.

Conclusions:
Rural deficits were largely explained by a lack of economic resources. However, socio-cultural factors in rural areas may also influence the provision of school-based physical activity programs. After controlling for all important model variables, district-level racial heterogeneity was the most important predictor of environmental support. More racially homogenous rural areas were more likely to overcome fiscal scarcity to offer broader physical activity programs, provide community access to school facilities, and partner with community organizations to support physical activities. This relationship was potentially created by higher social capital or social cohesion in these communities. School structure in rural areas was also associated with levels of environmental support. It is speculated that lower levels of environmental support for extracurricular physical activity in rural schools may be a contributing factor to decreased LTPA and higher obesity rates observed in these areas.

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