Developing Support Mechanisms for Comprehensive School Physical Activity Program Leaders

Peter Teake Stoepker

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UNIVERSITY OF NORTHERN COLORADO

Greeley, Colorado

The Graduate School

DEVELOPING SUPPORT MECHANISMS FOR
COMPREHENSIVE SCHOOL PHYSICAL
ACTIVITY PROGRAM LEADERS

A Dissertation Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Philosophy

Peter Teake Stoepker

College of Natural and Health Sciences
School of Sport and Exercise Science
Sport Pedagogy

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Accepted by the Doctoral Committee:

______________________________________________________
Brian Dauenhauer, Ph.D., Co-Research Advisor

______________________________________________________
Russell Carson, Ph.D., Co-Research Advisor

______________________________________________________
Jaimie McMullen, Ph.D., Committee Member

______________________________________________________
Justin B. Moore, Ph.D., Committee Member

______________________________________________________
Thomas Morgan, Ph.D., Faculty Representative

Date of Dissertation Defense: March 18, 2019

Accepted by the Graduate School

______________________________________________________
Linda L. Black, Ed.D.
Associate Provost and Dean
Graduate School and International Admissions
Research and Sponsored Projects
ABSTRACT


In this dissertation, support mechanisms for comprehensive school physical activity program (CSPAP) leaders were investigated. In the first study, a systematic review was completed that explored the effectiveness of CSPAP professional development/training. In total, 8,982 records were screened and two articles matched the eligibility criteria and were included within the review. One study examined effectiveness using qualitative methods (Centeio, Erwin, & Castelli, 2014) and the other using quantitative methods (Carson, Castelli, Pulling Kugh, et al., 2014). Due to the limited number of articles that met the search criteria, it can be concluded that there is limited evidence to fully understand how effective trained physical activity leaders (PALs) are in integrating CSPAPs. In study two, a valid and reliable instrument to assess CSPAP policies and practices (CSPAP-Q) was created and refined through three rounds of testing with experts and practitioners. In total, 78 items were tested (respondent characteristics = 8, wellness policy status = 1, physical education (PE) = 22, physical activity (PA) during school = 13, before/after school PA = 14, staff involvement = 9, and family/community engagement = 11). The kappa (κ) average for the entire CSPAP-Q was .60 with PE items having the highest test-retest agreement (κ = .66) and family/community engagement having the lowest (κ = .52). It was concluded that the CSPAP-Q is an acceptable tool for measuring PA policies and
practices in schools. Finally, in study three teachers who completed the CSPAP-Q were asked to participate in individual interviews. Seven teachers were interviewed at two time points to develop a deeper understanding of their data process and to gather input on the creation of a data reporting system that aligns with the CSPAP-Q. Results were presented through three overarching themes by data-driven decision making (DDDM) phases and included feedback about the CSPAP-Q data report and how it was used at each phase. The themes were (a) limited experience with data collection and organization (DDDM Phase I), (b) giving meaning to data (DDDM Phase II), and (c) making data-driven decisions (DDDM Phase III). After each interview, participants gave insight, feedback, and recommendations in regard to the formatting and structure of the CSPAP-Q data report. Based on the outcomes from these three studies, it can be concluded that (a) there is currently a dearth of evidence in regards to the effectiveness of CSPAP PAL professional development/trainings on school-wide PA promotion, (b) the CSPAP-Q is a valid and reliable tool that can be utilized to assess school-wide PA policies and practices, and (c) a CSPAP-Q data reporting system can help PALs better understand the current status of PA policies and practices and prioritize areas for action. Implications from this study could guide future research related to how leaders of PA use data and make decisions around the five components of a CSPAP.
DEDICATION

This dissertation is dedicated to my Mom, Jane Stoepker, for continually believing in me and giving me the freedom and support to explore my passions. Without your encouragement and love throughout my life, there is no way I would have been able to achieve this milestone.
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CHAPTER I
INTRODUCTION

A comprehensive school physical activity program (CSPAP) is a multi-component approach that focuses on developing opportunities to increase youth physical activity (PA) levels (Centers for Disease Control and Prevention [CDC], 2015). The CSPAP model has been recognized as a framework for physical education (PE) and PA for youth (CDC, 2017). The CSPAP consists of five components: (a) PE, (b) PA during the school day (e.g., recess), (c) PA before and after school (e.g., bike-to-school day), (d) staff involvement (e.g., staff PA challenge), and (e) family and community engagement (e.g., family fitness night). The CSPAP components can be used as a guide to help schools and PA leaders pinpoint specific interventions to create a more PA-supportive and healthy school environment (Chen & Gu, 2018). Figure 1.1 illustrates the five component areas, with PE as the cornerstone.
Figure 1.1. Five components of comprehensive school physical activity program. MAT-PEPAL = Master of Arts in Teaching Physical Education and Physical Activity Leadership.

A CSPAP is usually led by a physical activity leader (PAL) who is in charge of promoting school-wide PA (Beighle, Erwin, Castelli, & Ernst, 2009; Carson, 2012). To be a successful PAL, many skills are needed to ensure a quality and effective CSPAP is implemented (Dauenhauer, Carson, et al., 2018). For example, a PAL needs to be able to facilitate opportunities for staff to engage in PA staff involvement (Heidorn & Centeio, 2012) or be able to organize family and community PA events with family and community engagement (Cipriani, Richardson, & Roberts, 2012). Additionally, a PAL should understand current before and after school PA offerings (Beighle & Moore, 2012) and be able to train teachers on classroom PA integration (Castelli & Ward, 2012). Due to the wide variety of skills and responsibilities that PALs need to coordinate a CSPAP, the National Association for Sport and Physical Education (now the Society for Health and Physical Educators [SHAPE] America) commissioned a task force to create a professional development (PD) program
designed to equip aspiring PALs with the knowledge and skills to become certified leaders of school PA (Carson, 2012).

The *Physical Activity Leader Learning System and Training* (SHAPE America, 2018) was created to train and certify aspiring PALs. Since the conceptualization of this workshop in 2013, the program has reached 22,956 schools, trained 35,413 PALs, and impacted 13,471,796 students (Active Schools, 2018). Furthermore, due to the multiple responsibilities of being a PAL and the growing number of PALs being trained, some PE teacher education programs have recognized the need to integrate CSPAP training within their undergraduate and graduate curricula (Castelli, Carson, & Kulinna, 2017). In 2017, *The Journal of Physical Education, Recreation & Dance* published a special two-part feature that examined how university programs integrate CSPAP training into their PE programs. The university programs highlighted in this special feature discussed future research and evaluation efforts around PAL development and CSPAP implementation. Common evaluation efforts across all programs were (a) effectiveness of PALs implementing a CSPAP upon graduation, (b) providing students with applied CSPAP related experiences (e.g., leading a school PA initiative), and (c) developing community partnerships to help build CSPAP initiatives. With the growing number of programs infusing CSPAP within their curricula and the number of PALs being trained, it is important that these research and evaluation agendas are seen to fruition to ensure CSPAP training effectiveness.

In 2015, the Centers for Disease Control and Prevention (CDC) in collaboration with SHAPE America developed the *Comprehensive School Physical Activity Programs: A Guide for Schools* resource to help PALs create, implement, and assess CSPAP. According to this guide, for successful CSPAP implementation, one of
the expectations of a PAL is to conduct a needs-assessment to develop an understanding of current policies and practices related to school-wide PA promotion. To guide PALs in understanding the current state of PA within their school or district, multiple instruments are available to assess variables related to school health and PA. However, currently, there is no valid and reliable instrument with the central focus of assessing CSPAP policies and practices across all five component areas. For example, the School Health Policies and Practices Survey (CDC, 2014) and the School Health Index (CDC, 2012a, 2012b) include items within their instrument related to quality PE, but provide limited information about PA during the school day and staff involvement. These existing instruments provide valuable information surrounding school PA and wellness, but they do not assess and provide a comprehensive review of all five components of CSPAP. Furthermore, multiple CSPAP program implementation guides advise PALs to conduct a needs-assessment to identify existing PA policies and practices (CDC, 2015; Moore et al., 2018). Due to the number of PALs being trained to lead CSPAP initiatives and the lack of a valid and reliable CSPAP needs-assessment to guide PALs in CSPAP development, it is becoming critical for an instrument to be developed to assess CSPAP policies and practices.

Additionally, there has been an increase in the amount of data collected in schools (Mandinach, 2012), and research suggests that with this high influx of collected data, teachers often have difficulty accurately interpreting data (Means, Chen, DeBarger, & Padilla, 2011). To guide teachers into using data more effectively, data reporting systems have been developed to help teachers analyze and interpret their data (Rankin, 2016). Unfortunately, minimal research has been conducted to understand how educators use PA-specific data to drive school-based PA interventions.
(Dauenhauer, Keating, & Lambdin, 2018). Therefore, after the development of the CSPAP-Questionnaire (CSPAP-Q), it is crucial to understand how PALs make data-driven decisions and ensure that the results of the CSPAP-Q are reported in a user-friendly manner.

This dissertation consists of three studies that examine existing and new support mechanisms for PALs. All three studies function to advance our understanding of ways in which PALs can be supported in developing, implementing, and evaluating school-wide PA initiatives. Study One was a systematic review that explored the effectiveness of PAL professional development/training. Study Two focused on developing a CSPAP-Q through the use of the Delphi method (Linstone & Turoff, 1975). Lastly, Study Three examined how teachers form knowledge about data and how they prefer data to be reported to aid in the development of a CSPAP-Q data reporting system.

**Study Purposes**

The overall purpose of this dissertation was to understand how effective trained PALs are in implementing school-wide PA initiatives and develop essential support mechanisms (i.e., CSPAP-Q and CSPAP-Q data reporting system) to assist PALs in developing and implementing a CSPAP. For Studies 2 and 3, a formal proposal was approved by the University Institutional Review Board (see Appendices A and C). All participants gave written consent (see Appendices B and D) prior to data collection.

**Study One**

Study one was designed to examine outcomes associated with existing PAL professional development/training systems. The Preferred Reporting Items for
Systematic Reviews and Meta-Analysis (Moher, Liberati, Tetzlaff, Altman, & Group, 2009) checklist was followed in conducting and reporting the systematic review.

Criteria for article inclusion was (a) professional development/training occurring between 2007 and 2018, (b) studies were trainings solely focused on developing PALs to implement a CSPAP, (c) professional development/trainings conducted with current school personnel, and (d) full-length articles published in English language peer-reviewed journals. Data were extracted and entered into a documentation spreadsheet by the primary author and verified by a second co-author. Data included author/date, reference, source, search term, details on the professional development program, participants, procedures, measures, analysis, findings, and summary statement.

Eligibility decisions were reviewed with co-authors and a Preferred Reporting Items for Systematic Reviews and Meta-Analysis flowchart (Moher et al., 2009) was used to document each phase of the review. After eligibility decisions were made, results (articles that met search criteria) were organized by study design, sample, methods, and findings. Results were then discussed in relation to (a) how they align with current literature that has examined recent CSPAP-related professional development, and (b) similarities with a large-scale teacher certification program focused on teacher development and student learning.

**Study Two**

The purpose of Study Two was to develop a valid and reliable instrument for researchers and practitioners to understand school PA policies and practices. A two-round Delphi method (Linstone & Turoff, 1975) informed item revision decisions and provided evidence of content validity. In Round I, 11 experts were asked open-ended questions to gather initial feedback on the CSPAP-Q (Bowling, 2005). In Round II,
the same 11 experts were asked to rate each item on a 5-point Likert scale to determine fit within each subsection of the instrument. Expert responses from Round I were consolidated and categorized. A table of frequent comments was created to identify problematic items and inform revisions. The analysis for Round II included measures of central tendency (mean, median, mode) and measures of dispersion (standard deviation, inter-quartile range). Expert agreement was achieved when at least 67% of experts indicated agree or strongly agree on the 5-point scale (Mokkink et al., 2010). After two rounds of expert feedback, a draft of the CSPAP-Q was distributed to 55 physical education teachers in two states for reliability testing and to collect additional feedback regarding content validity. Thirty-eight teachers were asked to complete the CSPAP-Q 14-days apart with the test-retest method (Hendrickson, Massey, & Cronan, 1993). Percent agreement, kappa coefficients, and chi-square distributions (McHugh, 2012) were calculated to determine strength of agreement across the two time points and practitioner feedback supplemented expert feedback to inform additional item revision decisions. Each round of results was reported separately to show how CSPAP-Q items were revised or eliminated. The final breakdown of items that make-up the CSPAP-Q, how the CSPAP-Q should be conducted, and the potential impact of the questionnaire were discussed.

**Study Three**

The purpose of Study Three was to examine how PE teachers make data-driven decisions and collect input from teachers to determine how CSPAP-Q data could be reported to inform PA-related decisions. Areas of inquiry explored each phase of the data-driving decision making (DDDM) process (Breiter & Light, 2006) and gathered information to assist in the creation of a CSPAP-Q data report.
Specifically, this study examined (a) what types of PA data were currently being collected (data phase); (b) once collected, how PA data were understood and interpreted (information phase); (c) what contextual factors impacted DDDM (knowledge); and (d) how teachers preferred data to be reported to help drive decisions (knowledge). Seven teachers ($n = 4$ female; $n = 3$ male) agreed to participate and all were certified PE specialists. The lead researcher conducted two rounds of semi-structured phone interviews ranging from 20 to 35 minutes in duration and collected relevant artifacts (e.g., existing data reports) from participants. Interview questions were connected to the four areas of inquiry and asked specific questions related to the structure and usefulness of the CSPAP-Q reports. Data were analyzed inductively by the lead author (Creswell, 2013) using NVivo, version 11 (QSR [Qualitative Software Research] International, 2016). In the initial coding process, open and axial coding methods were used to identify common themes (Creswell, 2013). After the completion of the coding process, the lead author referred back to the DDDM conceptual framework from Breiter and Light, (2006) to identify overlap between DDDM, effective data reports, and current findings. Trustworthiness and credibility were maintained throughout the process via member checking, peer debriefing, and triangulation (Creswell, 2013). Results were presented in three overarching themes connected to DDDM phases and included feedback about the CSPAP-Q data report.

**Contributions to the Field**

All three studies have the potential to provide important contributions to the CSPAP literature. Specifically, Study One provides an in-depth exploration of the specific skills and responsibilities that a PAL needs, existing PD opportunities in
becoming a PAL and synthesizes recent findings of the impact trained PALs have on CSPAP implementation. Study Two addresses the need for a comprehensive needs-assessment to help guide PALs and researchers into understanding current policies and practices related to school-wide PA promotion. Lastly, Study Three contributes to our current understanding of how PE teachers make data-driven decisions related to PA and provides insight into how data should be reported in the newly created CSPAP-Q to help future PALs navigate the DDDM process.
CHAPTER II
REVIEW OF LITERATURE

Comprehensive School Physical Activity Programs

A comprehensive school physical activity program (CSPAP) is a multi-component approach that aims to provide opportunities for students to meet the nationally recommended 60 minutes of moderate-to-vigorous physical activity (MVPA) per day and for students to be well-equipped to be active for life (Centers for Disease Control and Prevention [CDC], 2015). The CSPAP model has been recognized as a framework for physical education (PE) and PA for youth (CDC, 2017). Figure 1.1 illustrates the five component areas, with PE as the cornerstone.

Components

The Society of Health and Physical Educators (SHAPE America, 2015) specified that a quality PE program is comprised of four essential components: (a) policy and environment (e.g., appropriate class sizes), (b) curriculum (e.g., based on national standards), (c) appropriate instruction (e.g., inclusion of all students), and (d) student assessment (e.g., grading related to student learning). Quality PE is an effective starting point to promote children and adolescent PA, but PE can only do so much due to frequency PE is offered, large class sizes, and time designated for PE (Erwin, Beighle, Carson, & Castelli, 2013). Due to these limitations for children and adolescents to learn how to be physically active for life and achieve 60 minutes of MVPA, other opportunities for PA should also be considered. These include: PA
During the school day (e.g., classroom PA), before and after school PA programs (e.g., intramurals), staff involvement (e.g., staff participation in PA), and family and community engagement (e.g., family members participate in school PA programs) (CDC, 2015; Erwin et al., 2013; Institute of Medicine, 2013; SHAPE America, 2015).

### Physical Activity Leader

To ensure a CSPAP can be properly developed and implemented, there are three different types of individuals or groups that can influence school-based PA promotion (Carson, Castelli, Beighle, & Erwin, 2014). These include (a) the primary leader who takes charge of CSPAP efforts and is the main point of contact for PA promotion (physical activity leader [PAL]), (b) school administrators (e.g., principal), and (c) a committee that is comprised of the PAL, school administrator, and other school personnel (CSPAP committee) (Carson, Castelli, Beighle, et al., 2014). These leaders (spearheaded by a PAL) are tasked with planning, developing, implementing, and evaluating school-wide PA initiatives.

A PAL has many responsibilities and skills that are needed to implement a successful CSPAP. These responsibilities and skills include but are not limited to: informing teachers of research linking PA to overall student achievement (Heidorn & Centeio, 2012), organizing and administering a variety of events related to PA and health (Beighle et al., 2009), and establishing community partnerships (Cipriani et al., 2012). Due to the many skills and responsibilities that leaders are tasked with, tools and resources are available to help guide PALs with these tasks. These resources include professional development training in becoming a PAL (SHAPE America, 2018), undergraduate programs to prepare future PALs (Karp, Brown, Scruggs, &
Berei, 2017), and graduate programs geared towards developing a PAL (Dauenhauer, Krause, Douglas, Smith, & Stellino, 2017).

**Tools to Assess Comprehensive School Physical Activity Program Policies and Practices**

In 2015, the CDC in collaboration with SHAPE America developed the *Comprehensive School Physical Activity Programs: A Guide for Schools* resource to help PALs create, implement, and assess CSPAP. The guide provides a comprehensive overview of CSPAP and a seven-step process to follow for CSPAP implementation. The first step in the process is to establish a team and designate a PAL. Within this first step, it is emphasized that a PAL needs to be in place and is responsible for coordinating all aspects and components related to CSPAP. After the designation of a PAL has been decided, the second step is to conduct a needs-assessment to identify existing PA policies and practices.

Currently, there is no validated instrument with the central focus of assessing CSPAP policies and practices. Many instruments measure health and PA, but do not specifically target the five components of CSPAP. The research team identified eight instruments as tools to assess current health and PA policies and practices in schools. The instruments were chosen because of their widespread use across the United States. For example, the school physical activity and policy assessment tool (Lounsbery, McKenzie, Morrow, Holt, & Budnar, 2013) has been used to understand school practices and policies related to children’s PA (Carlson et al., 2013). Brener et al., (2006) compared the *School Health Policies and Practices Study* (CDC, 2014) report with the *School Health Index* (CDC, 2012a, 2012b) results to determine if schools were meeting national wellness recommendations.
Once the eight instruments were identified, the research team did a comprehensive review of items within each instrument to determine which items should be included in the first draft of the CSPAP-Questionnaire (CSPAP-Q). Table 2.1 shows the eight instruments that were included, the CSPAP components that were identified within each instrument, and the desired main outcome measure that the instruments were trying to obtain.

**Categorization of Items**

During the review, there were three levels of item categorization were identified by a member of the research team. First, items were divided into the five CSPAP component areas (e.g., PA before/after school). Once component areas were identified, the items were then consolidated and placed into smaller sub-categories (e.g., active transportation). Items that addressed the specific sub-component were then placed into even smaller topic areas (e.g., encouragement of active transportation). Table 2.2 provides an example of the three categorization steps.

After the completion of item categorization, items were then confirmed by two additional members of the research team to ensure accuracy of classification. The purpose of this process was to understand how items within existing instruments may be able to aid in the development of items for the first draft of the CSPAP-Q.
Table 2.1

_Eight Instruments Included in Comprehensive School Physical Activity Program-Questionnaire Review_

<table>
<thead>
<tr>
<th>Instrument</th>
<th>CSPAP components covered</th>
<th>Main outcome measure(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Health Index: Middle school/High School version (CDC, 2012b)</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>Strength and weaknesses of school health &amp; safety program policies</td>
</tr>
<tr>
<td>School Health Index: Elementary School version (CDC, 2012a)</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>Strength and weaknesses of school health &amp; safety program policies</td>
</tr>
<tr>
<td>School Health Policies and Practices Survey, (CDC, 2014)</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>School health policies and practices</td>
</tr>
<tr>
<td>School Environment and Policy Survey: Module 1 (Belansky, 2015a)</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>Policies and factors related to PA and nutrition</td>
</tr>
<tr>
<td>School Environment and Policy Survey: Module 3 (Belansky, 2015b)</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>School PE and PA programs</td>
</tr>
<tr>
<td>School Physical Activity Policy Assessment (Lounsbery et al., 2013)</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>Elementary school related PA policies</td>
</tr>
<tr>
<td>The Physical Activity Resource Assessment (Lee, Booth, Reese-Smith, Regan, &amp; Howard, 2005)</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>Assess and rate PA resources within a community</td>
</tr>
<tr>
<td>CSPAP Survey (AAHPERD, 2011)</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>CSPAP implementation across all 5 components</td>
</tr>
</tbody>
</table>

*Note. AAHPERD = American Alliance for Health, Physical Education, Recreation, & Dance, B/A = before/after, CDC = Centers for Disease Control and Prevention, CSPAP = comprehensive school physical activity program, PA = physical activity, PE = physical education.*
### Table 2.2

*Steps for Categorization of Items*

<table>
<thead>
<tr>
<th>CSAP component</th>
<th>Sub-component</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical activity before/after</td>
<td>Active transportation</td>
<td>District policy—Encouraging active transportation</td>
</tr>
<tr>
<td>school</td>
<td></td>
<td>School policy—Encouraging active transportation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Encouragement of active transportation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Promotion and support of active transportation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Structured walk/bike to school program</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Percent of students participating in walk/bike to school program</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Who is the coordinator of walk/bike to school</td>
</tr>
<tr>
<td></td>
<td></td>
<td>School participation in walk to school day</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Availability of bike racks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Presence of crossing guards</td>
</tr>
</tbody>
</table>

*Note.* CSAP = comprehensive school physical activity program.

### Item Selection Process

Items that were included within the first draft of the CSPAP-Q were based on the number of instruments that addressed each topic, or if an item captured a unique aspect of CSPAP not measured by other instruments. Tables 2.3 through 2.7 show the
frequency of items within each CSPAP component that the instruments addressed. Although each instrument provided schools with valuable information, none of the tools provide a comprehensive evaluation of all five components of CSPAP. For example, the *Comprehensive School Physical Activity Program (CSAP) Survey Report* (American Alliance for Health, Physical Education, Recreation, & Dance, 2011) captured information on supporting component areas, but only had one item related to quality PE. When looking at the *School Health Policy and Practices Study* (CDC, 2014), it included items related to quality PE, but was limited in the area of PA during school and staff involvement. Compared to the other instruments, the School Physical Activity Policy Assessment (Lounsbery et al., 2013) provided the most comprehensive set of questions to cover all five components. However, it still had limited items addressing staff involvement and family/community engagement.

**Validity**

Establishing validity focuses on the meaningfulness of items, ensuring they accurately measure important constructs within a survey (Drost, 2011). There are four types of validity that researchers can consider: criterion, construct, face, and content validity. Criterion validity is the extent to which a measure is related to a specific outcome or standard (Frost et al., 2007). This measure of validity is not deemed appropriate for the development of CSPAP-Q due to the limitations of measuring all five components of CSPAP. National recommendations are considered the “gold standard” for PE (e.g., number of PE minutes), and, therefore, criterion can only be utilized for one of the CSPAP components (PE) and not all five. Due to this limitation, criterion validity was not used to develop CSPAP-Q validity.
Table 2.3

Number of Items Addressing Topics Related to Quality Physical Education

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Time for PE</td>
<td>8</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Fitness testing</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Grading in PE</td>
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<td>0</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Program evaluation</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PE teacher training</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>3</td>
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<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Standards-based PE curriculum</td>
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<td>3</td>
<td>3</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Access to proper facilities &amp; equipment</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Student-to-teacher ratios</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Exemptions, waivers, and withholding PE</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PE teacher engagement with school community</td>
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<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Adapted PE</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Safety in PE</td>
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<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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</tr>
<tr>
<td>Total</td>
<td>51</td>
<td>14</td>
<td>16</td>
<td>25</td>
<td>12</td>
<td>4</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

*Note. CSPAP = comprehensive school physical activity program, ES = elementary school, HS = high school, MS = middle school, PA = physical activity, S-PAPA = school physical activity policy assessment, PE = physical education, SEPS = school environment and policy survey, SHI = school health index, SHPPS = school health policy and practices study.*
Table 2.4

*Number of Items Addressing Topics Related to Physical Activity During School Day*

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Time for recess</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Organized recess activities</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Recess supervisor training &amp; responsibilities</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Playground safety</td>
<td>7</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Recess weather issues</td>
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<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Withholding recess</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Equipment &amp; facilities for recess</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Resources &amp; support for classroom PA integration</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Classroom PA integration</td>
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<td>Total</td>
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<td>4</td>
<td>0</td>
<td>13</td>
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</tbody>
</table>

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Table 2.5.

