

# State Legislation to Increase Physical Education in Schools: Barriers to Implementation



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## Background

Historically, policy has been a powerful force for intervention in some of the nation's most significant public health issues and negative health behaviors. Regulations related to water control, food preparation, seatbelts, occupational safety, and smoking bans have helped to decrease infectious disease, injury, and tobacco use.<sup>1,2</sup>

Policy interventions have recently emerged as a critical approach to address increasing rates of obesity and obesity-related health problems. Many states have created legislation specifically targeting primary and secondary prevention of childhood obesity and promotion of overall child wellness within the context of schools.<sup>3,4,5,6</sup>

In 2005, West Virginia (WV) introduced the Healthy Lifestyles Act (House Bill 2816). The Act was developed to address the burden of obesity through policy and education at the school level and set forth requirements for schools with regard to: (1) the sale of healthy beverages, (2) physical education (PE), (3) fitness testing, (4) the collection of body mass index (BMI) measurements, and (5) health education instruction and assessment.<sup>7</sup>

The PE requirement mandates elementary schools provide at least 90 minutes of PE/week, middle schools provide at least 1 period of daily PE for one semester/year, and high schools, one course in PE for graduation and a PE elective.<sup>7</sup>

Research has shown school policy to have a positive impact on childhood obesity and related health behaviors such as physical activity (PA) and healthy eating.<sup>3,6,8</sup> However, the implementation of these mandates is limited by barriers such as time constraints, academic requirements (such as those of No Child Left Behind), and limited funding.<sup>9,10,11</sup>

## Research Objectives

- To examine principals' perceptions of their ability to implement the PE requirements.
- To determine whether elementary, middle, and high school principals had the necessary resources to implement the PE requirements.
- To identify whether principal or school variables were associated with principals' perceived ease of implementation.

## Methods

**Procedure:** The present study utilizes data collected as part of a statewide, multi-component evaluation of the West Virginia Healthy Lifestyles Act, funded through the Robert Wood Johnson Foundation. Results presented here are based on principal surveys.

Principals of all "traditional" public schools in WV (N=696) were surveyed during the 2007-2008 school year. Specialized schools such as vocational centers and alternative learning centers were not included. Surveys were conducted both electronically and by standard mail. All principals received an initial request to complete the survey and two follow-up requests, if necessary. Data used in this study related to PE policy implementation, resources, time requirements, and principal demographics.

**Survey:** As part of the evaluation of the WV Healthy Lifestyles Act, principal surveys included questions relating to health education, nutrition, PE, PA, school level policies, and demographics. Data from questions relating to PA and PE were the focus of this study.

## Methods

**Analysis:** Descriptive statistics were calculated using SPSS 16.0. Perceived ease of implementation was collapsed from four categories (easy, somewhat easy, somewhat difficult, difficult) into two categories (easy/somewhat easy and difficult/somewhat difficult). Chi-square and t-tests were run to assess significant differences ( $p < .05$ ) among principal variables (principal experience and perceived importance of PE requirement) and school variables (school level, adequate resources, and adequate time in schedule to meet standards for PE) with regard to perceived ease of PE requirement implementation. A logistic regression analysis was performed to determine the influence of school and principal factors on perceived ease of implementation among elementary, middle, and high school principals. Easy/somewhat easy was coded as 1, difficult/somewhat difficult implementation was coded as 0. PE importance was collapsed from three categories (unfavorable, neutral, favorable) to two (unfavorable/neutral versus favorable) due to small cell sizes. Logistic regression models were run in both SPSS 16.0 and STATA 17.0.

## Results

- 84% (N=586) of WV school principals completed the survey (elementary N=391, middle N=87, and high school N=108 principals).
- Just over half of principals surveyed were male (54%) and the overwhelming majority had a master's level education (97%). The mean age of responding school principals was 52 and 36% reported having 10 years or more of experience as a principal (22% 6-10 years and 42% five years or less).

### Perception, School Characteristics, & Ease of Implementation

Questions relating to principals perceived ease of implementing the PE course requirement revealed that 71% rated the implementation as easy or somewhat easy, where as 29% rated the implementation difficult or somewhat difficult (Table 1).

The majority of school principals (84%) revealed that there was adequate time in the school schedule to meet the content standards and objectives for PE. Seventy-seven percent indicated that the school had the necessary resources to meet the PE requirement.

When asked about their overall perceptions of the PE requirement, 85% of school principals rated their opinion of the requirement as favorable, while 13% were neutral, and only 2% rated the requirement unfavorable.

### Significant Differences

Chi Square analyses of categorical variables indicated a significant difference between those who reported PE implementation easy/somewhat easy versus somewhat difficult/difficult for the following variables: adequate time to meet content standards and objective for PE, school has necessary resources, and perceived importance of the PE requirement ( $p < .001$ ).

Although chi square analyses among all three levels (elementary, middle, and high) revealed no significant differences ( $p = .058$ ), it was found that significantly more high school principals perceived PE implementation to be easy/somewhat easy, than elementary or middle school principals ( $p < .05$ ).