*Number of Items Addressing Topics Related to Physical Activity Before/After School*

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Intramurals &amp; PA clubs</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>9</td>
<td>0</td>
<td>1</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Interscholastic sports</td>
<td>2</td>
<td>9</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
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</tr>
<tr>
<td>Active transportation</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td>0</td>
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<tr>
<td>Safety</td>
<td>0</td>
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<td>1</td>
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<td>Child care providers</td>
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<td>Additional opportunities</td>
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<td>Total</td>
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<td>11</td>
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</table>

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Table 2.6

*Number of Items Addressing Topics Related to Staff Involvement*

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>Resources &amp; incentives for staff PA promotion</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>Staff wellness programs</td>
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<td>6</td>
<td>0</td>
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<td>0</td>
<td>3</td>
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<tr>
<td>Communication</td>
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<td>0</td>
<td>0</td>
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<td>0</td>
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</tr>
<tr>
<td>Special events &amp; developing a culture of PA</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5</td>
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</tr>
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<td>8</td>
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</tbody>
</table>

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Table 2.7

*Number of Items Addressing Topics Related to Family/Community Engagement*

<table>
<thead>
<tr>
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<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Volunteers</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Advocacy &amp; effective communication</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>0</td>
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<tr>
<td>Community use of facilities</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>2</td>
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<tr>
<td>Special events &amp; collaborations</td>
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<td>0</td>
</tr>
</tbody>
</table>

*Note.* CSPAP = comprehensive school physical activity program, ES = elementary school, HS = high school, MS = middle school, PA = physical activity, S-PAPA = school physical activity policy assessment, PE = physical education, SEPS = school environment and policy survey, SHI = school health index, SHPPS = school health policy and practices study.

Construct validity measures the accuracy of items and how items correlate with a specific theoretical construct (Frost et al., 2007). This measure of validity was not deemed appropriate due to the items included within the CSPAP-Q having already gone through some type of validation and because the standard analysis for construct validity is not appropriate for the items within the CSPAP-Q. Construct validity is usually examined through a factor analysis (Frost et al., 2007) and due to the nature of the questions within the CSPAP-Q, a factor analysis was not appropriate because most of the answers within the questionnaire were not weighted, ranked, or maintained a scale of distribution (Wirth & Edwards, 2007).
Face and content validity were the central focus when testing the CSPAP-Q as they provide information related to appropriate content (Turocy, 2002). Face validity is a validation measure where experts sample participants to decide if an instrument is measuring what it is intended to measure (Turocy, 2002). A group of experts can examine items within a questionnaire to determine their relevance and identify any potential gaps in content (Frost et al., 2007). This process is known as content validity and it was employed throughout the development of the CSPAP-Q by having experts address each item within the CSPAP-Q and make a decision if the item captures and effectively addresses all five components of CSPAP (see Table 2.8) (Haynes, Richard, & Kubany, 1995).

**Reliability**

Reliability ensures the consistency of measurement of an instrument (Drost, 2011). To help establish reliability, practitioners took the CSPAP-Q twice using the test-retest method (Hendrickson et al., 1993). This method is a form of intraclass correlation between two measurements of the same instrument given at two time points (Hendrickson et al., 1993). Test-retest was considered appropriate because items within the CSPAP-Q were related to independent constructs and the method helped ensure the trustworthiness and accuracy of items within the CSPAP-Q (see Table 2.8) (Frost et al., 2007).
Table 2.8

Validity and Reliability Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Sample</th>
<th>SCPAP-Q Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Validity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Face</td>
<td>Experts &amp; practitioners</td>
<td>Delphi method Round I &amp; pilot phase</td>
</tr>
<tr>
<td>Content</td>
<td>Experts &amp; practitioners</td>
<td>Delphi method Round II &amp; pilot phase</td>
</tr>
<tr>
<td>Reliability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test-retest</td>
<td>Practitioners</td>
<td>After Round I and II of Delphi method</td>
</tr>
</tbody>
</table>

*Note.* SCPAP-Q = comprehensive school physical activity program-questionnaire.

**Delphi Method**

The Delphi method was used to create face and content validity for items within the CSPAP-Q. This method gathers the collective opinion of experts and works under the assumption that group expert opinions enhance individual judgment on a specific topic (de Villiers, de Villiers, & Kent, 2005; Linstone & Turoff, 1975). This method allows for experts to voice their opinions and knowledge about a topic of interest and is viewed as one of the most effective methods to gather expert/group consensus (Shariff, 2015). The primary objective of the Delphi method is to build agreement on which items should be included in an instrument by gathering multiple rounds of feedback from experts (Hasson, Keeney, & McKenna, 2000; Hsu & Sandford, 2007). In recent years, the Delphi method has been used to develop measurement tools in medicine (Sun et al., 2017; Vance, Demel, Kirksey, & Moynihan, 2015) and educational tools in health fields (Barton, Armstrong, Preheim, Gelmon, & Andrus, 2009; Ormshaw, Kokko, Villberg, & Kannas, 2016; Vallor,
Due to the wide range of acceptability of the Delphi method as a validation tool, this technique was utilized to develop consensus amongst experts of items that should be included in the CSPAP-Q.

**Data-Driven Decision Making**

Minimal research has been conducted to understand how educators use PA-specific data to drive school-based PA interventions (Dauenhauer, Keating, et al., 2018). Therefore, after the development of the CSPAP-Q, it is crucial to understand how PALs make data-driven decisions and ensure that the results of the CSPAP-Q are reported in a user-friendly manner. Schools have seen an increase in the amount of data that is available to inform school policy and teacher practice (Datnow & Hubbard, 2016). With the addition of available data, educators vary in their ability to make sufficient data-driven decisions, with many feeling unprepared (Datnow & Hubbard, 2016). Data-driven decision making (DDDM) has been defined as a “systematic collection, analysis, examination, and interpretation of data to inform practice and policy” (Mandinach, 2012, p. 71). The DDDM process applies to all levels within an educational system and can be used as a tool to help inform teachers and impact school practice (Mandinach, 2012).

Due to its wide range of application, policymakers have placed tremendous faith in the power and use of data to inform decisions (Spillane, 2012). However, recent research suggests that even with the access and increased importance of using data, teachers do not always know how to use data effectively (Mandinach, 2012; Marsh & Farrell, 2015). Since some teachers and schools have limited experiences with data, it is critical to highlight and understand current DDDM practices.
Effective Practices

There is limited research measuring the impact of DDDM on district, teacher, and student performance (Marsh, Pane, & Hamilton, 2006). This section will highlight recent attempts by scholars to measure the effectiveness of the implementation of DDDM within a school setting.

Feldman and Tung (2001) examined the effects of DDDM experiences within six Massachusetts schools. Data teams from the six schools implemented a specific data process and how it impacted school and teacher practices. Findings indicated that teachers made adjustments to their teaching practices (e.g., became more reflective), and the school developed culture that fostered sharing and cooperation amongst colleagues. These findings are significant because they demonstrated how integrating a specific data process can have on teaching practice and school culture. To further our understanding of DDDM within a school context, it is important to look beyond the impact it can have on teaching practice, but also how it impacts student performance.

Datnow, Park, and Wohlstetter (2007) conducted a qualitative case study of four school systems’ DDDM procedures and how it impacted their school and student performance. The study included two mid-size urban school districts in California and Texas and two nonprofit charter organizations in New York and California. Six themes emerged from their analysis of how high-performing school systems use data to improve instruction: (a) school systems invested time and resources in building a solid foundation for DDDM, (b) a data culture was established, (c) all four school systems invested in a data management system, (d) school systems used data management systems to help select the right data, (e) school systems built a capacity for DDDM, and (f) school systems developed tools and processes to help school staff
make data actionable. This study is important in the field of data use and DDDM because it highlighted the specific data characteristics that were used to improve student and school performance. These findings can be used as a model for schools to follow when attempting to create a data culture within their district. Lastly, it is critical to look at specific types of successful interventions that improve data use and understanding in schools to further our knowledge of how to improve DDDM among educators.

Marsh and Farrell (2015) examined results from a year-long comparative case study on the type of interventions geared towards improving teacher’s data use and understanding. The authors conducted interviews with district leaders, school administrators, data interventionists, teachers, and focus groups with non-case study teachers across six different schools. Based on their findings, the authors developed a framework to help understand how to build teacher knowledge for data use and strategies for administrators to use help guide schools through the DDDM process.

When looking across these three studies, it is important to note the progression of findings over the years and how each study built upon one another. In the first study, it created an understanding of the effects of integrating DDDM on teaching practice. The second study furthered knowledge on the essential components that are needed to build a school culture around DDDM. Lastly the third study looked at specific types of interventions that can be implemented to improve data use and understanding. All three studies demonstrated the impact that DDDM can have on school culture, student performance, teacher practice, and data understanding. Even though there has been successful implementation of DDDM practices within schools,
the data process poses many challenges to teachers, with many feeling ill-prepared to engage in DDDM (Means et al., 2011).

**Data Challenges**

To be able to make data-driven decisions, teachers need to know how to collect, organize, analyze, summarize, synthesize, and prioritize data (Mandinach, 2012). However, due to the involved process of DDDM, teachers tend to worry, become anxious, and are apprehensive in engaging in the DDDM process (Dunn, Airola, Lo, & Garrison, 2013). Dunn et al. (2013) found that when surveying teachers in a northwestern state that teacher anxiety to engage in the DDDM process influenced the use of collected data. Also, it has been shown that some teachers and administrators have limited knowledge, skills, and training in regard to statistics, technology, and transforming data into actionable knowledge (Dunn et al., 2013; Marsh & Farrell, 2015; Marsh et al., 2006). Marsh et al. (2006) analyzed four different studies around DDDM. The authors used results from surveys, interviews, observations, document reviews, and focus groups from the four studies to develop a deeper understanding of DDDM in schools. A major theme that was discovered in their analysis was that school staff often lacked the knowledge to be able to analyze and interpret data.

Additionally, Means et al. (2011) found that if teachers did not have a sufficient data skillset, they were prone to use data ineffectively, which could lead to instruction that does not match student needs. Limited DDDM knowledge and lack of self-confidence in engaging in DDDM have created significant barriers with school stakeholders and teachers in implementing DDDM practices (Wayman, Cho, & Shaw, 2005). Since data inferences can vary by setting, it is essential to understand how
practitioners interpret and use data (Dunn et al., 2013; Goren, 2012). A main factor why data interpretations vary is due to the contextual factors that make up a school/district (Spillane, 2012). Spillane (2012) argued that when comparing schools, we fail to understand factors that may account for differences in achievement (e.g., access to resources). A way to increase our understanding of how practitioners use data is to further our knowledge of data information systems and how they can support teachers and schools in making data-driven decisions in a wide variety of settings (Breiter & Light, 2006).

**Designing Effective Information Systems in Support**

To guide teachers in DDDM, it is essential to look at how data reporting systems disseminate information. Breiter and Light (2006) examined how to define specific factors to aid in designing efficient information systems to support DDDM. The authors conducted a mixed method study in the largest education system in the United States (New York City). The study examined how classroom teachers and district administrators understood data, how they used the information to guide their decision making, and how data should be reported. Education leaders participated in structured interviews, and 15 schools across four districts were represented. It was found that data systems can support educators in DDDM by (a) building data reports based off of the needs of the classroom and building educators, (b) understanding teacher’s knowledge, (c) figuring out appropriate data to include in the information system, and (d) knowing how the reporting system aligns with standards (Breiter & Light, 2006). When designing a data reporting system, it is critical to frame it around
teacher needs by developing an understanding of how to report data that are appropriate and worthwhile (Breiter & Light, 2006).

In a similar study addressing useful data reporting for teachers and schools, the Bill & Melinda Gates Foundation (2015) explored how gathering information from educators and school leaders can inform product development and improve DDDM. A large sample of teachers across the United States was surveyed and follow-up interviews were conducted from the survey sample. Results indicated that 67% of teachers were not fully satisfied with the reported data produced by the information system. Specifically, it was found that these reports can be overwhelming, incompatible, and inconsistent. Furthermore, when exploring recommendations for product developers and how they can address these needs, it was essential to work with school leaders to develop better ways to support teachers when introducing new products (Bill & Melinda Gates Foundation, 2015).

**Conceptual Framework**

As DDDM literature continues to grow, several frameworks have emerged and have similar components that address the continuous and cyclical process of using data (Mandinach, 2012). Breiter and Light (2006) developed a conceptual framework that explores three phases of what they refer to as the data to knowledge continuum (see Figure 2.1). The figure represents how the data process starts with raw data and ends with the knowledge that is used to inform decision making and the skills associated with each phase of the data process (Breiter & Light, 2006).
Data level. At the data level, teachers collect and organize data. Within these steps, decisions are made on what types of data teachers would like to receive (e.g., performance data) and how best to organize the data in a way that makes sense to teachers (Mandinach, 2012).

Information level. At the information level, collected data are summarized and analyzed. During this process, teachers use context to give meaning to data to help aid in translating the data into information (Breiter & Light, 2006).

Knowledge level. At the knowledge level, teachers synthesize and make decisions about their data. During the synthesis phase, information is articulated in a way to help teachers understand the data that were analyzed. Lastly, teachers use the knowledge generated to make decisions (Mandinach, 2012).
Current Data Physical Education/Physical Activity Reporting Systems

Existing data reporting systems in the state of Colorado and around the United States related to health and PA were used to inform the design of a data reporting system related to the CSPAP-Q. A current example of a data reporting system in Colorado is *Smart Source* (Colorado Department of Public Health & Environment, 2018). This instrument provides kindergarten–12 schools with a data report on their current health policies and practices and how they align with the whole school, whole community, and whole child model (Association for Supervision and Curriculum Development, 2017). The data reports are generated through an online system and provide participants (school districts) with statistical information in the form of bar graphs and percentages of how their school policies and practices compare to the state of Colorado. The goal of the data report is to help schools identify needs, advocate for change, and evaluate the effectiveness of their current practices and policies (Colorado Department of Public Health & Environment, 2018).

Another example of a data reporting system is provided from SHAPE America. This organization collects and publishes *Shape of the Nation: Status of Physical Education in the USA* every two to five years (SHAPE America, 2016). The report provides a comprehensive review of state PE and PA policies and compares findings to current national standards and recommendations. Additionally, the report provides an executive summary of the entire United States and individual state narratives. Topics in the report include PE classroom characteristics and PA policy-related areas.
Another common report is from the *Youth Risk Behavior Surveillance — United States* developed from the CDC (Kann et al., 2015). This report provides each state with data around six different types of health-risk behaviors. Each subsection within the report provides percentages to help the user identify current health-risk behavior issues and trends of students within the school district. The CDC also created the *School Health Profile 2016* report for secondary schools (Brener et al., 2017). The purpose of this assessment was to further the understanding of current secondary school health policies and practices. The report generated provides a detailed narrative and graphical representations comparing states, large urban school districts, and territories.

The National Physical Activity Plan Alliance (2018) assessed children and youth PA in the United States. Members of this organization generated a data report of health statistics in children and youth and assigned an overall letter grade to 10 indicators related to PA. Lastly, FitnessGram (The Cooper Institute, 2013) is a health-related fitness assessment that is used to help PE programs evaluate student health. A report is generated for each student that displays aerobic capacity, muscular strength, body composition, muscular endurance, and flexibility. See Appendix E for examples of data reports from the reporting systems mentioned above.

**Summary**

Due to the importance of a PAL (Carson, 2012), the adoption of CSPAP as a national framework (CDC, 2017), and an increase in schools implementing a CSPAP approach (Active Schools, 2018; Chen & Gu, 2018), it is essential to summarize current research studies on the effectiveness of professional development training systems in relation to CSPAP implementation. A practical research and evaluation tool
also needs to be developed to help future PALs identify specific needs related to PA. Lastly, due to an increased emphasis on using data and the limited evidence that has explored how data reports can aid users in understanding and interpreting data, there is a need for future research to identify how data reports can better facilitate data interpretations (Hattie, 2010). This dissertation is designed to address these three issues.
CHAPTER III

STUDY ONE: PHYSICAL ACTIVITY LEADERSHIP IN SCHOOLS: A SYSTEMATIC REVIEW OF PROFESSIONAL DEVELOPMENT AND TRAINING EFFECTIVENESS

Introduction

A comprehensive school physical activity program (CSPAP) is a multi-component approach that aims to provide opportunities for students to meet the nationally recommended 60 minutes of moderate-to-vigorous physical activity (MVPA) per day and for students to be well-equipped to be active for life (Centers for Disease Control and Prevention [CDC], 2015). The CSPAP model consists of five components: (a) physical education (PE), (b) physical activity (PA) during the school day, (c) (PA) before and after school, (d) staff involvement, and (e) family and community engagement. Components of a CSPAP are designed to be used as a guide to help schools and leaders of PA pinpoint specific interventions to create a school environment that promotes school-wide PA and health (Chen & Gu, 2018).

Effectiveness of School Physical Activity Initiatives

Recent research has demonstrated that PA initiatives within individual CSPAP components can positively influence child health and academics. For example, studies have shown PA during the school day (e.g., classroom movement) can improve academic performance (Donnelly et al., 2016; Grieco, Jowers, & Bartholomew, 2009; Watson, Timperio, Brown, Best, & Hesketh, 2017), child cognition (Chang, Labban,
Gapin, & Etnier, 2012; Hillman, Erickson, & Kramer, 2008; Howie, Schatz, & Pate, 2015), and overall PA accrual (Calvert, Mahar, Flay, & Turner, 2018; Donnelly et al., 2009; Mahar et al., 2006). Likewise, after-school PA programs have been shown to positively influence academic-related outcomes (Gatz & Kelly, 2018; Lind et al., 2018) and increase child and adolescent PA levels (Beets et al., 2015, 2016). Additionally, it has been found that initiatives integrating multiple components of a CSPAP can decrease child body mass index and increase PA (Li et al., 2014), increase time spent engaged in vigorous PA (Pate et al., 2005), and increases in teacher reported school-based PA time (Braun, Kay, Cheung, Weiss, & Gazmararian, 2017). Even though literature has shown the positive influence school-based PA initiatives can have on student health and academic performance, it is unknown the impact a trained school leader of PA can have on the success of these initiatives.

Physical Activity Leader

To maximize PA opportunities before, during, and after school, activities need be carefully developed, planned, and implemented, ideally by a designated school physical activity leader (PAL) (Castelli & Beighle, 2007). Common tasks include informing teachers of research linking PA to overall student achievement (Heidorn & Centeio, 2012), organizing and administering a variety of events related to PA and health (Beighle et al., 2009), coordinating school PA and health efforts (Carson, 2012), and serving as the main point of contact for PA promotion (Carson, Castelli, Beighle, et al., 2014).
Physical Activity Leader Skills and Responsibilities: Development Over the Years

Since the conceptualization of a PAL over the past decade researchers have created specific parameters in regard to skills and responsibilities that a PAL must have to be able to lead and implement a CSPAP successfully. In the first ever article published on PALs, Castelli and Beighle (2007) articulated that the responsibility of a PAL is to lead and offer PA opportunities by using a whole-of-school approach (i.e., CSPAP). Furthermore, Beighle et al. (2009) highlighted four central roles and responsibilities of a PAL and believed a PAL should be able to (a) organize/administer CSPAP events, (b) be well versed in PA promotion from the public health perspective, (c) be an effective communicator and networker to help support CSPAP programming, and (d) promote PA beyond physical education (PE). Lastly, Carson (2013) described that a PAL’s responsibility is to develop an active school culture by implementing the CSPAP framework to guide youth in achieving and learning how to adopt the recommended amounts of PA per day. Carson (2013) emphasized that this can be done explicitly by a PAL coordinating and providing at least two of the five CSPAP components.

When considering these articles, it can be concluded that a PAL must be able to (a) advocate for PE/PA, (b) train school staff on the importance of health and PA, (c) be the primary facilitator and organizer of all school-wide PA and health events, and (d) understand each component of CSPAP to be able to create an active school culture. Table 3.1 provides an overview of each CSPAP component area and the specific skills and responsibilities that a PAL needs to obtain to be able to implement components of CSPAP effectively.
Table 3.1

*Physical Activity Leader Skills/Responsibilities Needed for Each Comprehensive School Physical Activity Program Component Area*

<table>
<thead>
<tr>
<th>Component Area</th>
<th>Quality physical education</th>
<th>Staff involvement</th>
<th>Before/after school physical activity</th>
<th>PA during school</th>
<th>Family &amp; community engagement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create/implement specific physical education policies</td>
<td>Train staff on physical activity integration</td>
<td>Understand current physical activity offerings</td>
<td>Obtain administrator buy-in</td>
<td>Provide families/community members information about physical activity/physical education</td>
<td></td>
</tr>
<tr>
<td>Develop physical education curriculum that includes national and/or state standards</td>
<td>Encourage involvement in after school physical activity programs</td>
<td>Train staff/coaches</td>
<td>Justify physical activity in the classroom</td>
<td>Host active events</td>
<td></td>
</tr>
<tr>
<td>Provide appropriate instruction that matches all student needs/levels</td>
<td>Provide opportunities for staff to engage in physical activity</td>
<td>Organize active commute</td>
<td>Train teachers on classroom physical activity integration</td>
<td>Establish partnerships</td>
<td></td>
</tr>
<tr>
<td>Implement assessments aligned with standards/grade level outcomes</td>
<td>Develop joint-use agreements</td>
<td>Market programs</td>
<td>Educate families about physical activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Implement quality/feasible programs</td>
<td></td>
<td>Implement quality/feasible programs</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assist in overcoming potential barriers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* SHAPE = Society of Health and Physical Education.

**Implementation Frameworks/Resources for Physical Activity Leaders to Follow**

The CDC in collaboration with the Society of Health and Physical Educators (SHAPE America, 2015) developed the *Comprehensive School Physical Activity Programs: A Guide for Schools* resource to help PALs create, implement, and assess CSPAP. The guide provides a comprehensive overview of CSPAP and a seven-step
The first step in the process is to establish a team and designate a PAL who is responsible for coordinating all aspects related to CSPAP. After the designation of a PAL, the next six steps are geared towards assessing current needs, developing specific and clear goals, and evaluating the effectiveness of the CSPAP initiative. This seven-step process can be used as a useful guide for PALs to follow when implementing a school-wide PA initiative.

Be A Champion was developed as a training system and strategy for CSPAP champions (PALs) to engage in and follow to help guide effective CSPAP implementation. Moore et al. (2018) (as cited in Meyers, Durlak, & Wandersman, 2012) followed the guidelines of the Quality Implementation Framework for program implementation and followed and developed a four-phase, 14-step process to guide CSPAP champions (PALs) in carrying out their CSPAP initiatives. The Be A Champion! framework was designed to address the complexity of a school setting and the challenges that a PAL faces when attempting to implement a school-wide health initiative. Due to the recent development of skills and responsibilities that a PAL needs and the creation of specific implementation steps for CSAP integration, professional development (PD) and CSPAP leader related trainings were created to equip aspiring PALs with the essential tools needed to guide in successful CSPAP implementation.

**Professional Development**

The PD programs are organized efforts to enhance teacher knowledge and bring changes in practice (Guskey, 2002; Patton, Parker, & Tannehill, 2015). There are multiple viewpoints in defining the parameters of effective PD. Recent literature has suggested that for PD to be effective, it should focus on building new knowledge
and skills related to teaching practice (Poekert, 2011), actively engage participants throughout the entire training (Darling-Hammond & McLaughlin, 2011), and help teachers identify their specific needs to improve teaching-related skills and practices (Patton, Parker, & Neutzling, 2013). Effective PD practices have shown to improve teacher content knowledge (Armour, Makopoulou, & Chambers, 2011), attitudes and behaviors towards teaching (Kulinna, McCaughtry, Martin, Cothran, & Faust, 2008), student engagement during lessons (Deglau & O’Sullivan, 2006) and teacher instructional practices (Desimone, Porter, Garet, Yoon, & Birman, 2002). Due to the impact PD can have on teacher development and student success, it is essential to examine how effective PD can be in preparing PALs to coordinate CSPAP.

**Professional Development Opportunities to Become a Physical Activity Leader**

To address the knowledge base and understanding in facilitating CSPAPs, the National Association for Sport and Physical Education commissioned a task force to create a PD program designed to equip aspiring PALs with the knowledge and skills to become certified leaders of school PA and promotion (Carson, 2012). A PD offering was created by SHAPE America (formerly the National Association for Sport and Physical Education) to train leaders to become a certified Director of Physical Activity (Carson, 2012). This training included a six-hour interactive workshop that introduced the CSPAP model and steps to follow for CSPAP implementation. Additionally, the training included a yearlong web-based support system (e.g., learning modules, CSPAP mentor) to assist future directors of PA in CSPAP implementation.

In 2013, SHAPE America in conjunction with former First Lady Michelle Obama’s, Let’s Move! Active Schools initiative (now titled Active Schools) revised
the Director of Physical Activity certification process. The *Physical Activity Leader Learning System and Training* (SHAPE America, 2018) was created and is action-focused training that prepares and aids future advocates for PE and PA in schools (SHAPE America, 2018). This training is a half-day leadership workshop led by a certified PAL and is geared toward training school employees who want to create active learning environments for their student population (SHAPE America, 2018). The training focuses on developing four competencies: (a) content knowledge (e.g., understanding why PA integration is important), (b) leadership (e.g., developing skill set to implement a CSPAP), (c) communication and promotion (e.g., understanding how to advocate for PA), and (d) collaboration (e.g., how to build relationships). Learning outcomes have the overarching goal of training PALs to be the “forefront of efforts to get our nation’s kids moving again” (SHAPE America, 2018, Learning System section). Since the conceptualization of this workshop in 2013, the program has reached 22,956 schools, 35,413 PALs, and 13,471,796 students (Active Schools, 2018).

**University Physical Activity Leader Training**

Due to the multiple responsibilities of being a PAL and to the growing number of PALs being trained, some PE teacher education programs have recognized the need to integrate CSPAP training within their undergraduate and graduate curricula (Castelli et al., 2017). In 2017, *The Journal of Physical Education, Recreation & Dance* published a special two-part feature that examined how university programs integrate CSPAP training into their PE programs. Each university program discussed the unique approaches and strategies and the specific learning objectives, knowledge
and skills students need in understanding what a CSPAP is and the characteristics that are necessary to become a PAL. According to the editors of the special feature, the university programs that were highlighted could be considered a “reconceptualization of PE programs” with the potential to benefit all people across a lifespan (Carson, Castelli, & Kulinna, 2017, p. 49).

The special issue discussed 11 programs and highlighted their specific approaches to infusing CSPAP within their undergraduate and graduate coursework. Four programs had undergraduate coursework involving PAL preparation (e.g., Karp et al., 2017); whereas, seven programs had graduate coursework dedicated to training PALs (e.g., Dauenhauer et al., 2017). In addition to providing evidence of CSPAP coursework integration, each article described current and future CSPAP related research initiatives and goals. Even though each program had its own research and evaluation efforts, there were some commonalities amongst programs in regard to future research direction. For example, 10 programs mentioned future research will evaluate the effectiveness of CSPAP implementation, seven programs mentioned providing their students with applied experiences in leading or being part of the research process of a school-based initiative, and five programs described developing community partnerships to help build CSPAP initiatives.

Castelli et al. (2017) synthesized these efforts and concluded that the university programs were impressive, but there is still a lack of consensus in regarding the necessary skill set for future PE teachers. The editors stressed the need for programs to start measuring the effectiveness of their specific training to help inform other university programs on future best practices on training and development around school-wide PA promotion. To address this conclusion, it is critical for university
programs to implement their research agenda to further our knowledge of effective PAL preparation. Furthermore, the authors believed that the measurement of these specific programs would be necessary to aid in justifying the allocation of future program resources. With the growing number of programs infusing CSPAP within their curricula and the number of PALs being trained, it is vital for programs to implement their research agendas and evaluation plans to ensure program effectiveness.

**Purpose**

In order for a CSPAP to be effectively implemented, it should be led by a certified PAL (Carson, 2012). Due to the importance of a PAL, adoption of CSPAP as a national framework (CDC, 2017), and the increase in schools implementing a CSPAP approach (Active Schools, 2018; Chen & Gu, 2018), it is essential to summarize current research studies related to the effectiveness of a trained PAL in implementing CSPAP. The purpose of this study was to examine the effectiveness of PAL PD training on CSPAP implementation and identify future directions for research and practice. To address this purpose, a systematic review was conducted that examined the effectiveness of current PAL PD trainings. Specifically, this review aimed to identify existing programs and practices that focus on developing PALs while simultaneously examining the effectiveness these trainings have had on CSPAP implementation.

**Methods**

Librarians can play an integral role in supporting a research team to conduct a systematic review (Spencer & Eldredge, 2018). To ensure the quality and rigor of the search process, the lead researcher met with a university librarian that specialized in
systematic reviews to confirm the search process and identify appropriate databases. Electronic searches were conducted using the following 10 databases that have been widely used when conducting systematic reviews related to PA and health: Social Science Citation Index, PubMed, Physical Education Index, SPORTDiscus, Academic Search Premier, Education ProQuest, PsycINFO, ProQuest Dissertation and Thesis global, Education Source, and Google Scholar. Additional papers were sourced from bibliographies of the retrieved studies. Search terms were identified by using consistent language from multiple CSPAP related materials (e.g., *Comprehensive School Physical Activity Programs* [CDC, 2015] and *Physical Activity Leader Learning System and Training* [SHAPE America, 2018]) and then reviewed and confirmed by members of the research team. The search included the following five keyword combinations: director of physical activity, physical activity champion, comprehensive school physical activity champion, school physical activity leader, CSPAP leader. All five keywords were paired with, training, professional development, implementation, program, certification, framework, monitoring, implementation effectiveness, and evidence-based program. A total of 450 searches were completed between April 2018 and September 2018.

**Eligibility Criteria**

The following criteria were used to select studies:

1. The professional development/training occurred between 2007 and 2018 (Castelli & Beighle, 2007, published the first PAL article) and were aligned with preparing PALs.

2. Studies had to include trainings solely focused on developing PALs to implement a CSPAP (at least one school PA program beyond PE, not
any other multi-component school health framework; (i.e., coordinated school health).

3. The trainings were conducted for current school personnel (individuals external to the school/outside school hires were excluded due to the original goal/intention of the SHAPE America PAL training).

4. Articles had to be English-language and published in peer-reviewed journals (unpublished scholarship or conference abstracts were not permitted).

**Study Selection**

The lead author performed the initial eligibility search by reviewing study titles, and abstracts. The electronic search strategy produced 28,542 articles: 1,418 from Academic Search Premier, 7,091 from Education ProQuest, 1,932 from Education Source, 2,605 from Google Scholar, 9,974 from Physical Education Index, 305 from ProQuest Dissertation and Thesis Global, 511 from PsychInfo, 1,323 from PubMed, 614 from Social Science Citation Index, and 2,769 from SportDiscus. An additional five articles were located by reviewing reference lists. Once duplicates were removed; a total of 8,982 records were screened. After the review of records, 8,969 articles were excluded due to failing to meet the search criteria. Full-text versions from the remaining 13 articles were retrieved directly from the electronic database or through the university inter-library loan service and assessed for eligibility. Lastly, after the review of the 13 articles, 11 were excluded from the selection process because they failed to meet the search criteria. The co-authors reviewed all included articles and agreed that articles met the eligibility criteria. Figure 3.1 shows each stage of the inclusion process of the systematic review.
Figure 3.1. Preferred reporting items for systematic reviews and meta-analyses flow diagram. This illustrates study inclusions through the stages of the systematic review. From “Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement,” by D. Moher, A. Liberati, J. Tetzlaff, D. G. Altman, and T. P. Group, 2009, PLOS Medicine, 6(7), The PRISMA Statement section.
Data Extraction

Extracted data were entered into a documentation spreadsheet via Microsoft® Excel. Relevant information from each article was extracted by the primary author and verified by a second co-author. Article disagreements were resolved by discussion among the co-authors. Data extracted and recorded into the documentation sheet included author/date, reference, source, search term, details on the professional development program, participants, procedures, measures, analysis, findings, and summary statement.

Results

After the completion of the search process, two articles were found that met the requirements of the search criteria. The focus of each article assessed training from a different perspective.

Centeio, Erwin, and Castelli (2014) conducted a collective case study design (Stake, 1995) examining teacher perceptions toward implementing a CSPAP during a one-year National Association for Sport and Physical Education Director of Physical Activity (now PAL) certification process. In total 10 PE teachers (n = 3 male; n = 7 female) with years of teaching experience ranging from one to 28 years participated in this study. Multiple different data sources were used to examine teacher perceptions toward implementing a CSPAP. These sources included four semi-structured interviews, artifacts from the certification process (e.g., de-identified student PA data), open-ended survey responses from the Comprehensive School Physical Activity Program (CSPAP) Survey Report (American Alliance for Health, Physical Education, Recreation, & Dance, 2011), site visits to observe PE lessons and other PA opportunities, and online forum monitoring from online community forums addressing
how to overcome CSPAP implementation barriers. After the collection of data, it was then analyzed using constant comparison and inductive analysis (Corbin & Strauss, 2008; LeCompte & Schensual, 1999). To ensure trustworthiness and the accuracy of data, multiple verification methods were used such as triangulation, peer debriefing, negative case analysis, and member checking (Creswell, 2013).

Four themes emerged with the overarching conclusion that the training prepared elementary PE teachers to overcome barriers related to CSPAP implementation and were willing to implement a CSPAP. The first theme (Leading the Charge: Ready, Set, Go!) was centered on roles and responsibilities of PE teachers and it was found that teachers within this study believed that it is important to provide multiple opportunities for children to be active. In the second theme (Adoption versus Adaptation: Implementation Varies) it was discovered that the CSPAP framework could be adaptable to various school contexts and meet specific school needs. The third theme (Social Media’s Place in the PD community) shed light on how teachers in this study were apprehensive in joining and participating in online forums for professional growth and development. Lastly, in the fourth theme (Keys to Successful Implementation) it was found that for successful CSPAP implementation, an action plan needs to be developed, support from school administration is needed, and PALs need a possess a passion for creating a healthy school environment.

In the second study, Carson, Castelli, Pulling Kuhn, et al. (2014) conducted a quasi-experimental cluster-controlled design to test two specific aims. The first aim was to examine the difference in teacher-reported school PA offerings across pre-, mid-, and post-assessments between PALs receiving yearlong CSPAP PD and support in implementing new PA programs (intervention group) to teachers who were
waitlisted to receive CSPAP support (control group). To address this first aim, PE teachers in both groups completed the CSPAP Survey (American Alliance for Health, Physical Education, Recreation, & Dance, 2011) to self-report the number of PA promoting activities currently offered. Participants completed the survey online on three separate occasions (pre: summer before the PD workshop, mid: after the workshop and toward the end of the first semester, and post: at the end of the school year). The second aim explored student ($n = 386$; age range 9–14) MVPA levels and sedentary behavior from baseline to post-intervention within the same two identified groups: yearlong CSPAP PD and support in implementing new PA programs (intervention group) to teachers who were waitlisted to receive CSPAP support (control group). To address the second aim, baseline (start of school year) and post (end of school year) weeklong accelerometer (GT3E+/GT1M) data were collected to assess during school student MVPA and sedentary behavior.

In total, full-time PE teachers ($n = 129$) from 96 elementary and middle schools in Louisiana participated in this study. All participants attended the Director of Physical Activity (now PAL) PD certification program. Yearlong CSPAP support was provided to the intervention group in the form of learning modules, technical assistance, and the assignment of a CSPAP mentor. Results from aim one indicated a significant increase in school PA offerings by PALs who received yearlong CSPAP support (intervention group) when compared to the control group (teachers who have not received yearlong CSPAP support) in two of the five CSPAP component areas, PA during school and staff involvement. When examining changes in MVPA and sedentary behavior (aim two) it was discovered that students of both groups (intervention and control) spent significantly less amount of time in MVPA and
significantly more amount of time engaged in sedentary behavior from baseline to post assessments (Carson, Castelli, Pulling Kuhn, et al., 2014). See Table 3.2 for the results of selected studies.

Table 3.2

Empirical Studies Measuring the Effectiveness of Physical Activity Leader Trainings

<table>
<thead>
<tr>
<th>Author</th>
<th>Intervention</th>
<th>Study design</th>
<th>Sample</th>
<th>Methods</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centeio et al. (2014)</td>
<td>Yearlong PD around CSPAP and how it affects daily practice</td>
<td>Qualitative-collective case study</td>
<td>10 elementary physical education teachers</td>
<td>Four semi-structured interviews, Artifacts collection, Open-ended surveys, Site visits, Online forum</td>
<td>PD that focuses on CSPAP integration and implementation adequately equips PALs to lead a CSPAP</td>
</tr>
<tr>
<td>Carson, Castelli, Pulling Kuhn, et al (2014)</td>
<td>Yearlong PD around CSPAP and how it affects daily practice</td>
<td>Quasi-experimental cluster controlled</td>
<td>129 certified-full time physical education teachers from 96 elementary/middle schools, 386 students (9-14 years old)</td>
<td>Two groups of teachers attended a CSPAP summer workshop, Intervention teachers received CSPAP support through year-long training, Student MVPA and sedentary behaviors examined via accelerometer</td>
<td>CSPAP training has the potential to increase the number of physical activity opportunities offered and students spent significantly less amount of time in MVPA and significantly more amount of time in engaged sedentary behavior</td>
</tr>
</tbody>
</table>

Note. CSPAP = comprehensive school physical activity program, MVPA = moderate-to-vigorous physical activity, PAL = physical activity leader, PD = professional development.

Discussion

A systematic review of the literature was conducted that investigated the effectiveness of PD training programs aligned with preparing PALs to lead a CSPAP. After the completion of the search, two articles were included for review. The two studies showed promise in regard to PAL training, but due to the limited amount of empirically based evidence that explored PAL training effectiveness relative to the
number of trainings that have occurred over the past 11 years, more information is needed in regards to the effects PAL training has on CSPAP implementation.

Considering the lack of evidence regarding PAL training effectiveness, the following sections will discuss recent PD focused on improving individual CSPAP components and the impact of large-scale teacher certification programs on teacher development and student learning in general education and then specifically in PE. Discussing certification and training programs could be used to inform next steps for PAL PD programs

**Professional Development and Training**

Large-scale studies have been done to explore the effects PD training programs on improving the quality of PE. The Child and Adolescent Trial for Cardiovascular Health was a 2.5-year intervention and PD program across 96 schools in the United States (McKenzie et al., 2001). The PD training was designed to improve PE classes (i.e., teacher instruction) and to increase student PA levels. The training consisted of full-day and half-day sessions and included follow-up site visits by Child and Adolescent Trial for Cardiovascular Health consultants to provide teacher feedback and technical assistance during lessons. Results from this study demonstrated changes in lesson contexts and improvement in child MVPA and vigorous PA levels (McKenzie et al., 2001).

Similarly, the Middle School Physical Activity and Nutrition evaluation consisted of seven three-hour trainings over two years (McKenzie et al., 2004). The training focused on strategies for implementing health-related PE, designing active lessons, and developing management skills to enhance PA and student learning.
Results from this two-year evaluation found a significant increase in middle school student MVPA levels by approximately 3 minutes per lesson (McKenzie et al., 2004).

Furthermore, studies have shown positive effects on child PA and health when training/holding PD that focuses on specific CSPAP initiatives. For example, in regard to integrating PA into the classroom, it was found that when elementary teachers attended training on how to implement classroom PA, it provided students with valuable PA throughout the school day (Calvert et al., 2018). For after-school PA promotion, it was found that when Young Men’s Christian Association staff attended a two-hour healthy eating and a three-hour PA training, there was a significant improvement in staff behaviors related to PA promotion (Weaver et al., 2014). Lastly, Huberty et al. (2011) examined the effects of a four-hour teacher training session geared toward increasing student PA levels during recess. It was discovered that trained staff had a positive impact on student PA during recess by increasing their overall MVPA levels by 2.5 minutes.

These PD trainings are recent examples of successful PD training effects. What is missing from the literature is similar studies about the effects of PAL trainings and university preparation programs. As mentioned earlier, there have been 35,413 PALs that have been trained and certified (Active Schools, 2018) and 11 university programs that focus on CSPAP and PAL development. It is crucial to evaluate how effective these trained PALs are in regard to their ability to integrate a CSPAP and how effective they are in using their newly learned skills in designing PA and health initiatives within each CSPAP component area. An evaluation model that can be utilized as a future framework for PAL training and certification is the rigorous
assessment that has been conducted for teachers who become nationally board certified.

**National Board Teacher Certification**

The National Board Teacher Certification was designed to “develop, retain and recognize accomplished teachers and to generate ongoing improvement in schools nationwide” (National Board for Professional Teaching Standards, 2018, Overview section). To be eligible to become a National Board Certified Teacher (NBCT), a teacher must have a bachelor’s degree, three years of classroom experience, and a valid state teaching license. During the certification process, multiple facets of teaching are examined such as: content knowledge, differentiation in instruction, teaching practice, learning environment, and how to be an effective and reflective practitioner. Candidates take a content knowledge exam within their subject area and are required to submit three portfolios that consist of (a) student work samples that demonstrate evidence of progress, (b) videos of classroom interactions, and (c) a plan of student improvement based on assessment practices. The NBCT candidates can take up to five years to become certified, but the certification process can take as little as one year (National Board for Professional Teaching Standards, 2018). Since the conceptualization of this certification process in 1987, over 110,000 teachers have become certified.

In the last decade, there have been numerous evaluations that have been published examining the impact of NBCT on teaching effectiveness and student learning. In regard to student learning, when comparing students taught by an NBCT to a non-NBCT it has been found that students taught by an NBCT had a larger
increase in student learning (e.g., math and literacy) (Cantrell, Fullerton, Kane, & Staiger, 2008; Chingos & Peterson, 2011; Vandevoort, Amrein-Beardsley, & Berliner, 2004). Furthermore, it was discovered that when NBCTs are compared to non-NBCTs, there was a significant difference in the quality of teaching (e.g., effective instruction practices) (Cavalluzzo, 2004; Cavalluzzo et al., 2015; Goldhaber & Anthony, 2007). The evidence suggests that becoming a NBCT can have positive effects on student learning and teacher practices.

**National Board Certified Physical Education Teachers**

Some studies have examined the effectiveness of a National Board Certified Physical Education Teacher in regard to teacher effectiveness and student achievement. Phillips (2008) examined the differences of teachers with and without certification and its relation to the percentage of student competency in high school PE. The specific competency measures that were used were based on data from the South Carolina Physical Education Assessment Program, which measured student motor skill performance, fitness knowledge, health-related fitness levels, and out of class participation. It was discovered that students instructed by National Board Certified Physical Education Teacher competence levels were stronger on all four performance indicators than their non-certified counterparts (Phillips, 2008). Moreover, Rhoades and Woods, (2012) discovered that a National Board Certified Physical Education Teacher scored high on teacher effectiveness, managing learning environments, and can have a positive effect on student achievement. Even though the limited research has provided positive results on the impact becoming certified can have on teaching practice and student learning, Rhoades and Woods (2012) called for
further examination of this population justify the need for obtaining this type of certification.

**Recommendations for Future Research**

This present review suggests that the specific roles and responsibilities of a PAL and are rooted in strong conceptual foundations, but more research is required to fully understand the impact a trained PAL has on CSPAP implementation and school-wide health. Limited evidence supports potential training system effectiveness in regard to readiness to implement CSPAP and PA offerings (Centeio et al., 2014; Carson, Castelli, Pulling Kuhn, et al., 2014), but more extensive research is needed on the impact training programs such as the *PAL Learning System* (SHAPE America, 2018) can have to support these initial findings. Furthermore, with the emergence of PAL training within university physical education programs evaluation measures need to be completed to further our understanding of the impact newly certified PE teachers can have on CSPAP implementation.

When considering future studies, researchers should address the relationship between a certified PAL and high priority outcomes such as PA involvement and academic achievement. Specifically, future research should examine the impact a certified PAL has on (a) CSPAP program advocacy, (b) training of school personnel in integrating PA, (c) facilitation skills in regards to organizing school-wide PA events, and (d) the ability to create an active school culture.

To aid in evaluating these four future research recommendations, a systematic approach to evaluating PAL PD effectiveness should be implemented. A practical approach to measure effective PD is assessing the five critical levels needed for valuable PD (Guskey, 2002). The five levels in this model are arranged from basic to
more multifaceted. Due to each level building on the understanding of the previous level, success at each level is necessary for PD success to be obtained at the highest level (Guskey, 2016). The five levels of PD consist of (a) participants’ reaction (e.g., did the materials used make sense?), (b) participants’ learning (e.g., did participants learn and acquire the specific skills and knowledge?), (c) organization support and change (e.g., is content available for use after training?), (d) participants’ use of new knowledge and skills (e.g., can participants effectively implement newly acquired knowledge?), and (e) student learning outcomes (e.g., did training impact student performance?). Data gathered from each level have the potential to provide significant information on PD quality and effectiveness (Guskey, 2016). Following this protocol across future PAL PD trainings creates a methodical approach to ensure each step of the PAL training is monitored.

Limitations

There are limitations associated with this review. Only two empirically based articles were discovered and, therefore, due to the lack of data within this topic, it is challenging to be conclusive. Also, articles that were included were written and published in English, which could have resulted in some degree of publication bias. Lastly, while this review tried to incorporate as much as possible, there could have been limitations by search terms and eligibility criteria. For example, there were articles excluded from this review that did not meet the search criteria that have examined the impact a PAL has on related student outcomes (e.g., PA levels).

Conclusion

It can be concluded that there are multiple articles that describe the skills and responsibilities needed to be a PAL. There are frameworks in place for PALs to follow
to guide them during CSPAP implementation. Universities are integrating intensive curricula to prepare future PALs during their time as a student. However, there is limited evidence to fully understand how effective certified PALs are in integrating CSPAPs and promoting school-wide health. Therefore, empirical based research focusing on certified PALs needs to catch up to the descriptive and conceptual works to fully understand the effectiveness of training and to explore if there need to be any significant changes to the specific skills and responsibilities of a PAL. By closing this gap, it will allow for further comprehension of not only the impact CSPAP has on schools, but the influence these trainings are having on PALs being able to lead CSPAPs at a proficient level. Without documented evidence that supports the effectiveness of these trainings, it will become increasingly challenging to advocate for a whole-of-school approach for PA and health and the need for schools to have designated leaders of PA.
CHAPTER IV

STUDY TWO: USING THE DELPHI METHOD TO
DEVELOP A COMPREHENSIVE SCHOOL
PHYSICAL ACTIVITY PROGRAM
POLICIES AND PRACTICES
QUESTIONNAIRE

Introduction

A comprehensive school physical activity program (CSPAP) is a multi-component approach that aims to provide opportunities for kindergarten–12 students to meet the nationally recommended 60-minutes of moderate-to-vigorous physical activity (MVPA) per day and for students to be well-equipped to be active for life (CDC, 2015). The CSPAP model has been recognized as a framework for physical education (PE) and PA for youth (CDC, 2017).

The Society of Health and Physical Educators (SHAPE America, 2015) specified a quality PE program is comprised of four essential components: (a) policy and environment (e.g., appropriate class sizes), (b) curriculum (e.g., standards-based), (c) appropriate instruction (e.g., inclusion of all students), and (d) student assessment (e.g., grading related to student learning). Quality PE is a useful starting point to increase children and adolescent health, but PE can only do so much due to the limited frequency it is offered, large class sizes, and minimal time designated for PE (Erwin et al., 2013). Because of these limitations, for children and adolescents to learn how to achieve 60 minutes of MVPA in their day and, ultimately, understand how to be physically active for life, other opportunities for PA should also be considered. These
include: PA during the school day (e.g., classroom PA), before and after school PA programs (e.g., intramurals), staff involvement (e.g., staff participation in PA), and family and community engagement (e.g., family members participate in school PA programs) (CDC, 2015; Erwin et al., 2013; Institute of Medicine, 2013; SHAPE America, 2015). Figure 1.1 illustrates the five CSPAP component areas, with PE as the cornerstone.