Table 1. Principal and School Characteristics Versus Ease of Implementation

|  | Easy/<br>Somewhat<br>Easy | Difficult/<br>Somewhat<br>Difficult |
|--|---------------------------|-------------------------------------|
| <b>School Level</b>  |                           |                                     |
| Elementary   | 263(69%)                  | 116(31%)                            |
| Middle   | 73(70%)                   | 32(30%)                             |
| High*  | 70(82%)                   | 15(18%)                             |
| <b>Years of Experience</b>   |                           |                                     |
| < 1 year   | 26(84%)                   | 5(16%)                              |
| 1-5 years  | 142(70%)                  | 62(30%)                             |
| 6-10 years   | 87(66%)                   | 44(34%)                             |
| >10 years  | 151(74%)                  | 52(26%)                             |
| <b>Adequate time in schedule to meet content standards and objective for PE*</b> |                           |                                     |
| Yes  | 378(79%)                  | 99(21%)                             |
| No   | 28(30%)                   | 64(70%)                             |
| <b>School has necessary resources to meet the PE requirement*</b>                |                           |                                     |
| Yes  | 377(86%)                  | 61(14%)                             |
| No   | 28(22%)                   | 102(78%)                            |
| <b>Principal perceptions of the PE requirement*</b>                              |                           |                                     |
| Favorable  | 363(76%)                  | 117(24%)                            |
| Neutral  | 39(52%)                   | 26(48%)                             |
| Unfavorable  | 3(25%)                    | 9(75%)                              |

\*  $p < .001$

## Results

### Logistic Regression

A logistic regression model was run to determine how perceived importance of the PE requirement, principal experience, time in the school schedule for PE content standards, and presence of necessary resources contributed to the overall ease of implementation of the PE requirement. Values were significant at  $p < .05$ .

A Nagelkerke-R<sup>2</sup> of .45 was obtained, an estimate of the R<sup>2</sup> in linear regression. To account for the fact that the data included more "1"s (easy/somewhat easy) than "0"s (difficult/somewhat difficult) the percent correctly predicted (PCP) was also calculated, which was found to be 83%, indicating that the model correctly predicted ease and difficulty 83% of the time (Table 2).

Having adequate resources, favorable perception of the PE requirement, and having adequate time to meet the content standards and objectives for PE were all found to have significant associations with ease of implementation.

Adequate resources had the most significant influence on perceived ease of PE implementation.

Table 2. Logistic Regression Analysis of Perceived Ease of Implementation (N=567)

| Predictor                       | Odds ratio | SE   | p     |
|---------------------------------|------------|------|-------|
| <b>Adequate Resources</b>       |            |      |       |
| Yes                             | 14.96      | 4.23 | .006  |
| No                              | --         | --   | --    |
| <b>Importance</b>               |            |      |       |
| Favorable                       | 2.14       | 0.66 | 0.013 |
| Unfavorable/Neutral             | --         | --   | --    |
| <b>Adequate Time</b>            |            |      |       |
| Yes                             | 2.55       | 0.87 | 0.006 |
| No                              | --         | --   | --    |
| <b>Experience</b>               |            |      |       |
| >10 years                       | 0.59       | 0.37 | 0.402 |
| 6-10 years                      | 0.39       | 0.25 | 0.147 |
| 1-5 years                       | 0.48       | 0.31 | 0.253 |
| <1 year                         | --         | --   | --    |
| <b>Level</b>                    |            |      |       |
| Elementary                      | 0.89       | 0.33 | 0.756 |
| Middle                          | 0.63       | 0.27 | 0.298 |
| High                            | --         | --   | --    |
| <b>Overall Model Evaluation</b> |            |      |       |
| Nagelkerke R <sup>2</sup>       | 0.45       |      |       |
| Percent Correctly Predicted     | 0.83       |      |       |

## Discussion

**Summary:** The results of this study indicate that 71% of WV school principals found the implementation of the mandated PE requirements to be easy or somewhat easy while 29% indicated the implementation to be difficult or somewhat difficult. Across all school levels, principal's experience did not produce significant differences. However, significant differences were observed among the percentage of principals reporting adequate time in the schedule, resources necessary to meet the PE requirement, and importance of the PE requirement. The finding that a higher percentage of high school principals perceived implementation to be easy/somewhat easy when compared with elementary or middle school principals is not surprising given that the mandates for the latter are more involved than for the high school level.

Results from the logistic regression indicate that adequate time in the schedule to meet content standards for PE, adequate resources, and importance of the PE requirement (favorable versus neutral/unfavorable), all significantly contributed to principals' perceived ease of PE implementation. This confirms findings from others that have indicated barriers and facilitators to policy implementation include: adequate funding, and time.<sup>9,10,11</sup> Compared with adequate time and perceived importance, having adequate resources appears to have the most influence upon perceived ease of implementation. Because principals are faced with No Child Left Behind mandates, efforts are needed to identify strategies to increase PE time in schools and improve administrator's perceptions of PE's importance.

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