When developing a CSPAP, it is important to take a systematic approach to planning, implementation, and evaluation (Moore et al., 2018). Multiple implementation guides have recommended conducting a needs-assessment as one of the first steps toward building a school-wide CSPAP initiative. In 2015, the CDC in collaboration with SHAPE America developed the Comprehensive School Physical Activity Programs: A Guide for Schools resource to help PA leaders create, implement, and assess CSPAP. The guide provides a comprehensive overview of CSPAP and a seven-step process to follow for CSPAP implementation. The second step within the implementation process is for a CSPAP team to conduct a needs-assessment to evaluate existing PA policies and practices and identify priority areas for intervention. Similarly, Be A Champion! (Moore et al., 2018) was developed as a training system and strategy for leaders of PA to follow during the CSPAP planning and implementation process. The first step in this training system is for school PA leaders to conduct a needs-assessment to identify areas of need for school PA and health improvement. Considering CSPAP is a national framework for PA promotion in schools (CDC, 2017), and the recommendation by multiple implementation guides for school leaders of PA to conduct a needs-assessment, researchers and practitioners
could benefit from the existence of a valid and reliable tool to assess policies and practices related to all five components of CSPAP.

Currently, there is no validated instrument with the central focus of assessing CSPAP policies and practices. Many instruments measure variables related to school health and PA, but do not explicitly target the five components of CSPAP. For example, the School Physical Activity and Policy Assessment tool (Lounsbery et al., 2013) includes measures of all five CSPAP components, but has limited items related to staff involvement and family and community engagement. Likewise, the School Health Policies and Practices Study (CDC, 2014) and the School Health Index (CDC, 2012b) include items related to quality PE, but provide limited information about PA during the school day and staff involvement. Therefore, the purpose of this study was to create a valid and reliable instrument that addresses all five components of CSPAP that will help researchers, schools, and districts assess the current state of CSPAP and develop a deeper understanding of school PA policies and practices.

**Initial Questionnaire Development**

Eight existing instruments were extensively reviewed for item consideration in the CSPAP-Questionnaire (CSPAP-Q). The instruments that were included for review were: School Health Index, elementary school and high school versions (CDC, 2012a, 2012b), School Health Policies and Practice Study (CDC, 2014), School Environment and Policy Survey, Modules 1 and 3 (Belansky, 2015a, 2015b), School Physical Activity Policy Assessment (Lounsbery et al., 2013), The Physical Activity Resource Assessment (Lee, Booth, Reese-Smith, Regan, & Howard, 2005) and the CSPAP Survey (American Alliance for Health, Physical Education, Recreation, & Dance, 2011). These instruments were selected due to their similar outcome measures related
to school PE and PA policies and practices and their inclusion of items that evaluate individual CSPAP components.

**Categorization and Selection of Items**

During the review, there were three stages of item categorization: (a) items were organized by the five component areas of CSPAP (e.g., PA during school, PA before/after school), (b) items were placed into smaller sub-categories based upon the unique aspects of the component area (e.g., PA during school: Recess; PA before/after school: Active transportation), and (c) items were assigned a specific topic area to provide a detailed description of the policy or practice being assessed (e.g., PA during school: Recess: Scheduled time for recess; PA before/after school: Active transportation: Structured walk/bike to school program). Item categorization was completed by one member of the research team and then confirmed by two additional members. The purpose of the categorization process was to further the research team’s understanding of existing items within multiple instruments to aid in the creation of a first draft of the CSPAP-Q. Following the review and categorization process, item inclusion decisions were determined by the number of instruments that addressed each topic, or if items captured a unique aspect of CSPAP not measured by other instruments.

**Item Structure**

The CSPAP-Q was designed to be completed by PE teachers in conjunction with their school/district wellness teams. The CSPAP-Q uses different types of question structures including open-ended, checklists, and dichotomous questions organized into seven sections: Respondent characteristics, wellness policy status, PE,
PA during the school day, before/after school PA, staff involvement, and family and community engagement. In total, 78 items (respondent characteristics = 8, wellness policy status = 1, PE = 22, PA during school = 13, before/after school PA = 14, staff involvement = 9, family/community engagement = 11) made up the first version of the CSPAP-Q before undergoing validity and reliably testing. Table 4.1 outlines the sub-categories aligned with each CSPAP component.

Table 4.1

*Sub-Categories Aligned with Comprehensive School Physical Activity Program Components*

<table>
<thead>
<tr>
<th>CSPAP component</th>
<th>Sub-categories</th>
</tr>
</thead>
</table>
| Physical education       | 1. Safe and positive PE environment  
                           | 2. Time for PE  
                           | 3. Grading in PE  
                           | 4. Teacher training  
                           | 5. Standards-based curriculum  
                           | 6. Facilities & equipment  
                           | 7. Student-to-teacher ratios  
                           | 8. Exemptions, waivers, withholding PE  
                           | 9. Adapted physical education  |
| PA during school         | 1. Time for recess  
                           | 2. Recess activities  
                           | 3. Playground safety  
                           | 4. Withholding recess  
                           | 5. Recess equipment & facilities  
                           | 6. Classroom PA integration  |
| PA before/after school   | 1. Intramurals & PA clubs  
                           | 2. Active transportation  
                           | 3. Community organized enrichment  |
| Staff involvement       | 1. Resources & incentives for staff  
                           | 2. Staff wellness programs  |
| Family & community engagement | 1. Advocacy & communication  
                           | 2. Community use of facilities  |

*Note.* CSPAP = comprehensive school physical activity program, PA = physical activity, PE = physical education.
Method

A two-round Delphi method (Linstone & Turoff, 1975) was used to inform item revision decisions and test the validity and reliability of the questionnaire. The Delphi method works by gathering the collective opinions of experts, with the assumption that group expert opinions enhance individual judgment on a specific topic (de Villiers et al., 2005; Linstone & Turoff, 1975). The method provides information related to both face validity (i.e., the extent to which items measure what they are intended to measure) (Turocy, 2002) and content validity (i.e., the extent to which items are relevant to a given topic area) (Frost et al., 2007) and allows for experts to voice their opinions and knowledge about a topic of interest. The Delphi method is viewed as one of the most effective methods of gathering expert/group consensus (Shariff, 2015). In recent years, the Delphi method has been used to develop measurement tools in clinical settings (Sun et al., 2017; Vance et al., 2015) and educational tools in health fields (Barton et al., 2009; Ormshaw et al., 2016; Vallor et al., 2016). Due to widespread acceptability of the Delphi method as a validation technique, this procedure was used to develop consensus amongst experts in relation to items included in the CSPAP-Q.

Expert Identification

Studies using the Delphi method typically use a purposeful non-random sample of professionals who have extensive knowledge of a given topic area (Hasson et al., 2000; Shariff, 2015). In this study, CSPAP experts were selected based upon their extensive scholarly contributions to CSPAP related research, academic degrees, and extensive experience associated with CSPAP (Duncan, Nicol, & Ager, 2004; Keeney, Hasson, & McKenna, 2001). All experts were contributors to a handbook on
CSPAP research (Carson & Webster, 2019). In total, 35 experts were invited to provide feedback during the questionnaire development process.

**Data Collection Procedures**

Two rounds of expert feedback were gathered in the fall of 2017 to establish initial CSPAP validity (Hsu & Sandford, 2007). Round I focused on asking opened-ended questions to establish face validity. Round II focused on establishing content validity by asking experts to rate items within the CSPAP-Q. For both rounds, experts were given approximately two months to offer their feedback. The survey building platform Qualtrics® was used to distribute the CSPAP-Q and collect expert feedback.

**Validity round I.** The invitation to participate in Round I was sent via e-mail (see Appendix F), with the CSPAP-Q survey link attached. Thirty-five CSPAP experts were e-mailed, and a total of 11 completed the first round. Experts were given the opportunity to provide feedback regarding the face validity of the items by answering the following three open-ended questions in Qualtrics:

1. Did the questions [in this subcategory] fully address the most important topic-specific evidence-based practices and policies related to CSPAP?
2. Were any of the questions repetitive? If so, please identify the questions that were repetitive.
3. Any additional comments?

**Validity round II.** In Round II, the 11 CSPAP experts that completed Round I were surveyed again. To establish content validity, experts were asked to rate each question on a 5-point Likert scale, with a rating of 5 representing strongly agree, the question should be in this subcategory and a rating of 1 representing strongly disagree, the question does not fit in the subcategory and should be eliminated. In addition to
rating each question, the experts were also provided another opportunity for open-ended comments about the items. Open-ended questioning allowed for another layer of content validity by allowing experts to provide input on what they believed may be missing from each subcategory. This helped ensure items within the CSPAP-Q fully represented each CSPAP component.

**Pilot phase validity.** To further determine face and content validity, feedback was gathered from a sample of practitioners who would be likely to use the tool (Turocy, 2002). The PE teachers were recruited from three states: Colorado, Wisconsin, and North Carolina. To obtain face and content validity, PE teachers answered two open-ended questions at the end of each subcategory: (a) were any items confusing? and (b) do any items need to be revised for further content or clarity? Additionally, at the end of the CSPAP-Q, participants were asked about survey quality and the potential concerns they might have about completing the CSPAP-Q (Turocy, 2002).

**Pilot Phase: Test-Retest Reliability**

Reliability was explored using the test-retest method. This method is a form of intraclass correlation between two measurements of the same instrument at two time points (Hendrickson et al., 1993). The amount of time between tests is important to consider; an insufficient period between tests might allow respondents to recall their initial answers, and a longer time interval might allow for an actual change in response to occur (Paiva et al., 2014). Approximately two weeks (14 days) is often considered the most appropriate time gap between tests (Paiva et al., 2014). Therefore, PE teachers were asked to complete the CSPAP-Q on two separate occasions, 14 days apart. The actual average days between tests ended up being 18 days; slightly longer
than the recommended length. All participants who completed the CSPAP-Q at both time points were eligible to receive a $25 gift card or a Fit Bit.

**Analysis**

**Round I**

Expert responses from Round I were reviewed, coded, and organized into a table. The table was then shared with two additional members of the research team for peer debriefing (Creswell, 2013). If feedback suggested items were not representative of a subcategory, the research team reviewed the items and discussed possible revision or elimination. Similar analytical procedures were used for the pilot phase with PE participants.

**Round II**

The analysis following Round II included measures of central tendency (mean, median, mode) and dispersion (standard deviation, inter-quartile range) for Likert items. Quantitative analyses were conducted using SPSS version 23.0. Expert agreement was achieved when at least 67% of experts indicated agree or strongly agree on the 5-point scale (Mokkink et al., 2010). Items that did not reach this cut-point were reviewed and discussed by the research team for possible revision or elimination.

**Test-Retest Reliability**

Analytic methods for test-retest reliability included the calculation of kappa coefficients, percent agreement, and chi-square distribution (Hendrickson et al., 1993; McHugh, 2012). When interpreting strength of agreement for categorical variables, cutoff values from Landis and Koch (1977) were used: kappa score < 0 = no agreement, 0.01–0.20 = none to slight agreement, 0.21–0.40 = fair agreement, 0.41–
0.60 = moderate agreement, 0.61–0.80 = substantial agreement, and 0.81–1.00 = almost perfect agreement. Similar cut-points have been used in previous PA-related survey validation studies (i.e., Booth, Okely, Chey, & Bauman, 2001; Lounsbery et al., 2013; Wong, Leatherdale, & Manske, 2006). For percent agreement, guidelines from Saelens et al. (2006) were used: <60% indicates poor agreement, 60 to 74% moderate agreement, 75 to 89% good agreement, and 90 to 100% excellent agreement. Lastly, chi-square values of $p < .05$ were used to identify significant agreement between time points (Tinsley & Weiss, 1975). Items with low kappa values (<.40), poor percent agreement (< 60%), and non-significant chi-square values ($p > .05$) were revised or eliminated.

**Results**

**Delphi Round I Results**

Expert feedback suggested nine overarching recommendations for revisions to the CSPAP-Q: (a) condense long questions, (b) distinguish between school- and district-related policy questions, (c) reduce survey length, (d) ensure all items are related to CSPAP, (e) reliability of data (e.g., can all questions be answered by one person?), (f) maintain question consistency, (g) cosmetic changes, (h) reframing questions, and (i) adding definitions to terms. After Round I, 36 items were revised and seven were eliminated.

**Delphi Round II Results**

Based upon expert agreement criteria (i.e., < 67% agree or strongly agree) (Mokkink et al., 2010) and additional written feedback, 30 items were revised and 15 items were eliminated in Round II (see Table 4.2).
Table 4.2

*Delphi Round II Results*

<table>
<thead>
<tr>
<th>CSPAP-Q subcategories</th>
<th>Expert average item ranking</th>
<th>Expert average item % agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondent characteristics</td>
<td>4.55(.64)</td>
<td>91.6</td>
</tr>
<tr>
<td>Wellness policy status</td>
<td>4.77(.66)</td>
<td>88</td>
</tr>
<tr>
<td>PE</td>
<td>4.54(.79)</td>
<td>92.7</td>
</tr>
<tr>
<td>PA during school</td>
<td>4.61(.82)</td>
<td>91.65</td>
</tr>
<tr>
<td>Before/after school PA</td>
<td>4.40(1.02)</td>
<td>86.67</td>
</tr>
<tr>
<td>Staff involvement</td>
<td>4.74(.48)</td>
<td>94</td>
</tr>
<tr>
<td>Family &amp; community engagement</td>
<td>4.66(.65)</td>
<td>91.2</td>
</tr>
<tr>
<td>Average total</td>
<td>4.61</td>
<td>90.8</td>
</tr>
</tbody>
</table>

*Note.* CSPAP = comprehensive school physical activity program, PA = physical activity, PE = physical education.

**Pilot Phase**

**Participant demographics.** A total of 55 teachers completed the CSPAP-Q in the first round of reliability testing: 29 PE teachers from Colorado, 26 from Wisconsin, and 0 from North Carolina. After the second time point, 38 teachers (20 from Colorado, 18 from Wisconsin) completed the CSPAP-Q. See table 4.3 for teacher demographics.
Table 4.3

Teacher Demographics that Completed the Comprehensive School Physical Activity Program-Questionnaire

<table>
<thead>
<tr>
<th>State</th>
<th>Gender</th>
<th>Grade level</th>
<th>Average yrs. experience</th>
<th>Certified PE teacher %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Elementary</td>
<td>Secondary</td>
</tr>
<tr>
<td>Colorado</td>
<td>13</td>
<td>16</td>
<td>16</td>
<td>13</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>7</td>
<td>19</td>
<td>10</td>
<td>16</td>
</tr>
</tbody>
</table>

*Note. PE = physical education.*

**Validity.** Three overarching recommendations were identified through practitioner feedback: (a) reduce survey length, (b) define active transportation, and (c) provide clear instructions. Based upon this feedback combined with reliability testing, three items were eliminated, language defining active transportation was improved, and instructions to the survey were revised for clarity.

**Reliability: Wellness policy items.** Table 4.4 provides the results for selected wellness policy status items. Test-retest results showed agreement ranging from fair (κ = .21-.40) to almost perfect (κ = .81-.99), with a mean kappa of .56 (moderate agreement). Five of the six items within this section were categorized as moderate agreement or above. One item, “does your district have a wellness policy that addresses PA” scored below moderate agreement (κ = .24).
Table 4.4

**Reliability Among Selected Wellness Policy Status Items**

<table>
<thead>
<tr>
<th>Item</th>
<th>% agreement</th>
<th>p-value for $\chi^2$</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your district have a wellness policy that addresses physical activity?</td>
<td>79.4</td>
<td>.20</td>
<td>.24</td>
</tr>
<tr>
<td>Does your district have a committee that oversees school health policies and programs?</td>
<td>83.9</td>
<td>&lt; .001</td>
<td>.84</td>
</tr>
</tbody>
</table>

**Reliability: Physical education items.** Table 4.5 displays the results for selected PE items. Overall, the PE items had substantial agreement with a mean kappa of .66 and a range from .28 to .99. Excluding two items, “does your school have a written policy or guideline that prohibits classroom teachers from withholding PE as a class punishment?” ($\kappa = .35$) and “is the student grading policy for PE the same as it is for other subject areas?” ($\kappa = .28$), all other PE items had moderate to almost perfect agreement ($\kappa = .41-.99$). Eleven items within this section had significant $\chi^2$ associations ($p = .001–.005$) and percent agreement ranged from 72.7 to 100%.
Table 4.5

**Reliability Among Selected Physical Education Items**

<table>
<thead>
<tr>
<th>Item</th>
<th>% agreement</th>
<th>p-value for $\chi^2$</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your school have a written policy or guideline that prohibits classroom teacher’s form withholding physical education class as a punishment?</td>
<td>88</td>
<td>.160</td>
<td>.35</td>
</tr>
<tr>
<td>Does your school follow physical education standards at the national level?</td>
<td>97</td>
<td>&lt; .001</td>
<td>.87</td>
</tr>
</tbody>
</table>

**Reliability: Physical activity during school items.** Table 4.6 shows the results for selected items within the PA during school component. Similar to the PE items, PA during school had a kappa range from .28 to .99 with a kappa average of .65 (substantial agreement). Most items ranged from moderate to substantial agreement such as policy items related to recess supervision ($\kappa = .52$), rules for recess behavior ($\kappa = .75$), and availability of recess equipment ($\kappa = .61$). One item within this section “does your school sponsor training for recess monitors at least once a year?” had a kappa score below moderate agreement at .28. Six items had significant $\chi^2$ associations ($p = .001-.005$) and percent agreement ranged from 73 to 100%. 
Table 4.6

Reliability Among Selected Physical Activity During School Items

<table>
<thead>
<tr>
<th>Item</th>
<th>% agreement</th>
<th>(p)-value for (\chi^2)</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are recess supervisors asked to encourage students to be physically active during recess</td>
<td>88</td>
<td>&lt; .001</td>
<td>.76</td>
</tr>
<tr>
<td>Does your school have a written policy that specifies the number of recess minutes per day students should receive?</td>
<td>81.5</td>
<td>.056</td>
<td>.43</td>
</tr>
</tbody>
</table>

Reliability: Physical activity before/after school items. Table 4.7 illustrates results from the PA before/after school component. This section had an average kappa value of .56 (moderate agreement) with kappa values ranging from .24 to .93. Four items had a kappa value below moderate agreement \((\kappa < .40)\). The items, “are any school-sponsored PA clubs and/or intramural sports offered to students in your school before or after the school day?” \((\kappa = .33)\), “do those who supervise, lead, or coach PA clubs or intramural programs receive any training from your school or district?” \((\kappa = .24)\), and two items within the active transportation section, designation of safe routes \((\kappa = .37)\) and walking/bicycling safety \((\kappa = .36)\) had fair agreement. The rest of the items ranged from moderate to substantial agreement. Five items had a significant \(\chi^2\) association \((p = .001–.005)\) and percent agreement ranged from 65 to 96%.
Table 4.7

*Reliability Among Selected Physical Activity Before/After School Items*

<table>
<thead>
<tr>
<th>Item</th>
<th>% agreement</th>
<th>( p )-value for ( \chi^2 )</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do those who supervise, lead, or coach physical activity clubs or intramural sports programs receive any training from your school or district?</td>
<td>65.2</td>
<td>.363</td>
<td>.24</td>
</tr>
<tr>
<td>Are there community organized enrichment programs available on school grounds outside of the normal school day?</td>
<td>86.5</td>
<td>&lt; .001</td>
<td>.72</td>
</tr>
</tbody>
</table>

**Reliability: Staff involvement items.** Table 4.8 displays selected results from the staff involvement component. This section had a kappa average of .65 (substantial agreement) with a range of .23 to .99. Only one item, “does your school or district provide incentives to employees to be physically active on school grounds?” had fair agreement (\( \kappa = .23 \)). The rest of the items within this section that had items related to school/district staff PA promotion policies, school/district providing employee PA classes/programs, staff payment to lead PA clubs and school-wide special PA events had moderate to almost perfect agreement (\( \kappa = .45 \) to .99). Six items had significant \( \chi^2 \) associations (\( p = .001 \) to .005) and percent agreement ranged from 73 to 96%. 
Table 4.8

Reliability Among Selected Staff Involvement Items

<table>
<thead>
<tr>
<th>Item</th>
<th>% agreement</th>
<th>p-value for $\chi^2$</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your school provide any employee physical activity classes/</td>
<td>85.7</td>
<td>&lt; .001</td>
<td>.70</td>
</tr>
<tr>
<td>programs?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does your school or district provide incentives to employees to be</td>
<td>73.5</td>
<td>.306</td>
<td>.23</td>
</tr>
<tr>
<td>physically active on school grounds?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Reliability: Family and community engagement items. Lastly, Table 4.9 shows selected results from the family/community engagement component of the survey. This section had a kappa average of .52 (moderate agreement) with a range of .20 to .81. One item, “has goals related to PE and PA in the school improvement plan?” had a fair agreement ($\kappa = .20$). Four items had significant $\chi^2$ associations ($p = .001$ to .005) and percent agreement ranged from 70 to 91%.

Overall kappa ranges and averages. Table 4.10 provides an overview of the kappa ranges and averages for each section of the CSPAP-Q. The kappa range for the entire CSPAP-Q was .20 to 1.00 with an overall average of .60 (moderate agreement). Each section of the survey had a kappa average in either moderate (3 sections) or substantial agreement (3 sections). For full reliability statistics, see Appendix G.
Table 4.9

*Reliability Among Selected Family and Community Engagement Items*

<table>
<thead>
<tr>
<th>Item</th>
<th>% agreement</th>
<th>p-value for $\chi^2$</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has goals related to physical education and physical activity in the school improvement plan?</td>
<td>70</td>
<td>.345</td>
<td>.20</td>
</tr>
<tr>
<td>Does your school wellness committee/team have a leader with physical activity expertise?</td>
<td>92.9</td>
<td>&lt; .001</td>
<td>.81</td>
</tr>
</tbody>
</table>

Table 4.10

*Kappa Range and Average for Comprehensive School Physical Activity Program-Questionnaire*

<table>
<thead>
<tr>
<th>CSPAP-Q component</th>
<th>Kappa range</th>
<th>Kappa average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wellness policy items</td>
<td>.24-.84</td>
<td>.56</td>
</tr>
<tr>
<td>Physical education items</td>
<td>.28-1.00</td>
<td>.66</td>
</tr>
<tr>
<td>Physical activity during school</td>
<td>.28-1.00</td>
<td>.65</td>
</tr>
<tr>
<td>Physical activity before/after school</td>
<td>.24-.93</td>
<td>.54</td>
</tr>
<tr>
<td>Staff involvement</td>
<td>.23-1.00</td>
<td>.65</td>
</tr>
<tr>
<td>Family &amp; community</td>
<td>.20-.81</td>
<td>.52</td>
</tr>
<tr>
<td>Entire CSPAP-Q</td>
<td>.20-1.00</td>
<td>.60</td>
</tr>
</tbody>
</table>

*Note. CSPAP-Q = comprehensive school physical activity program-questionnaire.*
Discussion

The CSPAP-Q consists of seven sections: (a) respondent characteristics, (b) wellness policy status, (c) PE, (d) PA during the school day, (e) before/after school PA, (f) staff involvement, and (g) family and community engagement. Average reliability per component area ranged from a kappa of .52 to .66, with the lowest average component being family/community engagement ($\kappa = .52$) and the highest average being PE ($\kappa = .66$). The highest agreement scores within the PE section could be attributed to the fact that all participants are current PE teachers and they know their PE program extensively compared to other CSPAP components.

Final Item Decisions

Eleven items fell below acceptable agreement levels ($\kappa$ range = .00 to .40) and had non-significant $\chi^2$ values ($p > .05$). Eight of those items also had extensive feedback from experts and practitioners. The research team decided to revise eight of the 11 items and eliminated three (see Figure 4.1), resulting in the final CSPAP-Q having 53 items.

Comprehensive School Physical Activity Program-Questionnaire

Implications

The creation of the CSPAP-Q addresses gaps in research and practice related to CSPAP implementation and evaluation. Results from the CSPAP-Q can help schools identify specific areas of need related to school-wide PA promotion. Subsequently, it will allow for schools to develop a plan of action related to CSPAP component areas that need improvement. Additionally, it will allow for a standardized evaluation for researchers to understand the state of CSPAP at the school, district,
state, and potentially national level. Results from the CSPAP-Q can inform future directions for research and evaluation by developing an understanding of CSPAP components that are frequently used and identify components that may need more attention. This will allow for an increased understanding of future CSPAP interventions that need to be developed, implemented, and evaluated to guide the understanding of the effectiveness of all CSPAP component areas.

Figure 4.1. Decision-making flowchart.

The final item on the CSPAP-Q asks the respondent(s) to identify the number of personnel that contributed to completing the survey. It has been recommended to form a CSPAP team (CDC, 2015) when implementing a CSPAP (e.g., school administrator, classroom teacher, PE teacher, school nurse). This same recommendation has been made for respondents taking the CSPAP-Q. Moreover, results from this final item will allow for the research community to evaluate the effectiveness of CSPAP teams and understand the most common stakeholders who
take part in CSPAP. The CSPAP-Q offers a wide range of potential uses, but most importantly it will allow for schools and researchers the ability to assess and address needs related to school-wide PA promotion.

**Limitations**

Even though the majority of test-retest reliabilities on items were acceptable, the CSPAP-Q does have some limitations. Test-retest was administered during the summer months which could have had a significant impact on the number of respondents. Even though the number of participants that completed the survey twice ($n = 38$) is in line with other PA test-retest sample sizes (e.g., school physical activity policy assessment, $n = 31$), a larger sample size could have resulted in more favorable kappa values. Furthermore, due to the test-retest administered during the summer, the participants may not have had access to their CSPAP team to be able to answer all the questions accurately at either time point which could have impacted the reliability results. Lastly, on average teachers took the CSPAP-Q twice over an 18-day period. With an extra four days beyond the recommended 14 there is a potential that some responses to items could have changed.

**Conclusion**

The purpose of this study was to use the Delphi method to gather consensus from experts on items that should be included within the CSPAP-Q. The CSPAP-Q provides school districts and researchers with the flexibility to assess one CSPAP component or all five components that make up a CSPAP. Review by CSPAP content experts and revisions based on pilot administration suggest the CSPAP-Q has face and content validity. Test-retest reliability results suggest the CSPAP-Q items are reliable
and can potentially be useful in assessing policies and practices related to school-wide PA promotion.

Having an instrument that is valid and reliable that measures all five components of CSPAP is essential in a time where there is an increased awareness of childhood obesity and physical inactivity. Results from the CSPAP-Q will play an integral role for researchers, teachers, and school policymakers in assessing and addressing school and district needs related to promoting PA in schools.
CHAPTER V

STUDY THREE: DESIGNING DATA-DRIVEN REPORTS FOR PHYSICAL ACTIVITY LEADERS: A QUALITATIVE STUDY

Introduction

Data-driven decision making (DDDM) has been defined as the “systematic collection, analysis, examination, and interpretation of data to inform practice and policy” (Mandinach, 2012, p. 71). The DDDM process applies to all levels within an educational system and can be used as a tool to help inform teachers on specific ways to improve their practice (Mandinach, 2012). Breiter and Light (2006) proposed a conceptual framework that articulates three phases of a data to knowledge continuum (see Figure 2.1). The figure represents how the data process starts with raw data and ends with the knowledge that is used to inform decision making; and identifies the specific skills associated with each phase of the data-driven process (Breiter & Light, 2006). Light, Wexler, and Heinze (2004) and Breiter and Light (2006) emphasized that in order to create an effective data information system, it is critical to understand how teachers go through the three phases of DDDM.

Data Information Systems

The DDDM is more than just numbers and data, it is about being able to understand how to transform the data and turn it into usable and actionable knowledge (Mandinach, 2012). High-level education officials are looking to DDDM as a potential solution to solving problems that surround education (i.e., graduation and dropout...
rates), and due to this there has been an influx in the amount of data that are being collected in schools (Mandinach, 2012). Researchers have found that if a teacher does not have a sufficient data skillset, they are prone to use data ineffectively, which could lead to instruction that does not match student needs (Means et al., 2011). To address making incorrect data inferences, data information systems have been developed to guide teachers and schools in understanding their data (Rankin, 2016). These data information systems are a form of educational technology and usually contain student level data (e.g., FitnessGram results) in addition to other school-related data (e.g., teacher demographics) (Rankin, 2016). Data systems are commonly used to generate reports, yet even with the creation of data systems to help streamline data interpretation, it has been found that many users (teachers) have trouble understanding and interpreting data reports (Hattie, 2010; Rankin, 2016; Wayman et al., 2009).

**Data Interpretation Challenges**

Teachers and administrators have limited knowledge, skills, and training in regard to statistics, data processing technologies, and transforming data into actionable knowledge (Dunn et al., 2013; Marsh & Farrell, 2015; Marsh et al., 2006;). Marsh et al. (2006) discovered that school staff often lack the knowledge to be able to analyze and interpret data correctly. Research has also shown that teachers tend to worry, become anxious, and experience apprehension about engaging with data in the classroom setting (Dunn et al., 2013). A national study by the U.S. Department of Education, Office of Planning, Evaluation and Policy Development (2011) discovered that in school districts known for data use, 52% of teachers misinterpreted student data when making inferences involving basic statistical concepts. Furthermore, Dauenhauer, Carson, et al. (2018) discovered that physical education (PE) teachers
have concerns about the quality of their data. Data quality concerns (e.g., accuracy of measurement) could have a potential impact on teacher confidence level in the data being reported and impact future data related decisions (Marsh et al., 2006). Incorrect data interpretations from data systems have the potential to limit the use of data in schools, which could significantly impact overall student performance (Wayman et al., 2009).

**Comprehensive School Physical Activity Program**

A comprehensive school physical activity program (CSPAP) is a multi-component approach that aims to provide opportunities for kindergarten–12 students to meet the nationally recommended 60 minutes of moderate-to-vigorous physical activity (MVPA) per day and for students to be well-equipped to be active for life (Centers for Disease Control and Prevention [CDC], 2015). The CSPAP model has been recognized as a framework for physical education (PE) and PA for youth (CDC, 2017). There are five components of the CSPAP model: (a) PE, (b) physical activity (PA) during school, (c) PA before and after school, (d) staff involvement, and (e) family and community engagement. To address the complex, multifaceted nature of a CSPAP, a research team developed a questionnaire (CSPAP-Q) to help schools and researchers understand policies and practices related to CSPAP.

**Comprehensive School Physical Activity Program Questionnaire Overview**

The CSPAP-Q was designed to be completed by PE teachers in conjunction with school or district wellness team. The purpose of creating the CSPAP-Q was to
develop a valid and reliable instrument for assessing all five components of CSPAP. The instrument went through rigorous validity and reliability testing (e.g., Delphi Method) (Linstone & Turoff, 1975) and test-retest (Hendrickson et al., 1993) to ensure soundness of items. The CSPAP-Q consists of 53 items in total and uses different types of question structures including open-ended, checklists, and dichotomous question types to assess practices and policies related to seven sections: (a) respondent characteristics, (b) wellness policy status, (c) PE, (d) PA during the school day, (e) before/after school PA, (f) staff involvement, and (g) family and community engagement. Results from the CSPAP-Q can be used by researchers, teachers, and policymakers to understand school and district needs related to school-wide PA promotion. Multiple different CSPAP implementation guides (e.g., Comprehensive School Physical Activity Programs: A Guide for Schools [CDC, 2015] and Be a Champion! [Moore et al., 2018]) call for school leaders of PA to conduct a needs-assessment to identify existing PA policies and practices and areas for improvement. Due to the impact results from the CSPAP-Q may have on schools and districts, it is important to examine how CSPAP-Q data should be designed and reported to ensure accurate interpretation of policies and practices related to PA.

**Purpose**

Due to an increased emphasis on using data and the limited evidence on how data reports can aid users in understanding and interpreting data, there is a need to identify how data reports can better facilitate data interpretations (Hattie, 2010). Guided by the DDDM framework, the purpose of this study was to examine how PE teachers make data-driven decisions related to PA and to develop an understanding of how data should be reported in the CSPAP-Q.
Methods

Initial Data Report Development

The initial CSPAP-Q data report draft was developed by the lead author by reviewing current data reporting systems and evaluating the extent to which they align with five elements of effective information system design: (a) teacher/school input, (b) visually appealing, (c), interpretation guide (d), aligned with standards, and (e) technical assistance (Breiter & Light, 2006). Upon completion of the review, a content analysis (Miles & Huberman, 1994) was conducted that assessed commonalities and unique report characteristics to inform the creation of the CSPAP-Q data report (see Table 5.1). In total, nine different data reporting systems were documented, reviewed, and analyzed (Miles & Huberman, 1994) to guide the creation of the initial CSPAP-Q report.

Synthesis of Report Characteristics

After reviewing the similarities and differences among the selected data reports, multiple conclusions were drawn. First, only three of the reports were informed by input/feedback from the report’s target audience. It was unclear if or to what extent the other systems solicited feedback in the generation of their reports. Second, only one report (*School Health Index* [CDC 2012a]) did not align results with education standards. Due to these limitations, when designing the CSPAP-Q data report, the research team prioritized gathering insight from potential users and aligning results with standards.
Table 5.1

*Data Report Alignment with Elements of Effective Information System Design*

<table>
<thead>
<tr>
<th>Data report</th>
<th>Teacher/school input</th>
<th>Visually appealing</th>
<th>Interpretation guide</th>
<th>Aligned with standards</th>
<th>Technical assistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorado Smart Source (2018)</td>
<td>Input in the creation of instrument</td>
<td>-White space</td>
<td>-Smart Source overview provided</td>
<td>Provides links for best practices (does not compare results to standards)</td>
<td>Workshops provided to help interpret data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Multiple graphs -Limited technical terms</td>
<td>-Online webinar “Navigating the Smart Source Reports”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shape of the Nation (2016)</td>
<td>Input in the creation of instrument</td>
<td>-Limited white space</td>
<td>-“About this report” section</td>
<td>Aligned with SHAPE America Essential Components of Quality Physical Education</td>
<td>No technical assistance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Limited amount of visuals</td>
<td>-“Recommendations for action” section</td>
<td></td>
<td></td>
</tr>
<tr>
<td>School Health Index (2017)</td>
<td>-Input in the creation of instrument -Interviews on how data report is used</td>
<td>-Limited white space</td>
<td>-“Planning for improvement” section</td>
<td>-Does not compare results to standards</td>
<td>Technical assistance provided</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Limited amount of visuals</td>
<td>-School Health Index learning course</td>
<td></td>
<td></td>
</tr>
<tr>
<td>School Health Profile (2016)</td>
<td>-Not reported</td>
<td>-Limited white space</td>
<td>-Long term changes</td>
<td>-Questions aligned with National Health Education Standards</td>
<td>Technical assistance provided</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-More tables than graphs</td>
<td>-Short term changes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>National Physical Activity Plan (2018)</td>
<td>-Not reported</td>
<td>-White space</td>
<td>-Information on how grades were formed presented</td>
<td>-Compares to national recommendations/standards</td>
<td>No technical assistance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Easy to interpret visuals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FitnessGram (version 10.0)</td>
<td>-Not reported</td>
<td>-White space</td>
<td>-Breakdown of meaning of “healthy fitness zone,” “needs improvement,” &amp; “needs improvement-health risk”</td>
<td>-Compares individual to a specific healthy fitness standard</td>
<td>Technical assistance provided</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Limited text</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Multiple graphs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical education manager</td>
<td>-Not reported</td>
<td>-White space</td>
<td>-Online assistance provided</td>
<td>-Aligns with fitness standards</td>
<td>Technical assistance provided</td>
</tr>
<tr>
<td>WellNet (Single School Solution)</td>
<td>-Not reported</td>
<td>-Limited text</td>
<td>-Online assistance provided</td>
<td>-Aligns with fitness and PE standards</td>
<td>Technical assistance provided</td>
</tr>
<tr>
<td>Spirit System (Interactive Health Technologies zone)</td>
<td>-Not reported</td>
<td>-White space</td>
<td>-Online assistance provided</td>
<td>-Aligns with fitness and PE standards</td>
<td>Technical assistance provided</td>
</tr>
</tbody>
</table>

*Note:* SHAPE = Society of Health and Physical Education.
There were other unique characteristics that each data report demonstrated that were considered for inclusion when drafting the CSPAP-Q data report. For example, when looking at the National Physical Activity Plan data report, it had clean visuals with limited text which was easy for the user to interpret. Another example that was considered for inclusion was providing links to best practices like the Colorado Smart Source data report. Figure 5.1 provides an example of a clean visual with limited text (National Physical Activity Plan Alliance, 2018) and how resources related to best practices can be presented (see Figure 5.2) (Colorado Department of Public Health & Environment, 2018).

Formatting features from both of these data reports and the others were also taken into consideration when designing the first CSPAP-Q data report draft. Figure 5.3 provides an example of a page in the drafted CSPAP-Q data report.
Figure 5.1. Overall physical activity. From *The 2018 United States Report Card on Physical Activity for Children and Youth* (Indicators section), by National Physical Activity Plan Alliance, 2018, Washington DC: Author.

Figure 5.2. Positive attributes of data reports. From *Smart Source* by Colorado Department of Public Health & Environment, 2018. http://www.coloradoedinitiative.org/our-work/health-wellness/smart-source/
Areas of Inquiry

Using Breiter and Light’s (2006) conceptual framework for DDDM and strategies to design effective data information systems as a guide, areas of inquiry explored each phase of the DDDM process to assist in creating a valuable CSPAP-Q data report draft. Specifically, this study examined four areas of inquiry and how they related to understanding the DDDM process and how it can relate to and inform the building of a CSPAP-Q data report. The primary areas of inquiry were: (a) what types of PE/PA data are currently being collected (data phase), (b) once collected, how are PE/PA data understood and interpreted (information phase), (c) what contextual factors impact DDDM (knowledge), and (d) how would teachers like data reported to
help drive their decision making (knowledge). Interview questions related to specific phases of the DDDM process and how the process could impact the design of the CSPAP-Q data report.

**Research Design**

A qualitative descriptive research design was used to investigate how teachers organize and interpret data to develop a data reporting system for the CSPAP-Q. Descriptive research aims to describe the characteristics of a specific group with accuracy and when particular descriptions of a phenomenon are desired (Dulock, 1993; Sandelowski, 2000). This is usually achieved by providing a comprehensive summary of events and deliberately choosing to describe an event in terms of a conceptual framework (Sandelowski, 2000). A formal proposal was approved by the University of Northern Colorado Institutional Review Board. All participants gave written consent before data collection.

**Participants**

The PE teachers who completed the CSPAP-Q as part of study two were recruited via e-mail to participate in two individual interviews approximately one month apart (see Appendix H). Seven teachers ($n = 4$ female), including five elementary and two secondary school teachers (see Table 5.2), agreed to participate. Years of experience teaching PE ranged from 1 to 36 years ($M = 12.42, SD = 11.01$) and all participants were certified PE specialists.
Table 5.2

*Demographic Information of Participating Teacher School Districts*

<table>
<thead>
<tr>
<th>Teacher</th>
<th>State</th>
<th>Grade level</th>
<th>Gender</th>
<th>Years of experience</th>
<th>Highest degree earned</th>
<th>School enrollment</th>
<th>% Free/reduced lunch</th>
<th>% minority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mike</td>
<td>CO</td>
<td>Elementary</td>
<td>Male</td>
<td>6</td>
<td>Bachelors</td>
<td>262</td>
<td>79</td>
<td>73</td>
</tr>
<tr>
<td>Tina</td>
<td>WI</td>
<td>Secondary</td>
<td>Female</td>
<td>12</td>
<td>Bachelors</td>
<td>345</td>
<td>N/A</td>
<td>11</td>
</tr>
<tr>
<td>Jen</td>
<td>CO</td>
<td>Elementary</td>
<td>Female</td>
<td>36</td>
<td>Doctorate</td>
<td>316</td>
<td>70</td>
<td>32</td>
</tr>
<tr>
<td>Winston</td>
<td>CO</td>
<td>Elementary</td>
<td>Male</td>
<td>11</td>
<td>Masters</td>
<td>505</td>
<td>17</td>
<td>43</td>
</tr>
<tr>
<td>Joan</td>
<td>CO</td>
<td>Secondary</td>
<td>Female</td>
<td>3</td>
<td>Masters</td>
<td>1147</td>
<td>38</td>
<td>24</td>
</tr>
<tr>
<td>Jane</td>
<td>CO</td>
<td>Elementary</td>
<td>Female</td>
<td>18</td>
<td>Masters</td>
<td>448</td>
<td>24</td>
<td>26</td>
</tr>
<tr>
<td>Robert</td>
<td>CO</td>
<td>Elementary</td>
<td>Male</td>
<td>1</td>
<td>Bachelors</td>
<td>167</td>
<td>66</td>
<td>53</td>
</tr>
</tbody>
</table>

*Note.* Teachers were assigned pseudonyms during data analysis.

**Data Sources**

Two data sources were used for this study: individual interviews and artifacts. Specifically, two rounds of individual interviews were conducted and relevant data reports that teachers currently use to inform practice (artifacts) were collected. All semi-structured interviews \( (n = 14) \) took place between May and July of 2018 via phone at a convenient time for the teacher and lasted between 20 and 35 minutes. The interview guide included questions that were asked to all participants in addition to unique questions for individuals based on their specific CSPAP-Q results. All interviews were audio-recorded and later transcribed verbatim, and the PE teachers were assigned pseudonyms during data analysis. Additionally, existing data reports (artifacts) that the participants currently use to inform practice were submitted electronically.
**Round I interview.** The purpose of Round I interviews was to explore Phase I and Phase II of the data-to-knowledge continuum to develop an understanding of how teachers collect and organize data. Sample interview questions asked of all the participants included: “how do you collect and organize your PE/PA data?”; “when looking at the CSPAP-Q data report, what changes (if any) would you make?” See Appendix I for the complete list of interview questions.

**Round II interview.** The purpose of Round II interviews was to explore if the teachers were able to reach the final phase of the data-to-knowledge continuum and form actionable knowledge around their CSPAP-Q data results. Sample interview questions asked of all the participants included: “How does your school prioritize data and how is it shared within your school/community?” “Is there a support system in place to help you with data, if so please elaborate?” See Appendix J for the complete list of interview questions.

Prior to the second round of interviews, a personalized CSPAP-Q data report was generated based off CSPAP-Q survey responses and displayed individual teacher results. To allow time for participants to review CSPAP-Q results, data reports were e-mailed one week prior to the second interview. During the second interview, all teachers were asked, “how could you turn data from this report into an actionable plan?” After the conclusion of Round II interviews, a finalized draft of the CSPAP-Q data report was created.

**Artifacts.** All consenting participants were asked to provide the researcher with any data reports (artifacts). Artifacts in this sense were defined as electronic files of data reports that have been collected by the teacher and used to inform professional practice (e.g., FitnessGram report and Smart Source data report). Artifacts were used
as a reference when making revisions to the CSPAP-Q data report between Rounds I and II and to gain understanding of the types of data that teachers currently collect. Specific likes and dislikes were considered when finalizing the CSPAP-Q data report draft. All artifacts were submitted via e-mail and were de-identified by the participant beforehand to ensure the confidentiality of the data. Artifacts were scanned and numbered into a stored and secure password protected computer.

**Data Analysis**

Data were analyzed inductively by the lead author (Creswell, 2013). Prior to analysis, interviews were transcribed and transcriptions were imported into an analysis software program (NVivo, version 11). In the initial coding process, open and axial coding methods were used to identify emerging themes (Creswell, 2013). Once data were coded, similar codes were grouped together and themes were identified (Creswell, 2013). After the completion of the coding process, the lead author referred back to the conceptual framework from Breiter and Light, (2006) to see if there was any overlap between DDDM, effective data reports, and current findings.

**Artifacts.** To analyze artifacts, the lead author used a document summary developed by Miles and Huberman (1994) (see Appendix K) that focused on meanings and relationships of words and concepts within an artifact to help make inferences about data reports. To determine if responses during interviews could be linked with artifacts, analysis examined how existing data reports (artifacts) were used to inform the DDDM process and how an artifact could inform the creation of a CSPAP-Q data report (e.g., report characteristics).

**Trustworthiness.** Transcriptions from interviews and preliminary interpretations were sent to the participants to ensure accuracy (member checking;
Creswell, 2013). Also, a qualitative research expert reviewed codes, commented on emerging themes, and provided input on the analysis process (peer debriefing). Findings were triangulated through two rounds of teacher interviews and the analysis of artifacts. Lastly, a negative case analysis was completed to make sure generated themes did not have an abundance of contrasting support (Merriam, 2009). Figure 5.3 shows a graphical representation of the steps that were implemented in conducting this study.

**Results**

Results are presented through three overarching themes by DDDM phases and include feedback about the CSPAP-Q data report and how it was used at each phase. The themes were: (a) limited experience with data collection and organization (DDDM Phase 1), (b) giving meaning to data (DDDM Phase II), and (c) making data-driven decisions (DDDM Phase III). After each interview, participants shared insights and gave feedback about the CSPAP-Q data report and how they formed a knowledge base related to their specific results.
Limited Experience with Data Collection and Organization

At the data level, data collection and organization takes place. Within these steps, decisions are made on what types of data teachers would like to receive and how
best to organize it so that it makes sense (Mandinach, 2012). When exploring the data level, teachers were asked what types of data they collect, how they organize their data, and questions about the structure and organization of the CSPAP-Q data report.

**Types of data.** Winston commented that “to my knowledge, there is nothing being collected on the students.” Furthermore, Robert mentioned that when starting his new PE position, “I really didn’t have anything to go on, the teacher before me only collected FitnessGram data, but did it a little different and it wasn’t that relevant to me.” Lastly, Jen said, “we don’t do any sort of data collection or data reporting in our school.”

This theme also became more evident when the participants were asked to send any artifacts at the conclusion of the interview on any data reports that they have used in the past. Out of the seven participants, only three teachers sent an artifact on data that they collect. The other four participants stated that they did not have any data artifacts to provide. There were only two types of data artifacts that participants provided. Two teachers sent their Colorado Smart Source data, and one provided a FitnessGram report. For example, Robert said, “I think we collect mostly FitnessGram data and mainly the PACER [progressive aerobic cardiovascular endurance run]. I think cardio is mainly what we’re looking at to get those heart rates up.”

**Unstructured data collection.** When exploring how teachers collect data, it became apparent that the majority of teachers gathered data manually and did not use any type of technology to aid in the data collection process. Tina and Joan both stated, “I do everything manually (inputting all the fitness tests).” Winston added, “it’s more of just, I keep it in my head and to just kind of get an idea of the general population.” Jane added, “my data collection process is really observational and paper and pencil
type of test.” Jen stated that her approach to collecting data was to “scan the room, then go and help the kids who need it the most at the time. So by the time the 30 minutes are up you’ve scanned and you’ve helped the ones who need it the most. So that is how I approach it.”

**Organizational process.** Next the teachers were asked about how they organize and categorize their collected data. It was found that each teacher had their own unique process for organizing their data. Joan stated:

> It’s not very individualized. Basically, we just say, ok, you set these specific goals, over the next week, and whatever you got last week you need to improve. They get points based on that. It is not very individualized data, would just say that it’s very generalized.

Mike discussed that students usually track their progress. He stated, “students have this notebook, and anytime we work on a skill they get their notebook out and write down their results. How many questions they got correct on the skills, whatever it is, they pretty much track it themselves.” Tina stated that their school process is, “entering student data (based off of different tests) and monitoring the levels of the kids and then we just kind of go from there.” Lastly, Robert stated: “I wanted to put [data] in graphs and stuff, but our school instructional coach left, and I think things kind of tailed off in a way so I never really got to make graphs and stuff. I just kind of looked to see if the students improved.”

**Questionnaire organization.** During both interviews, the participants were asked about the structure and organization of the CSPAP-Q data report. Evidence from teachers indicated a perception that the reports were user-friendly and organized. In the first interview, Tina stated, “the information is all straightforward, and it’s all there. I think it would be very beneficial to teachers and districts.” She followed up
this comment in the second interview by stating, “I think it is so well laid out that it’s very evident that these are the areas that you need to work on. I love the layout of it.” Mike added in Interview 1 that, “it is pretty easy to use, easy to navigate.” In Interview 2 he followed up these comments by saying:

I just think the presentation as a whole is just awesome, with the pictures, and it’s not boring like some of those data reports that you’ll see sometimes where it’s just an excel sheet with a bunch of numbers. The presentation is very aesthetically pleasing I guess.

Joan stated in Interview 1 that, “it is very clearly outlined, the table of contents you can just go where you need to. It’s very inclusive.” In Interview 2 she added, “I really like the way it’s set up, I really like the way it’s laid out.” Lastly, to confirm this notion, Jane stated: “It is appealing to read each section, so it’s not like it’s going to make me fall asleep, that is huge, that is big, you don’t want the person to look at it at first glance and say, no I don’t feel like reading this right now, it is appealing.”

Giving Meaning to Data Information

At the information level, collected data are summarized and analyzed. During this process, teachers use context to give meaning to data to help aid in translating the data into information (Breiter & Light, 2006). To understand how teachers interpret data, it is essential to understand school context (e.g., school data policies and procedures) around how data are disseminated (Goren, 2012). Therefore, when exploring how teachers generate information from their PA related data, they were asked if they had a process for sharing, discussing, or analyzing data within their school or district.

Data sharing. It became evident that there was not a systematic procedure in place around discussing or analyzing data. Mike stated, “it’s been a little sporadic, but
I’m hoping to get our health team meetings on the actual agenda for our school this year.” Tina added, “I don’t think we ever really converse about needing some improvements here based on the data.” Jen followed up by saying, “when you say data, it brings to mind a survey. So, it’s not that formalized in that way. It’s more informal.” Winston stated: “Mostly for me this year, I’ve just collected data for my personal use, and then do informal instruction. I would like to get to the point where I’m giving parents something really clean to give feedback for their kids.” Joan merely stated, “we really didn’t collect much data (to share).” Jane added, “Not in my school, we do not have a process to disseminate the data.” Lastly, Robert stated:

I don’t think so [data sharing process], I just do it for myself and for the requirements that the principle has with the state process of renewing our contracts. We set the goals, so I guess I kind of report it, but that’s just for one class, it wasn’t for all the students, and that was just based on the PACER [progressive aerobic cardiovascular endurance run] test.

**Questionnaire analysis.** The participants were given a week to look over their updated CSPAP-Q results and before questions were asked about any potential changes to the CSPAP-Q data report itself, they were asked about how they would go about developing information on the data that was presented to them. It became evident that each teacher had their own unique approach to analyzing their results. Robert stated that his process was to, “go right through it from the beginning to the end.” Joan had a different approach and said: “I pretty much went to the development opportunities section and made some notes about okay, I can do something about this, or I need help with this, or this is something kind of out of reach for the coming year.” Winston’s process was a little different (more reflective) and mentioned that he:

Looked at what is an easy fix first. Is it a me problem? Is it above me problem that I need some help with? I kind of look at the stuff and go, ok, what can I
personally solve right here, right now. Am I just being lazy? Do I need more sources? What is it?

Jen stated that “I just perused it and noticed there may be strengths and areas to improve.” Lastly, Tina said that she “went page-by-page and kept going back to the PA portion of it because that seems to be our big area of need.”

**Making Data-Driven Decision Knowledge**

At the knowledge level, teachers synthesize and make decisions based upon their data. During the synthesis phase, information is articulated in a way to help teachers understand connections among variables or outcomes (Mandinach, 2012). Teachers were asked if the CSPAP-Q data report draft could help them drive their decision making and what specific features were needed to aid in the decision making process.

**Data report beneficial in decision making process.** Participants were asked if they believed that the CSPAP-Q report could help inform future decision making. Tina stated: “Absolutely, I do believe that this is all so well laid out, and I think that they [administration] would see this and be like, oh yeah, and I think they would become a little more supportive and engaged in what we do.” Mike simply stated, “Absolutely.” Whereas, Jen went into a little more detail and stated:

Well yes, the information would need to be shared at the district wellness committee, it would need to be shared like in a district meeting with all the schools represented, and with all the resources provided, and then some talking points to be discussed, so that they have kind of a plan of where to go next.

Joan added:

Oh yeah, definitely, especially at the beginning, as you’re starting a new year, you always want to look for improvements, and this gives us clear direction, like oh, we’re already strong in this area, why don’t we focus on one of these development opportunities.
Robert also stated, “I think that it would be beneficial coming up on this next school year.”

**Resources enhanced understanding.** Many participants stated that the inclusion of resources at the end of the data report was particularly beneficial and aided in their decision-making process (e.g., forming actionable knowledge). Joan said, “all of these resources, I mean, just in this report that you sent me, I have more resources than I have from the school.” Jane added, “I am loving that there’s a family and community engagement resources page. I love that part. I love the staff involvement resources part of this.” Winston added, “I think the resources are a big piece [to the report].” Mike stated, “all those resources are amazing.” Lastly, Tina stated, “as I started scrolling through it more, and then I saw all the resources at the end. I’m thinking, this is awesome because I can take all this information, easily pass on quick resources to the teachers.” Figure 5.5 is an example of a resource page included within the CSPAP-Q draft.
Prioritizing questionnaire data. One aspect of the CSPAP-Q data reports that the teachers would like to see enhanced is a way to prioritize the data to help them identify needs and to help them make informed decisions. Mike stated: “If there was some way that you guys could like—what am I trying to say—kind of prioritize [results], I guess. You could say you need improving in all ten of these things, which ones should we prioritize first.” Mike then followed up in the second interview by saying: “If you put something on the next steps page to kind of talk to schools into picking one of these areas to work on first and say, hey you know there are five areas that you got graded on, pick one to start with, instead of trying to do everything all at once.”
Jen added, could results “be tailored to the school?” Winston stated, “it would be nice to see something actionable by adding a section entitled, what can you do?” Winston followed up in the second interview by stating: “I think that without a ranking system, I could see myself or someone else being like, alright where do we start. I’ve got all these great resources, I’ve got possible huge gaps that I don’t even know where to start on them.” Lastly, Tina added, “it may be worth it to have some state specific sites on there if somebody’s really struggling maybe to put information out there.” The feedback during the interviews about the CSPAP-Q data report was taken into consideration and updates were made accordingly. For example, to address a prioritization system, a next steps page (see Figure 5.6) was created to inform survey takers on aspects that they should consider when identifying how to proceed after reviewing the results.

**Report Draft**

Based on the feedback from the participants and comparing the CSPAP-Q report to pre-existing reports, a finalized draft of the CSPAP-Q data report was created. The CSPAP-Q data report was 22 pages in length and consists of results that report on (a) wellness policy, (b) PE, (c) PA during school, (d) before/after school PA, (e) staff involvement, and (f) family and community engagement. After the results are presented, the report has subsequent pages that provide ideas for next steps of implementation and resources for each CSPAP component. The full version of the CSPAP-Q data report is available in Appendix L.
Discussion

Interview questions were aligned to the conceptual framework for DDDM illustrated by Breiter and Light (2006) with three phases of the DDDM process (data, information, and knowledge). Each phase was important to understand when designing the CSPAP-Q data report due to the limited experiences the participants had with data.

Data Collection and Organization

Findings from this study suggest that the teachers interviewed had limited data collection experience and had an unstructured data organization process. These findings are in alignment with current literature on DDDM. Earl and Katz (2002)
found that teachers are not actively using data to drive their instruction which attributes to a more informal approach to using data. In regard to a specific data collection process and organization system, this study found that the teachers did not have a systematic approach for collecting and organizing data. Datnow et al. (2007) discovered that for data within a school district to be used effectively, the data approach should be systematic with specific structures in place to encourage a bottom-up information flow of data. Furthermore, Datnow et al. found that many teachers want to see school and district data organized in a coherent fashion to help streamline the data process. Findings from previous literature and this study demonstrate how a lack of a systematic data collection and organization approach effects the rest of the data process.

**Information to Knowledge**

Findings from the present study suggest that teachers felt their school and district lacked a PE/PA interpretation process. Goren (2012) mentioned that the context that a teacher works in plays an integral role in how data are managed and delivered and the interpretation should not be considered a solo act and should involve various members at different levels within an education system. Additionally, it has been found that strong instructional communities that work together within the data process increase the use of data in productive ways (Datnow & Hubbard, 2016; Wohlstetter, Datnow, & Park, 2008). For instance, it was discovered that when a support system was in place around data, student achievement and teacher instruction improved (Louis et al., 2010). Without teachers feeling supported it can lead to a lack of a systematic data process that could impede on student growth and improvements in pedagogical practices. A way to help guide teachers to engage in data discussions is
aligning a data reporting system that is relevant and can adhere to the needs of a teacher (Breiter & Light, 2006; Datnow et al., 2007).

Furthermore, the way data are presented has a significant impact on how decisions are made (Thaler & Sunstein, 2008). There are specific data report features to consider to increase accurate understanding and use of data. When considering specific features to integrate into a data report, it was found that calculations and summaries that were completed before reporting increased the likelihood of accurate data interpretation (Rankin, 2016). Moreover, data reports that provided users with data that only relates to the specific topic area and outcomes of interest increased the ease of data interpretation (Jimerson & Wayman, 2015). Likewise, visual representations (e.g., graphs) improved the ability to recall information and recollection of data (Abela, 2013). Lastly, it was found that to help with prioritizing data, reports that had clear headers that distinguish data categories provided teachers with clarity and guidance when characterizing data (Hattie, 2010). If these specific features are not considered when generating data reports, misinformation could occur which could lead to invalid data inferences (Marsh et al., 2006). The CSPAP-Q data reports addressed these overarching issues by providing respondents with all summaries and calculations related to their results. Clear and easy to understand headers, graphs, and visuals were used to provide guidance throughout the report. Lastly, a report interpretations page was included in the report to guide users into how to interpret and process results. Developing a data report that is easy to understand and that allows teachers to make informed decisions could make the DDDM process more streamlined and efficient for teachers which could lead to an increase in data decisions around school-wide PA.
Limitations

Some limitations should be considered in this study. The results reflect the perceptions of PE teachers from only two different states. Therefore, it could be difficult to generalize in other contexts. Due to this, the responses from these teachers may have been affected by the particular culture of the school or district. Future research should consider broadening the scope of states, schools, and districts represented to obtain a more representative sample. The researcher collecting feedback was also the creator of the report. This could have led to limited critical feedback in regards to how the report should be designed. Lastly, the CSPAP-Q data reports were generated individually by one member of the research team. This current model will be unsustainable after increased use of the CSPAP-Q over time. Therefore, it will be critical to explore current technologies that are available that could help make the CSPAP-Q data reporting generation process more practical on a larger scale. Possible technologies could include data visualization software companies like Tableau® and Domo®. Both of these platforms can transform large amounts of data into effective visualization reports with a quick and easy-to-use interface (Eaton & Baader, 2018). Data platforms like these will be considered when implementing the CSPAP-Q on a larger-scale.

Conclusion

Guided by the DDDM framework, the purpose of this study was to examine how PE teachers make data-driven decisions related to PA and to develop an understanding of how data should be reported in the newly created CSPAP-Q. Recent literature has discovered that some teachers are ill-equipped in making data-driven decisions. Findings demonstrated insights into how current PE teachers go through
each phase of the DDDM process, which led to creating a data reporting system that could aid teachers to improve decision making around CSPAP. Results could influence the need for schools to recognize the importance of creating a school culture around data. Integrating a systematic approach around PE/PA data could have a significant impact on student health and PA levels. Implications from this study could guide future research related to how leaders of PA use data and make decisions around the five components of CSPAP.
CHAPTER VI

GENERAL SUMMARY AND CONCLUSIONS

Summary

The overarching purpose of this dissertation was to advance our understanding of ways in which physical activity leaders (PALs) can be supported in developing, implementing, and evaluating school-wide physical activity (PA) initiatives. All three study conclusions built off of one another. First, it was discovered that there is limited empirical evidence supporting the effectiveness of trained PALs. Second, a comprehensive school physical activity program-questionnaire (CSPAP-Q) was created that can serve as a tool to further PALs’ understanding of school policies and practices related to school-wide PA. Lastly, developing an understanding of how teachers go through the data-driven decision making (DDDM) process and receiving feedback from physical education (PE) teachers on how data should be reported in the newly created CSPAP-Q aided in the process of creating a quality data reporting system. Developing this understanding could increase the likelihood of accurate PA data interpretations.

The purpose of study one was to examine the effectiveness of PAL professional development (PD) training on CSPAP implementation and identify future directions for research and practice. To address this purpose, a systematic review was conducted that examined the effectiveness of current PAL PD/training on CSPAP. Findings from the systematic review included two articles exploring the effectiveness
of PAL PD and training. Due to the limited findings in the review, it can be concluded that there is limited evidence in understanding how effective trained PALs are in integrating CSPAP initiatives. Results of previous studies have attempted to build upon the limited evidence in understanding the effectiveness of trained PALs.

McMullen, Kulinna, and Cothran (2014) found after interviewing teachers who attended PD workshops around classroom PA, teachers prefer classroom activity breaks to be easy to implement, academically focused, and fun for all students. A responsibility of a PAL is to train classroom teachers in how integrate PA into the classroom (Castelli & Ward, 2012). Findings from this study could be included when considering content that is needed in future PAL PD. Furthermore, there have been recent studies that have examined the impact a hired PAL (hourly and part-time paraprofessionals) has on CSPAP implementation and effectiveness. These studies were not included in the systematic review findings due to eligibility criteria No. 3 (the trainings were conducted for current school personnel, individuals external to the school/outside hires were excluded). When exploring the effectiveness of a stand-alone hired PAL, research has shown child gross motor skills improvements (Brusseau et al., 2018; Burns, Fu, Fang, Hannon, & Brusseau, 2017), increased child cardio-respiratory endurance (Brusseau et al., 2018; Burns, Brusseau, & Fu, 2017), improved child daily step counts (Brusseau & Burns, 2018; Brusseau, Hannon, & Burns, 2016; Burns, Brusseau, & Hannon, 2015), enhanced child PA enjoyment (Fu, Burns, Brusseau, & Hannon, 2016), and increased student classroom on-task behavior (Burns, Brusseau, Fu, Myrer, & Hannon, 2016). Results from these studies show significant promise in the impact a PAL can have on CSPAP; therefore, it will be critical for future PAL PD research to use these studies as a model for future examination related...
to effectiveness of large scale PAL trainings of current school personnel (e.g., PAL learning system) (Society of Health and Physical Education [SHAPE] America, 2018).

The purpose of Study Two was to create a valid and reliable instrument that addresses all five components of CSPAP that would help researchers, schools, and districts assess the current state of CSPAP and develop a deeper understanding of school PA policies and practices. After the completion of three rounds of validity and reliability testing, the final CSPAP-Q consisted of 53 total items that measure school-wide PA policies and practices. The creation of this instrument could potentially address some of the critical research questions related to youth PA (Erwin, Brusseau, Carson, Hodge, & Kang, 2018). Erwin et al. (2018) proposed that future research should assess current kindergarten–12 PA opportunities in the United States. Once fully implemented, the CSPAP-Q could shed light on current PA opportunities in kindergarten–12 schools, broken down by CSPAP component area, and identify least to most frequently implemented components. Additionally, according to the Comprehensive School Physical Activity Programs: A Guide for Schools (CDC, 2015), PALs should conduct a needs-assessment to develop an understanding of current policies and practices related to school-wide PA promotion. The development of the CSPAP-Q addresses this need by providing PALs with an acceptable tool to evaluate CSPAP.

Guided by the DDDM framework, the purpose of Study Three was to examine how PE teachers make data-driven decisions related to PA and to develop an understanding of how data should be reported in the newly created CSPAP-Q. Results were presented through three overarching themes by DDDM phases and included feedback about the CSPAP-Q data report and how it was used at each phase. Findings
from this study could help inform the critical research question: “how can researchers take advantage of existing and new data-analytic methods to reveal more useful information than is currently available to benefit our research and the general public” (Erwin et al., 2018, p. 292)? Study results provide insight into how PE teachers go through the DDDM process and specific qualities that are preferred when developing a PA related data report. Furthermore, Dauenhauer, Keating, et al. (2018) discovered that effective strategies are needed to aid PE teachers in the amount of time spent on data collection to ensure the quality of data. Findings from Study Three confirm this notion due to finding that PE teachers have limited data collection and organization experiences. The creation of the CSPAP-Q data report could help mitigate data challenges by providing results in an effective and easy to interpret way.

In summary, there is limited empirical evidence on the effectiveness of PAL professional development and training. This lack of evidence can be interpreted that there is a need to develop a deeper understanding of effective ways to train, support and evaluate future PALs. To address this issue, an instrument that measures CSPAP was created. This instrument went through a rigorous reliability and validity process to ensure the quality of the instrument. After the validity and reliability process, the CSPAP-Q was deemed acceptable and therefore can be used to measure CSPAP. Finally, to aid in our understanding of how to effectively train PALs, it is vital to understand how they make data-driven decisions. After two rounds of interviews and data artifact collection, it was found that teachers have limited experiences with data. Also, feedback from teachers was gathered to inform the creation of the first ever data reporting system on CSPAP. The CSPAP-Q data report that was created was deemed a potentially useful data reporting system by the teachers interviewed.
Conclusion

Currently, there is limited evidence in regard to the effectiveness of PAL trainings and PD efforts. There needs to be a shift in the PAL training literature from descriptive and conceptual to more data-driven to fully understand what is deemed as effective when training future PALs. Due to the limited evidence that is currently in the literature on effective PAL training and PD efforts, the CSPAP-Q was developed. This instrument could provide future trained PALs with more profound insights in regards to school-wide PA policies and practices. Additionally, it will allow the research community to further understand current kindergarten–12 PA policies and offerings across the United States. Furthermore, due to teachers having limited experience with data, it will be critical to continue to explore how teachers go through each phase of the DDDM process. Lastly, understanding the relationship between how results are presented in data reports and teacher data interpretations will be vital to not only inform future data report design, it will also assist teachers in making informed and accurate data decisions.

Future Directions

Based on the data presented here, several directions remain open for future work. Future directions from Study One:

- Further investigation into how effective trained PALs are within their school setting at implementing a CSPAP.
- How the use of a systematic approach can help guide PALs into understanding CSPAP implementation and sustainability.
- Assessing the impact PALs and CSPAP as a whole can have on overall child health (i.e., mental and emotional health) and academic
performance (i.e., classroom behavior, grades) and staff, family, and community health.

Future directions for Study Three:

- Incorporate more states to implement the CSPAP-Q.
- Aggregate results from the CSPAP-Q and create an overview of the status of CSPAP across the United States.
- Infuse CSPAP-Q into CSPAP professional development and training as a primary tool to help further our understanding of effective PAL training.

Future directions for Study Three:

- Develop an online data reporting system to streamline the CSPAP-Q results.
- Examine the impact data training has on a PAL’s ability to be comfortable with each phase of the DDDM process.
- Further our understanding of how PE/PA data can be validated at the district and state levels.

By taking into consideration these results and future directions, we can enhance our understanding of how to effectively prepare future physical activity leaders
REFERENCES


Wayman, J. C., Cho, V., & Shaw, S. (2009). *First-year results from an efficacy study of the acuity data system*. Austin, TX: University of Texas at Austin.


APPENDIX A

INSTITUTIONAL REVIEW BOARD: STUDY TWO
DATE: February 28, 2018

TO: Peter Stoepker
FROM: University of Northern Colorado (UNCO) IRB

PROJECT TITLE: [1162696-4] Using the Delphi Method to Create a CSPAP Needs Assessment
SUBMISSION TYPE: Amendment/Modification

ACTION: APPROVAL/VERIFICATION OF EXEMPT STATUS
DECISION DATE: February 22, 2018
EXPIRATION DATE: February 22, 2022

Thank you for your submission of Amendment/Modification materials for this project. The University of Northern Colorado (UNCO) IRB approves this project and verifies its status as EXEMPT according to federal IRB regulations.

We will retain a copy of this correspondence within our records for a duration of 4 years.

If you have any questions, please contact Sherry May at 970-351-1910 or Sherry.May@unco.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of Northern Colorado (UNCO) IRB’s records.
APPENDIX B

INFORMED CONSENT: STUDY TWO
Informed Consent for Participation in Research

Project Title: Development of a CSPAP Questionnaire: Test Re-Test Reliability and Face Validity

Comprehensive school physical activity program (CSPAP) is a multi-component approach that aims to provide opportunities for students to meet the recommended 60-minutes of moderate-to-vigorous physical activity per day and for students to be well-equipped to be physically active for life. As researchers, we are interested in exploring current school physical activity and wellness policies that align with CSPAP.

Currently, there is no instrument to help teachers develop a deeper understanding of CSPAP within their school context. Therefore, we have created a CSPAP instrument to help teachers understand their school’s current physical activity and wellness policies and programs. We are now in the final stages of validating this instrument, and we are looking for current teachers input on the instrument to make sure that it is reliable and valid.

If you grant permission and willingness to participate, we will ask you to complete demographic information questions to provide us with information about you and your school district and take our newly developed CSPAP Questionnaire twice over a 14-day period. The questionnaire will take approximately 45-minutes to complete. We hope to gather results and feedback from the CSPAP Questionnaire to validate the instrument. Questions will revolve around all five components of CSPAP as well as open-ended questions at the end for you to provide any additional feedback.

In the first subsection of survey questions, you will be asked to provide your name. Your name will be used to match test/retest data. However, your name will not appear in any professional report of this research. Members of the research team may follow up with you for future exploration around CSPAP within your school. Only members of the research team will look through the CSPAP Questionnaire results.

We foresee little to no risks to participants. You will not directly benefit from participation in this study, but findings will be used to help validate the creation of a CSPAP Questionnaire. For completing the survey at both time points, you will be entered to win one of ten $25 gift cards. After the completion of the survey at both time points and the raffle prizes have been distributed, your name will be assigned a numeric identifier to ensure confidentiality.

Participation in this study is entirely voluntary. Once participation begins you may still decide to stop and withdraw at any time. Your decision will be respected and will not result in loss of benefits to which you are otherwise entitled.

If you have any concerns about being research participant, please contact Sherry May, IRB
Administrator, in the Office of Research, Kepner Hall, University of Northern Colorado, Greeley, CO 80639; 970-351-1910.

By clicking on the next button below you are agreeing to be part of the study

Researcher Contact information

Brian Dauenhauer, Ph.D.
School of Sport and Exercise Science
Brian.Dauenhauer@unco.edu
999-999-9999

Russell Carson, Ph.D.
School of Sport and Exercise Science
Russell.Carson@unco.edu
999-999-9999

Peter Stoepker, M.A.
School of Sport and Exercise Science
Peter.Stoepker@unco.edu
999-999-9999

Zach Beddoes, Ph.D.
University of Wisconsin La Crosse School of Sport and Exercise Science
zbeddoes@uwlax.edu
999-999-9999

Debra Sazama, Ph.D.
University of Wisconsin La Crosse School of Sport and Exercise Science
dsazama@uwlax.edu
999-999-9999

Justin Moore, Ph.D.
Wake Forest University Family and Community Medicine
jusmoore@wakehealth.edu
999-999-9999
APPENDIX C

INSTITUTIONAL REVIEW BOARD:
STUDY THREE
DATE: May 15, 2018

TO: Peter Stoepker

FROM: University of Northern Colorado (UNCO) IRB

PROJECT TITLE: [1162696-6] Using the Delphi Method to Create a CSPAP Needs Assessment
SUBMISSION TYPE: Amendment/Modification

ACTION: APPROVAL/VERIFICATION OF EXEMPT STATUS

DECISION DATE: May 15, 2018

EXPIRATION DATE: February 22, 2022

Thank you for your submission of Amendment/Modification materials for this project. The University of Northern Colorado (UNCO) IRB approves this project and verifies its status as EXEMPT according to federal IRB regulations.

We will retain a copy of this correspondence within our records for a duration of 4 years.

If you have any questions, please contact Sherry May at 970-351-1910 or Sherry.May@unco.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of Northern Colorado (UNCO) IRB’s records.
APPENDIX D

INFORMED CONSENT: STUDY THREE
Informed Consent for Participation in Research
Project Title: Teacher Input Into the Creation of a CSPAP Data Report

Researchers: Peter Stoepker, M.A.  Brian Dauenhauer, Ph.D.
School of Sport and Exercise Science  School of Sport and Exercise Science
Peter.Stoepker@unco.edu  Brian.Dauenhauer@unco.edu
999-999-9999  999-999-9999

A comprehensive school physical activity program (CSPAP) is a multi-component approach that aims to provide opportunities for students to meet the recommended 60-minutes of moderate-to-vigorous physical activity per day and for students to be well-equipped to be physically active for life. As researchers, we are interested in exploring how teachers make data-driven decisions and how they would like data reported related to CSPAP. Currently there is no instrument to help teachers develop a deeper understanding of CSPAP within their school context. Therefore, we have created a CSPAP Questionnaire to help teachers understand their school’s current physical activity programs and wellness policies. With the newly created instrument, it is our goal to develop a user-friendly CSPAP data report based off of the results of the CSPAP Questionnaire. We believe it is crucial to gain a deeper understanding from teachers how they want data reported so that we can make a reporting system that helps teachers make data-driven decisions.

If you grant permission and willingness to participate, we will ask you to participate in two rounds of interviews that will take place before/after school or during the most convenient time for you. During the first interview you will be asked questions about how you make data-driven decisions, how you want data reported and provide feedback on an initial CSPAP data report draft. In the second interview, you will be asked questions to provide feedback of the revised version of the CSPAP data report draft that shows your results from the questionnaire. The interviews should last between 30 and 45 minutes. Lastly you will be asked to share any type of data report that you have used in the past or are currently using. We would like to develop a deeper understanding of data reports that you have found beneficial and/or not helpful in the past.

Your name will not appear in any professional report of this research. Numeric identifiers will be assigned to each participant so that information remains confidential. Audio-recordings from the interviews and all other information collected as part of this study will be stored on a password-protected computer or in a locked filing cabinet in the Sport Pedagogy Lab at UNC. Only members of the research team will hear the recordings and they will be deleted after transcription.
We foresee **little to no risks** to participants. You will not directly benefit from participation in this study, but findings will be used to help develop a deeper understanding how teachers make data-driven decisions around school physical activity and health.

Participation in this study is **completely voluntary**. Once participation begins you may still decide to stop and withdraw at any time. Your decision will be respected and will not result in loss of benefits to which you are otherwise entitled. Having read the above and having had an opportunity to ask any questions, please sign below if you would like to participate in this research. A copy of this form is yours to keep for future reference.

If you have any concerns about being research participant, please contact Sherry May, IRB Administrator, in the Office of Research, Kepner Hall, University of Northern Colorado, Greeley, CO 80639; 970-351-1910.

__________________________  ______________________________
Full Name (please print)      Date

__________________________  ______________________________
Researcher Signature         Date
APPENDIX E

DATA REPORT EXAMPLES: STUDY THREE
Colorado Smart Source One Page Data Report

RESULTS BY DISTRICT SIZE: 2015–16

25% of all Colorado K12 schools participated in 2015–16 Smart Source

The data included below are responses from participant schools for select items from Smart Source grouped across three district size categories.

Small district = <1,201 students
Medium district = 1,201-25,000 students
Large district = >25,000 students

FOUNDATIONAL COMPONENTS OF SCHOOL HEALTH AND WELLNESS

SCHOOLS WITH WELLNESS TEAM

SCHOOLS WITH WELLNESS POLICY AND STUDENT-LEVEL HEALTH ASSESSMENTS

Local wellness policy
Healthy Kids Colorado Survey
District-created wellness assessment

SCHOOLS WITH HALF-TO FULL-TIME ACCESS TO HEALTH STAFF

COMMUNITY & STUDENT INVOLVEMENT IN HEALTH EFFORTS

SCHOOLS PARTNERING WITH ORGANIZATIONS

SCHOOLS CO-CREATING PROGRAMS AND POLICIES WITH STUDENTS
Amount of Required Physical Education: The state does not require physical education in elementary or middle school/junior high school. The state requires high school physical education for graduation, but it does not specify the grades of participation, nor the required minutes per week of physical education.

Physical Education Equipment and Facilities: The state does not annually assess the availability of appropriate equipment and adequate facilities for students to engage in required physical education instruction.

High School Graduation Requirements: The state requires students to complete 1.0 credit in physical education, 1.0 credit in health, or 0.5 credit of each for graduation. (Note: Students can graduate with 1.0 credit in health only.)

Substitutions: The state permits school districts or schools to allow students to substitute interscholastic sports or cheerleading for required physical education credit.

Exemptions/Waivers: The state permits schools or school districts to apply for a waiver from state physical education requirements. Each district has individual guidelines regarding who has the authority to grant waivers regarding physical education. There is no state authority. Students may apply for an exemption from participation in the physical education class time or required credit. Students may receive an exemption by participating in other academic courses, Advanced Placement courses, or for medical reasons.

Physical Activity: The state does not require elementary schools to provide daily recess, and it does not require a minimum weekly amount of physical activity time for elementary, middle school/junior high, or high school students. Classroom physical activity breaks are not required. The state does not prohibit the use of withholding physical activity, including recess, as punishment for disciplinary reasons, nor does it prohibit the use of physical activity as punishment for inappropriate behavior.

Local School Wellness Policy: The state requires schools or school districts to provide their local school wellness policy to the state education agency, and to post the policy online, making it available to the public. The state monitors implementation of the parts of the local school wellness policies that are required through the federal Healthy, Hunger-Free Kids Act. This monitoring is done through the Child Nutrition Program at the state Department of Education and Early Development.

State Standards: The state has adopted standards for physical education, with which all school districts are required to comply. The Alaska Physical Education Standards were last revised in March 2010.

Areas addressed in the state standards include:

National Standard 1: Competency in a variety of motor skills and movement patterns

National Standard 2: Knowledge of concepts, principles, strategies and tactics related to movement and performance

National Standard 3: Knowledge and skills to achieve and maintain a health-enhancing level of physical activity and fitness

National Standard 4: Responsible personal and social behavior that respects self and others

National Standard 5: Value of physical activity for health, enjoyment, challenge, self-expression and/or social interaction

State Curriculum: The state requires school districts and schools to use a curriculum aligned with the state standards for physical education, but does not require a specific curriculum. The governing body of a district must review each content area at least every six years by way of a systematic evaluation of the curriculum. The state has not promoted physical education curriculum tools or the use of the Physical Education Curriculum Analysis Tool (PECAT) to school districts or schools.

State Funding for Physical Education Programs: General education funding is available for the state’s physical education programs in school districts and schools. No additional funding is available for physical education programs.

Class Size: The state does not have a required student-teacher ratio for academic or physical education classes.

Grade Point Average (GPA): The state does not require[s] physical education grades to be included in a student’s GPA.
### 2015 Youth Risk Behavior Survey Results

**Delaware High School Survey**  
**Detail Tables - Weighted Data**

Q8: When you rode a bicycle during the past 12 months, how often did you wear a helmet?

<table>
<thead>
<tr>
<th>Total</th>
<th>Age</th>
<th>Grade</th>
<th>Race/Ethnicity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>15 or younger</td>
<td>16 or 17</td>
</tr>
<tr>
<td>Did not ride a bicycle</td>
<td>%</td>
<td>38.1</td>
<td>32.4</td>
</tr>
<tr>
<td>N</td>
<td>1,025</td>
<td>308</td>
<td>576</td>
</tr>
<tr>
<td>Never wore a helmet</td>
<td>%</td>
<td>44.5</td>
<td>48.2</td>
</tr>
<tr>
<td>N</td>
<td>1,252</td>
<td>461</td>
<td>669</td>
</tr>
<tr>
<td>Rarely wore a helmet</td>
<td>%</td>
<td>6.1</td>
<td>6.7</td>
</tr>
<tr>
<td>N</td>
<td>167</td>
<td>60</td>
<td>87</td>
</tr>
<tr>
<td>Sometimes wore a helmet</td>
<td>%</td>
<td>3.6</td>
<td>4.3</td>
</tr>
<tr>
<td>N</td>
<td>92</td>
<td>38</td>
<td>47</td>
</tr>
<tr>
<td>Most of the time wore a helmet</td>
<td>%</td>
<td>5.5</td>
<td>3.7</td>
</tr>
<tr>
<td>N</td>
<td>86</td>
<td>31</td>
<td>48</td>
</tr>
<tr>
<td>Always wore a helmet</td>
<td>%</td>
<td>4.3</td>
<td>4.8</td>
</tr>
<tr>
<td>N</td>
<td>119</td>
<td>44</td>
<td>62</td>
</tr>
<tr>
<td>Total</td>
<td>%</td>
<td>2.74</td>
<td>1.64</td>
</tr>
</tbody>
</table>

Note: *N* students were excluded from this analysis.  
*Non-Hispanic.*  
*N* = Number of students who selected this response option.
Overall Physical Activity

The current physical activity guidelines in the U.S.\(^2\) and globally\(^3\) call for children and youth to participate in at least 60 minutes of moderate-to-vigorous physical activity daily. The grade of D- indicates that the majority of U.S. children and youth do not meet physical activity recommendations.

The primary data source for overall physical activity levels was the 2005-06 NHANES which provides an objective assessment of physical activity by having children wear activity monitors (accelerometers) as they go about their daily lives. Although these data are a decade old, they represent the most up-to-date device-based measurement of physical activity levels at the national level. The publically available NHANES dataset was used to estimate the prevalence of children meeting current physical activity guidelines (60 min/day) on at least 5 of 7 days of the week. Overall, 21.6% of 6-19 year old U.S. children met the guidelines. More boys (26.0%) than girls (16.9%) are physically active. There is a marked decline in physical activity levels with age in childhood for both boys and girls (Figure 1).

A recently published analysis of data from 2011-2014 NHANES examined physical activity levels among children with long-term mobility limitations, defined as having an impairment or health problem that limits their ability to walk, run, or play, and lasting (or expecting to last) more than 12 months.\(^4\) The results showed that boys (but not girls) with mobility limitations had a significantly lower odds (odds ratio = 0.42) of meeting physical activity guidelines compared to boys without
FitnessGram Data Report

Your scores on all test items were in or above the Healthy Fitness Zone. Scoring in the Healthy Fitness Zone will help you look and feel better. Great job!

The PACER
Current: 72
Past: 58
VO2max is based on your aerobic test score. It shows your ability to do activities such as running, cycling, or sports at a high level. HFZ begins at 42.

VO2Max
Current: 45
Past: 42

(Abdominal) Curl-Up
Current: 52
Past: 35

(Trunk Extension) Trunk Lift
Current: 12
Past: 12

(Upper Body) Push-Up
Current: 21
Past: 20

(Flexibility) Back-Saver Sit and Reach R, L
Current: 12.00, 12.00
Past: 12.00, 11.00

Percent Body Fat
Current: 15.60
Past: 17.40

Being too lean or too heavy may be a sign of (or lead to) health problems.

To be healthy and fit it is important to do some physical activity almost every day. Aerobic exercise is good for your heart and body composition. Strength and flexibility exercises are good for your muscles and joints.

Alex XXXX
Grade: College  Age: 18
Unassigned School

Instructor: Ms. Gaston & Mr. McCarthy J&C

Date  Height  Weight
Current: 04/22/2008
Past: 02/07/2008

MESSAGES

Your aerobic capacity score is in the Healthy Fitness Zone. To maintain fitness, you should be active most days of the week. Try to do aerobic sports or other activity a total of 30 to 60 minutes each day.

Your trunk and upper-body strength are both in the Healthy Fitness Zone. To maintain your fitness, do resistance training that includes exercises for each of these areas. Trunk exercises should be done 3 to 5 days each week. Strength activities for other parts of your body should be done 2 to 3 days each week.

Your flexibility is in the Healthy Fitness Zone. Maintain your flexibility by stretching slowly 3 or 4 days each week, holding the stretch 20-30 seconds.

Your abdominal strength is very good. Maintain your strength by doing curl-ups and other resistance exercises 3 to 5 days a week. Remember to keep your knees bent. Avoid having someone hold your feet.

Alex, your body composition is in the Healthy Fitness Zone. To maintain this level, it is important to do physical activity on most days. You should also eat a healthy diet.

Healthy Fitness Zone for 18 year-old boys
The PACER = 72 - 106 laps
Curl Up = 24 - 47 repetitions
Trunk Lift = 9 - 12 inches
Push-Up = 18 - 35 repetitions
Back-Saver Sit and Reach = At least 8 inches on R & L
Percent Body Fat = 7.00 - 25.00 %
FIGURE 3. Median percentage of schools that taught a required physical education course in each grade,*
School Health Profiles, 2016

<table>
<thead>
<tr>
<th>Grades</th>
<th>States</th>
<th>Large Urban School Districts</th>
<th>Territories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 6</td>
<td>97.3</td>
<td>100.0</td>
<td>93.8</td>
</tr>
<tr>
<td>Grade 7</td>
<td>97.1</td>
<td>99.5</td>
<td>93.8</td>
</tr>
<tr>
<td>Grade 8</td>
<td>95.6</td>
<td>99.5</td>
<td>88.1</td>
</tr>
<tr>
<td>Grade 9</td>
<td>93.9</td>
<td>93.6</td>
<td>82.8</td>
</tr>
<tr>
<td>Grade 10</td>
<td>70.4</td>
<td>85.7</td>
<td>86.5</td>
</tr>
<tr>
<td>Grade 11</td>
<td>43.3</td>
<td>65.0</td>
<td>69.4</td>
</tr>
<tr>
<td>Grade 12</td>
<td>42.3</td>
<td>61.9</td>
<td>68.7</td>
</tr>
</tbody>
</table>

*Among schools with students in each grade.
APPENDIX F

PARTICIPANT RECRUITMENT E-MAIL:
STUDY TWO
Good Morning/Afternoon,

I hope you are having a great week. We are interested in learning more about policies and practices related to physical activity in schools and would like to invite you to take an online Comprehensive School Physical Activity Program Questionnaire (CSPAP-Q).

Background:
- Currently, there is no survey to help teachers understand CSPAP policies and practices
- We need your help to make sure this new survey is valid and reliable
- You can also learn something new about your school

If you grant permission and willingness to participate, we will ask you to:
- Complete the CSPAP-Q twice
  - First time before or on May 4th
  - Second time before or on May 18th
- Provide feedback on the content and clarity of questions

For completing the survey at both time points, you will be entered to win one of ten $25 gift cards.

Once receiving this email, the survey can be immediately accessed by clicking on this link:

https://unco.co1.qualtrics.com/jfe/form/SV_9pDfcy8hvbVoGyh

If you have any questions, please e-mail the survey coordinator, Peter Stoepker, at Peter.Stoepker@unco.edu.

Have a wonderful day.

Insert name here
APPENDIX G

COMPLETE STATISTICS FOR COMPREHENSIVE SCHOOL PHYSICAL ACTIVITY PROGRAM-QUESTIONNAIRE
Table A.1

*Test-Retest Reliability Among Wellness Policy Status Items*

<table>
<thead>
<tr>
<th>Item</th>
<th>% agreement</th>
<th>$p$-value for $\chi^2$</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your school have a wellness policy that addresses physical activity?</td>
<td>78.1</td>
<td>&lt; .002</td>
<td>.55</td>
</tr>
<tr>
<td>Does your district have a wellness policy that addresses physical activity?</td>
<td>79.4</td>
<td>.20</td>
<td>.24</td>
</tr>
<tr>
<td>Does your school have a committee that oversees school health policies and programs?</td>
<td>72.4</td>
<td>.013</td>
<td>.45</td>
</tr>
<tr>
<td>Does your district have a committee that oversees school health policies and programs?</td>
<td>83.9</td>
<td>&lt; .001</td>
<td>.84</td>
</tr>
<tr>
<td>Does your school have wellness coordinator/leader?</td>
<td>81.1</td>
<td>&lt; .001</td>
<td>.55</td>
</tr>
<tr>
<td>Does your district have a wellness coordinator/leader?</td>
<td>94.3</td>
<td>&lt; .002</td>
<td>.72</td>
</tr>
</tbody>
</table>
Table A.2

*Test-Retest Reliability Among Time for Physical Education Items*

<table>
<thead>
<tr>
<th>Item</th>
<th>% agreement</th>
<th>p-value for $\chi^2$</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your school have a written policy that requires a specific number of minutes per week or a specific number of days per week that students will have physical education?</td>
<td>82.1</td>
<td>&lt; .003</td>
<td>.60</td>
</tr>
<tr>
<td>Does your district have a written policy that requires a specific number of minutes per week or a specific number of days per week that students will have physical education?</td>
<td>77.8</td>
<td>.013</td>
<td>.52</td>
</tr>
<tr>
<td>Must students attending your school take any physical education as a requirement for graduation or promotion to the next grade level or school level?</td>
<td>78.8</td>
<td>.010</td>
<td>.48</td>
</tr>
</tbody>
</table>

Table A.3

*Test-Retest Reliability Among Grading in Physical Education Program Evaluation Items*

<table>
<thead>
<tr>
<th>Item</th>
<th>% agreement</th>
<th>p-value for $\chi^2$</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the student grading policy for physical education the same as it is for other subject areas?</td>
<td>72.7</td>
<td>.170</td>
<td>.28</td>
</tr>
<tr>
<td>What standards are taken into consideration when determining physical education grades?</td>
<td>92.9</td>
<td>&lt; .001</td>
<td>.75</td>
</tr>
<tr>
<td>Excluding teacher evaluations, does your school have a written policy that requires that physical education program to be evaluated annually?</td>
<td>86.2</td>
<td>.20</td>
<td>.52</td>
</tr>
</tbody>
</table>
### Table A.4.

*Test-Retest Reliability Among Physical Education Teacher Training Items*

<table>
<thead>
<tr>
<th>Item</th>
<th>% agreement</th>
<th>$p$-value for $\chi^2$</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are all physical education classes taught by a certified physical education specialist?</td>
<td>97.4</td>
<td>No statistics calculated due to consistency</td>
<td>No statistics calculated due to consistency</td>
</tr>
<tr>
<td>Are teachers of physical education required to participate at least once a year in professional development in physical education?</td>
<td>91.4</td>
<td>&lt; .001</td>
<td>.78</td>
</tr>
<tr>
<td>Does your school provide financial support for physical education related professional development?</td>
<td>84.8</td>
<td>&lt; .001</td>
<td>.69</td>
</tr>
<tr>
<td>Does your district provide financial support for physical education related professional development?</td>
<td>89.3%</td>
<td>&lt; .001</td>
<td>.74</td>
</tr>
</tbody>
</table>

### Table A.5

*Test-Retest Reliability Among Standards-Based Curriculum Items*

<table>
<thead>
<tr>
<th>Item</th>
<th>% agreement</th>
<th>$p$-value for $\chi^2$</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your school follow physical education standards at the national level?</td>
<td>97</td>
<td>&lt; .001</td>
<td>.87</td>
</tr>
<tr>
<td>Does your school follow physical education standards at the state level?</td>
<td>94.7</td>
<td>&lt; .009</td>
<td>.64</td>
</tr>
<tr>
<td>Does your school follow physical education standards at the district level?</td>
<td>86.7</td>
<td>&lt; .003</td>
<td>.62</td>
</tr>
</tbody>
</table>
Table A.6

Test-Retest Reliability Among Access to Proper Facilities and Equipment Items

<table>
<thead>
<tr>
<th>Item</th>
<th>% agreement</th>
<th>$p$-value for $\chi^2$</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your school have a budget allocation for physical education equipment and supplies?</td>
<td>91</td>
<td>.031</td>
<td>.52</td>
</tr>
</tbody>
</table>

Table A.7

Test-Retest Reliability Among Student-to-Teacher Ratio Items

<table>
<thead>
<tr>
<th>Item</th>
<th>% agreement</th>
<th>$p$-value for $\chi^2$</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your school have a written policy that specifies the maximum student-to-teacher ratio for physical education?</td>
<td>100</td>
<td>No statistics computed due to both time points are constants</td>
<td>No statistics computed due to both time points are constants</td>
</tr>
<tr>
<td>Does your district have a written policy that specifies the maximum student-to-teacher ratio for physical education?</td>
<td>100</td>
<td>No statistics computed due to both time points are constant</td>
<td>No statistics computed due to both time points are constant</td>
</tr>
</tbody>
</table>
Table A.8

*Test-Retest Reliability Among Exemptions, Waivers, and Withholding of Physical Education Items*

<table>
<thead>
<tr>
<th>Item</th>
<th>% agreement</th>
<th>( p )-value for ( \chi^2 )</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your school permit students to be exempt from physical education for one grade period or longer?</td>
<td>92.6</td>
<td>&lt; .001</td>
<td>.84</td>
</tr>
<tr>
<td>Does your school have a written policy or guideline that prohibits classroom teachers from withholding physical education class as a punishment?</td>
<td>88</td>
<td>.160</td>
<td>.35</td>
</tr>
<tr>
<td>Does your district have a written policy or guideline that prohibits classroom teachers from withholding physical education class as a punishment?</td>
<td>85</td>
<td>.018</td>
<td>.58</td>
</tr>
</tbody>
</table>

Table A.9

*Test-Retest Reliability Among Adapted Physical Education Items*

<table>
<thead>
<tr>
<th>Item</th>
<th>% agreement</th>
<th>( p )-value for ( \chi^2 )</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full inclusion of all students in physical education?</td>
<td>94.6</td>
<td>.081</td>
<td>.47</td>
</tr>
<tr>
<td>Use a second teacher, aide, physical therapist, or occupational therapist to assist students, as needed?</td>
<td>89.2</td>
<td>&lt; .002</td>
<td>.60</td>
</tr>
</tbody>
</table>
### Comprehensive School Physical Activity Program

#### Component Physical Activity During School Items

**Table A.10**

*Test-Retest Reliability Among Time for Recess Items*

<table>
<thead>
<tr>
<th>Item</th>
<th>% agreement</th>
<th>p-value for $\chi^2$</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your school have a written policy that specifies the number of recess minutes per day students should receive?</td>
<td>81.5</td>
<td>.056</td>
<td>.43</td>
</tr>
</tbody>
</table>

**Table A.11**

*Test-Retest Reliability Among Recess Supervisor Training and Responsibility Items*

<table>
<thead>
<tr>
<th>Item</th>
<th>% agreement</th>
<th>p-value for $\chi^2$</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do recess supervisors regularly provide organized activities during recess?</td>
<td>90.6</td>
<td>.020</td>
<td>.52</td>
</tr>
<tr>
<td>Does your school sponsor training for recess monitors at least once a year?</td>
<td>80.6</td>
<td>.173</td>
<td>.28</td>
</tr>
<tr>
<td>Are recess supervisors asked to encourage students to be physically active during recess</td>
<td>88</td>
<td>&lt; .001</td>
<td>.76</td>
</tr>
</tbody>
</table>
Table A.12

*Test-Retest Reliability Among Playground Safety/Recess Weather Issues Items*

<table>
<thead>
<tr>
<th>Item</th>
<th>% agreement</th>
<th>p-value for $\chi^2$</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your school have a written policy that specifies a maximum</td>
<td>100</td>
<td>No statistics are</td>
<td>No</td>
</tr>
<tr>
<td>student-to-teacher ratio during recess?</td>
<td></td>
<td>computed due to both</td>
<td>statistics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>time points are</td>
<td>computed due to both</td>
</tr>
<tr>
<td></td>
<td></td>
<td>constants</td>
<td>time points are</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>constants</td>
</tr>
<tr>
<td>Does your district have a written policy that specifies a maximum</td>
<td>100</td>
<td>No statistics are</td>
<td>No</td>
</tr>
<tr>
<td>student-to-teacher ratio during recess?</td>
<td></td>
<td>computed due to both</td>
<td>statistics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>time points are</td>
<td>computed due to both</td>
</tr>
<tr>
<td></td>
<td></td>
<td>constants</td>
<td>time points are</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>constants</td>
</tr>
<tr>
<td>Are rules for how to behave at recess posted for students and</td>
<td>90</td>
<td>&lt; .001</td>
<td>.75</td>
</tr>
<tr>
<td>adults to see?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>During inclement weather, can students be physically active during</td>
<td>87.5</td>
<td>&lt; .001</td>
<td>.74</td>
</tr>
<tr>
<td>recess?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table A.13

*Test-Retest Reliability Among Withholding Recess Items*

<table>
<thead>
<tr>
<th>Item</th>
<th>% agreement</th>
<th>p-value for $\chi^2$</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are teachers permitted to withhold scheduled recess from students for academic or disciplinary reasons?</td>
<td>85.2</td>
<td>.079</td>
<td>.41</td>
</tr>
</tbody>
</table>
Table A.14  
*Test-Retest Reliability Among Equipment and Facilities for Recess Items*

<table>
<thead>
<tr>
<th>Item</th>
<th>% agreement</th>
<th>p-value for $\chi^2$</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is a variety of loose equipment available for children to play with during recess?</td>
<td>90.9</td>
<td>.007</td>
<td>.61</td>
</tr>
<tr>
<td>Is there a separate annual equipment budget for recess equipment and supplies?</td>
<td>92%</td>
<td>&lt; .002</td>
<td>.68</td>
</tr>
</tbody>
</table>

**Comprehensive School Physical Activity Program**  
**Component: Physical Activity Before/After School**

Table A.15  
*Test-Retest Reliability Among Intramurals and Physical Activity Clubs/Interscholastic Sports Items*

<table>
<thead>
<tr>
<th>Item</th>
<th>% agreement</th>
<th>p-value for $\chi^2$</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are any school sponsored PA clubs and/or intramural sports offered to students in your school before or after the school day?</td>
<td>76.3</td>
<td>.047</td>
<td>.33</td>
</tr>
<tr>
<td>Do those who supervise, lead, or coach PA clubs or intramural sports programs receive any training from your school or district?</td>
<td>65.2</td>
<td>.363</td>
<td>.24</td>
</tr>
<tr>
<td>Does your school have an interscholastic sports program?</td>
<td>96.7</td>
<td>&lt; .001</td>
<td>.93</td>
</tr>
</tbody>
</table>
Table A.16

*Test-Retest Reliability Among Active Transportation Items*

<table>
<thead>
<tr>
<th>Item</th>
<th>% agreement</th>
<th>p-value for $\chi^2$</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Designation of safe or preferred routes to school?</td>
<td>68.8</td>
<td>.079</td>
<td>.37</td>
</tr>
<tr>
<td>Promotional activities such as participation in International Walk to School Week, National Walk and Bike to School Week?</td>
<td>88.6</td>
<td>&lt; .001</td>
<td>.76</td>
</tr>
<tr>
<td>Instruction on walking/bicycling safety provided to students?</td>
<td>68.6</td>
<td>.041</td>
<td>.36</td>
</tr>
<tr>
<td>Promotion of safe routes programs to students, staff and parents via newsletters, websites, and local newspapers?</td>
<td>75.8</td>
<td>.016</td>
<td>.45</td>
</tr>
<tr>
<td>Crossing guards?</td>
<td>89.2</td>
<td>&lt; .001</td>
<td>.78</td>
</tr>
<tr>
<td>Crosswalks on streets leading to schools?</td>
<td>80</td>
<td>.033</td>
<td>.40</td>
</tr>
<tr>
<td>Walking school buses?</td>
<td>93.5</td>
<td>&lt; .001</td>
<td>.76</td>
</tr>
<tr>
<td>Creation and distribution of maps of school environment?</td>
<td>85.7</td>
<td>.073</td>
<td>.42</td>
</tr>
</tbody>
</table>
Table A.17

*Test-Retest Reliability Among Community Organized Enrichment Items*

<table>
<thead>
<tr>
<th>Item</th>
<th>% agreement</th>
<th>$p$-value for $\chi^2$</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are there community organized enrichment programs available on school grounds outside of the normal school day?</td>
<td>86.5</td>
<td>&lt; .001</td>
<td>.72</td>
</tr>
<tr>
<td>Do these programs designate time in each session for physical activity?</td>
<td>75</td>
<td>.028</td>
<td>.51</td>
</tr>
<tr>
<td>Do the individuals employed by these programs receive professional development/training on facilitating physical activity?</td>
<td>72.7</td>
<td>.182</td>
<td>.50</td>
</tr>
</tbody>
</table>
Comprehensive School Physical Activity Program
Component: Staff Involvement

Table A.18
Test-Retest Reliability Among Resources and Incentives for Staff Physical Activity Promotion

<table>
<thead>
<tr>
<th>Item</th>
<th>% agreement</th>
<th>p-value for $\chi^2$</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your school have a written policy that requires all school personnel to receive professional development on the promotion of physical activity?</td>
<td>96.8%</td>
<td>No statistics computed due to constant time point 2</td>
<td>No statistics computed due to constant time point 2</td>
</tr>
<tr>
<td>Does your district have a written policy that requires all school personnel to receive professional development on the promotion of physical activity?</td>
<td>92.6%</td>
<td>No statistics computed due to constant time point 2</td>
<td>No statistics computed due to constant time point 2</td>
</tr>
<tr>
<td>Does your school provide any employee physical activity classes/programs?</td>
<td>85.7%</td>
<td>&lt; .001</td>
<td>.70</td>
</tr>
<tr>
<td>Does your district provide any employee physical activity classes/programs?</td>
<td>80</td>
<td>&lt; .002</td>
<td>.55</td>
</tr>
<tr>
<td>Does your school provide employees with any subsidies or discounts for off-site physical activity programs?</td>
<td>83.3</td>
<td>.016</td>
<td>.51</td>
</tr>
<tr>
<td>Does your district provide employees with any subsidies or discounts for off-site physical activity programs?</td>
<td>89.7</td>
<td>&lt; .001</td>
<td>.77</td>
</tr>
<tr>
<td>Are staff paid to supervise, lead or coach physical activity clubs or intramural sports programs?</td>
<td>78.8</td>
<td>0.17</td>
<td>.45</td>
</tr>
<tr>
<td>Has your school conducted any special events in which staff engage in physical activity with students during this and last school year?</td>
<td>77.8</td>
<td>&lt; .002</td>
<td>.53</td>
</tr>
<tr>
<td>Does your school or district provide incentives to employees to be physically active on school grounds?</td>
<td>73.5</td>
<td>.306</td>
<td>.23</td>
</tr>
</tbody>
</table>
Table A.19

*Test-Retest Reliability Among Advocacy and Effective Communication Items*

<table>
<thead>
<tr>
<th>Item</th>
<th>% agreement</th>
<th>( p )-value for ( \chi^2 )</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have parents/guardians been surveyed about their thoughts on the school physical education and physical activity program during this school year?</td>
<td>89.9</td>
<td>.045</td>
<td>.51</td>
</tr>
<tr>
<td>Have students been surveyed about their thoughts on the school physical education and physical activity program during this school year?</td>
<td>74.2</td>
<td>.038</td>
<td>.41</td>
</tr>
<tr>
<td>Does your school recruit volunteers to help in physical education, recess, or before and after-school physical activity programs?</td>
<td>72.4</td>
<td>.143</td>
<td>.32</td>
</tr>
<tr>
<td>Has a school wellness committee/team addressed physical education and physical activity?</td>
<td>81.8</td>
<td>&lt; .001</td>
<td>.56</td>
</tr>
<tr>
<td>Has goals related to physical education and physical activity in the school improvement plan?</td>
<td>70</td>
<td>.345</td>
<td>.20</td>
</tr>
<tr>
<td>Includes information about physical education and physical activity in the school’s communications</td>
<td>77.4</td>
<td>.007</td>
<td>.51</td>
</tr>
<tr>
<td>Includes physical education and physical activity in school-based community events?</td>
<td>83.9</td>
<td>&lt; .001</td>
<td>.67</td>
</tr>
</tbody>
</table>
### Table A.20

**Test-Retest Reliability Among Community Use of Facilities Items**

<table>
<thead>
<tr>
<th>Item</th>
<th>% agreement</th>
<th>( p )-value for ( \chi^2 )</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are indoor physical activity facilities open to students, their families, and the community outside school hours?</td>
<td>73</td>
<td>.008</td>
<td>.45</td>
</tr>
<tr>
<td>Are outdoor physical activity facilities open to students, their families, and the community outside school hours?</td>
<td>91.2</td>
<td>.018</td>
<td>.53</td>
</tr>
<tr>
<td>Which organizations does your school communicate and collaborate to enhance school and/or community physical activity opportunities?</td>
<td>84.6</td>
<td>&lt; .001</td>
<td>.69</td>
</tr>
</tbody>
</table>

### Table A.21

**Test-Retest Reliability Among Personnel/Team Item**

<table>
<thead>
<tr>
<th>Item</th>
<th>% agreement</th>
<th>( p )-value for ( \chi^2 )</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your school wellness committee/team have a leader with physical activity expertise?</td>
<td>92.9</td>
<td>&lt; .001</td>
<td>.81</td>
</tr>
</tbody>
</table>
APPENDIX H

PARTICIPANT RECRUITMENT E-MAIL:
STUDY THREE
Dear ________,

I hope you are having a wonderful day/week. My name is Peter Stoepker and I am currently a Doctoral student at the University of Northern Colorado working on my dissertation. I am very interested in how a current champion for school physical activity and health (like yourself) make decisions about physical activity and health data at your school. Also, I am very interested in how you process and form knowledge about physical activity and health data. Lastly, I recently created an instrument that assess comprehensive school physical activity (CSPAP) and would really like to hear feedback on how data should be reported from the instrument.

If you grant permission and willingness to participate, I will ask you to participate in two rounds of interviews that takes place before/after school or during the most convenient time for you. During the first interview you will be asked questions about how you make data-driven decisions, how you want data reported and provide feedback on an initial CSPAP data report draft. In the second interview, about 2-4 weeks later, you will be asked questions to provide feedback on another version of a CSPAP data report draft that reports your results. The interviews should last between 20 and 30 minutes.

It would be truly outstanding if you were willing to participate. Getting feedback from school physical activity champions is extremely important to me because the CSPAP data report is geared towards champions like yourself. Providing input would ensure that the tool I created is applicable and relevant towards supporting school physical activity and health champions.

Attached you will see a consent form to participate. If you are willing to participate please electronically sign the consent form and return it to me at Peter.Stoepker@unco.edu by _______. Once signed, you will be contacted by _____ to inform you about next steps. If you have any questions, please do not hesitate to call me at 999-999-9999. Have wonderful Day!
APPENDIX I

ROUND I: INTERVIEW GUIDE: STUDY THREE
Round I Interview Guide

Date: ________________ Time: ______________

Equipment Needs: Digital recorder, batteries.

Set-up:
- Digital recorder – check batteries

Introduction:
- Thank you for participating in this interview today. Today I want to talk to you a little bit about physical activity and data in your school. You will be provided with a draft of a CSPAP data report, I am really interested in getting your thoughts about the report to ensure that the report is applicable and relevant to you. Please answer the questions as honestly as possible and do not just say what you think I want to hear. If, at any time, you want to pass on a question, or have me turn off the recorders, just ask. The interview should take between 20-30 minutes. Thank you, again, for your participation.

<table>
<thead>
<tr>
<th>Introduction Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before we get started, let’s talk a little bit about you...</td>
</tr>
<tr>
<td>1. How long have you been teaching PE?</td>
</tr>
<tr>
<td>2. Why did you become a PE teacher?</td>
</tr>
<tr>
<td>3. Tell me about your current position?</td>
</tr>
<tr>
<td>4. Have you had other positions?</td>
</tr>
<tr>
<td>5. What is the typical size of your classroom?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Phase 1: Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>RQ 1. What types of PA data is currently being collected?</td>
</tr>
<tr>
<td>1. How do you currently find out about the PA levels and health of your students?</td>
</tr>
<tr>
<td>2. Are there specific assessments or types of data that you collect?</td>
</tr>
<tr>
<td>a. What do you do with that data after you collect it?</td>
</tr>
<tr>
<td>3. Tell me about your experiences with PA/Health data reports (E.g., FitnessGram report) (Collecting)</td>
</tr>
<tr>
<td>4. Tell me about any professional development experiences you’ve had around PA data</td>
</tr>
<tr>
<td>If they don’t collect PA/Health Data</td>
</tr>
<tr>
<td>5. In, the past have you ever used any type of data collecting programs (e.g., FitnessGram, Smartsource, etc.), if so please elaborate</td>
</tr>
<tr>
<td>6. What are some barriers (if any) in collecting data?</td>
</tr>
<tr>
<td>7. What types of assessment do you use?</td>
</tr>
<tr>
<td>8. Describe the process in how you report back to students their assessment results</td>
</tr>
</tbody>
</table>
### Introduce generic draft of CSPAP-Q report

9. Describe how you think the CSPAP needs assessment report could be beneficial? If not beneficial explain why? (Organizing)

10. Describe your initial reaction when seeing the draft of the CSPAP needs assessment report

11. When looking at the report what changes (if any) would you make?

12. How would you go about making decisions based off this CSPAP data report? (Decision Making)

13. Any additional feedback about the CSPAP report?

### Phase 1 & 2: Data, Information

**RQ 1.** What types of PA data is currently being collected?

14. What types of PA data do you/your school collect? (Collecting)
15. Describe the process in which you/your school goes about deciding on the types of PA data to collect (Collect, Organize, Summarize, Analyze…Decision making)

**RQ 2.**

*Once collected, how is PA data understood and interpreted?* (Information)

(Analyzing, Synthesizing, Decision-Making)

15. How do you organize PA data? (Organize)
16. Describe the ways in which you put data into action (Analyze-Decision Making)
17. What types of software/data reporting systems do you use to help you analyze the data?
18. Describe some of the biggest challenges you face (if any) from collecting data then analyzing it
19. How do you help others understand the PE/PA data that you collect?
20. Is there anything else about your data process (how you collect, organize etc.) that I should know?
APPENDIX J

ROUND II: INTERVIEW GUIDE: STUDY THREE
Round II Interview Guide

Date: __________________ Time: ______________

**Equipment Needs:** Digital recorder, batteries.

**Set-up:**
- Digital recorder – check batteries

**Introduction:**
- Thank you for participating in this interview today. The goal is to continue our discussion around making decisions about PA/health data. Also, thanks again for provided outstanding feedback on my CSPAP data report draft. I have made revisions based off of feedback and I am looking for any more comments that you might have about this draft that has your specific results. As mentioned before, please answer the questions as honestly as possible and do not just say what you think I want to hear. If, at any time, you want to pass on a question, or have me turn off the recorders, just ask. The interview should last between 20-30 minutes. Thank you, again, for your participation.

<table>
<thead>
<tr>
<th><strong>Phase 3: Knowledge</strong></th>
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</thead>
</table>

**RQ 3.** What contextual factors impact DDDM?

1. How is PA/Health data shared within your school? (Synthesizing, Decision Making)
2. How is PA/Health data valued within your school? (Decision Making)
3. How do you use PA data? (Decision Making)
4. Is there a support system in place to help you with data, if so please elaborate?
5. How does your school prioritize data and how is it shared within your school/community?
**Phase 3: Knowledge**

**RQ 4.** How would teachers like data reported to help drive their decisions?

**Initial Questions:**
1. You have had a week to look over your results:
2. Please discuss your general impressions of the results
3. When you reviewed your results could you describe how you processed the data
4. What immediately stood out to you when you reviewed your results?
5. If you were going to start an initiative what would be the first thing you would address?

**Intermediate Questions:** (Focusing on refining the data report)
6. What if anything, did you like about the data report draft?
7. What aspects if any would you change?
8. Was the data report user friendly? If so, please describe how it was
9. Was there anything missing from the data report draft that you think needs to be added? If so, please describe
10. Describe how you could utilize this data report

**Questions about turning data into action:**
11. Based on a data report like this, how do you think it could help drive your decision making?
12. How could you turn this data reported into an actionable plan?
13. What effective strategies (if any) do you use when interpreting data reports to guide your decision making?

**Ending questions:**
14. Is there anything else that you would like to add to the draft report?
15. After reviewing the draft, what other feedback do you have?
16. Do you think that having this data report will be beneficial for you and your school district? Elaborate why or why not
APPENDIX K

ARTIFACT AND DOCUMENT SUMMARY FORM:
STUDY THREE
Artifact and Document Summary Form

Documentation FORM

Site:  
Document #:  
Date received:  

Name or description

Event or contact, if any, with which document/artifact is associated

Significance or importance of document/artifact

Brief summary of contents

If document is central or crucial to a particular contact
APPENDIX L

COMPREHENSIVE SCHOOL PHYSICAL ACTIVITY PROGRAM-QUESTIONNAIRE DATA REPORT DRAFT: STUDY THREE
For more information please contact:
Peter Stoepker
University of Northern Colorado
Peter.Stoepker@unco.edu
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UNC Active Schools Lab

Mission Statement
• To cultivate a professional learning community surrounding the education, research, and support for schoolwide physical activity promotion and programming.

Primary Aim and Services
• Improve health of Colorado services through physical activity promotion, support, research and evaluation

Support school stakeholders by providing:
• Opportunities for physical activity focused continuing education
• Evaluation of local professional development opportunities
• School-specific physical activity data and data literacy coaching

UNC Active Schools Lab are leaders in the fields of:
• Physical Education
• Physical Activity Leadership
• Coaching Education
• Educational Technology
• Social Psychology of Sport

For more information visit:
www.uncactiveschools.com
CSPAP-Q Research Committee

Committee Members

Russell Carson, PhD  
UNC Active Schools Lab  
University of Northern Colorado

Peter Stoepker, M.A.  
UNC Active Schools Lab  
University of Northern Colorado

Brian Dauenhauer, PhD  
UNC Active Schools Lab  
University of Northern Colorado

Thomas Morgan, PhD  
Department of Educational Leadership  
University of Northern Colorado

Jaimie McMullen, PhD  
UNC Active Schools Lab  
University of Northern Colorado

Justin B. Moore, PhD  
Family & Community Medicine  
Wake Forest University School of Medicine
Objective of CSPAP-Q

The CSPAP-Q is an assessment to help schools identify strengths and weaknesses in comprehensive school physical activity program policies and practices. The primary goal of the CSPAP-Q is to inform physical activity champions of the current state of student physical activity offerings and how they align with current national recommendations.

Results from the CSPAP-Q will allow physical activity champions to identify new initiatives, programs, and policies to support CSPAP within their school and district.
Methodology

CSPAP-Q Development

**Identification of current health and PA instruments**
- Research team identified eight instruments that assess health and PA policies and practices in schools
- A comprehensive review of items within each instrument was completed to decide which items should be included

**Item Selection Process**
- Items included within the first CSPAP-Q draft were based on number of instruments that addressed a CSPAP topic, or if an item captured a unique aspect of CSPAP not measured by other instruments

**Validity Round I (Following Delphi Method procedures)**
- Identified CSPAP experts were asked open-ended questions to gather initial feedback of the content of the survey

**Validity Round II**
- Experts rated each question on a 5-point Likert scale
- Provided with another opportunity to provide feedback

**Practitioner Validity**
- Physical Education teachers were asked open ended question to ensure the content was appropriate

**Test Retest Reliability**
- To ensure items were reliable physical education teachers completed the CSPAP-Q twice over a 14 day period
What is CSPAP?

CSPAP Goals
- Multi-component approach that aims to provide opportunities for students to meet the nationally recommended 60-minutes of moderate-to-vigorous physical activity per day
- Students to be well-equipped to be active for life

Components
- Quality Physical Education (cornerstone of CSPAP)
- PA during school
- PA before/after school
- Staff Involvement
- Family & Community Engagement

CSPAP model has been recognized as the national framework for physical education and physical activity for youth (CDC, 2015).
Report Interpretation

• Results below are divided into six sections (wellness policy status, followed by each CSPAP component)

• For PE and PA during school day results a pie chart displays a percent indicating how much of your program aligns with national standards & recommendations

• Each result section has a two tables
  • Areas of strength table
    • Highlights the specific strengths of your school/district schoolwide PE/PA programs
  • Development opportunities table
    • Displays areas in which your school/district can consider addressing to improve schoolwide PE/PA programs
## Wellness Policy Status

<table>
<thead>
<tr>
<th>Wellness Policy Items</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>School wellness policy that addresses PA</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>District wellness policy that addresses PA</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>School have a committee that oversees health policies &amp; programs</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>District have a committee that oversees health policies &amp; programs</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>School has a wellness coordinator/leader</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>District has a wellness coordinator/leader</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

### Areas of Strength

<table>
<thead>
<tr>
<th>Areas of Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>School &amp; District policy that addresses PA</td>
</tr>
<tr>
<td>School &amp; District have a wellness coordinator/leader</td>
</tr>
<tr>
<td>School &amp; District have a committee that oversees health policies &amp; programs</td>
</tr>
<tr>
<td>School &amp; District have a wellness coordinator/leader</td>
</tr>
</tbody>
</table>
Physical Education Results

PE Program Meeting National Standards/Recommendations

- 50% Meets PE Standards/Recommendations
- 50% Does Not Meet PE Standards/Recommendations

Areas of Strength
- PE is required for graduation
- PE is taught by a certified specialist
- PE program fully includes all students
- Grading policy is the same as it is for other subject areas
- PE grades are based off of standards
- Exemptions are not permitted

Development Opportunities
- Developing a School & District days/mins PE per week policy
- PE program is not evaluated on an annual basis
- Support for professional development
- Policy in place for student-to-teacher ratio
- PE can be withheld for punishment
- Budget for PE
Physical Activity During School Results

PA During School Meeting National Standards/Recommendations
- 30% Meets PA Standards/Recommendations
- 70% Does Not Meet PA Standards/Recommendations

Areas of Strength
- Loose equipment available during recess
- Recess is Supervised
- Recess equipment is provided
- Most teachers integrate PA into their classrooms

Development Opportunities
- Teachers are allowed to withhold recess as punishment
- School & District do not provide classroom teacher support for PA in the classroom
- School & District Recess minutes policy
- Recess supervisors are not trained, and do not provide organized activities
- School & District policy addressing student-to-supervisor ratio during recess
- Loose equipment is not available during recess
- Budget for Recess equipment
- Posting of Recess Rules for adults and students to see
- Activity for students to be active during inclement weather

After 20 minutes of sitting quietly
After 20 minutes of walking

Images courtesy of Dr. Chuck Williams, University of North Carolina
Before/After School Physical Activity Results

<table>
<thead>
<tr>
<th>Program Type</th>
<th>School Offers</th>
<th>School Does Not Offer</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA Club/Intramural Sports</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Training for leaders of PA Clubs/Intramural Sports</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Fee for PA Clubs/Intramurals</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Walking/Biking to School Program</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Community Organized PA Programs</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Development Opportunities

- Offering PA Clubs/Intramural Sports
- Training for leaders of PA Club/Intramural Sports
- Walking/Biking to school program
- Providing instruction on walking/bicycling safety to students
- Promotes safe routes program to students, parents, & staff via newsletters, websites, & local newspaper
- Walking school bus stops
- Collaborating with community organizations to provide PA programs
### Staff Involvement Results

<table>
<thead>
<tr>
<th>Staff Involvement Items</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>School &amp; District Promotion of PA Professional Development Policy</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>School provides employee PA classes</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>District provides employee PA classes</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>School provides discounts to off-site PA classes</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Districts provides discounts to off-site PA classes</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Staff members paid to lead PA clubs or intramurals</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Staff and Student PA special event</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Staff incentives to be physically active</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>&gt;24% of staff participate in school offered PA programs/classes</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

### Areas of Strength
- School & District providing PA classes for employees

### Development Opportunities
- School & District do not have a policy in place that school staff receives professional development on PA promotion
- School & District do not provide discounts to off-site PA classes
- Incentives for staff to be physically active
- Compensation for staff to lead PA Clubs/Intramurals
- Participation in staff PA offerings
## Family & Community Engagement Results

<table>
<thead>
<tr>
<th>Family &amp; Community Engagement Items</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents &amp; Guardians surveyed on school PE &amp; PA programs during this school year</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Students surveyed on school PE &amp; PA programs during this school year</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>School recruit volunteers to help with PA or PA Programs</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>School Wellness team that address PE and PA</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>School wide PE and PA goals are created</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Outreach efforts to inform community/families on PE and PA offerings</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Indoor school facilities are open for use outside of school hours</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Outdoor school facilities are open for use outside of school hours</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>School collaborates with numerous outside agencies to promote PA</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

### Areas of Strength

- School wellness team has created school wide health goals
- Outreach efforts to engage the community on PE & PA offerings
- Outdoor school facilities are open for use outside of school hours
- School wellness team that addresses PE & PA

### Development Opportunities

- Gathering feedback from families and students on PE and PA programs
- Recruitment of volunteers to help with PE and PA programs
- Indoor school facilities are not open for use outside of school hours
- Collaborating with outside agencies to promote PA
Next Steps

• Meet with your school PA/Health team and discuss results
  • *If you do not have a team, first step would be to assemble/advocate for one!

• With your school PA/Health team
  • Create a data organization system (based on CSPAP results)
  • Summarize data to give specific meaning
  • Condense the data and prepare it in a way that makes the most sense
  • Turn data into an actionable plan
    • Understand what is feasible
    • Know school capacity
    • Create actionable steps to achieve desired outcome

• Evaluate success
Physical Education Resources

Quality Physical Education
- SHAPE America
- Support Real Teachers
- PE Central
- Online Physical Education Network (OPEN)

Funding Resources for Physical Education and Physical Activity
- Kids in the Game Go! Grants
- Spark Grant Finder (database)
- SHAPE America Grants (database)
- Achieve Grant Finder (database)
- Action for Healthy Kids
- Coordinated Approach to Child Health (database)
- Peaceful Playgrounds (database)
- Fuel Up to Play 60

Physical Education Advocacy
- SHAPE America Advocacy Toolkit
- Example Presentation for Superintendent/ District Google Slide Presentation on Physical Education
- Webinar: How to Present to you School Board
Physical Activity During School Resources

Recess
- SHAPE America Recess Tool Kit
- Action for Healthy Kids: Active Recess
- Active Living Research: Increasing PA through Recess

Classroom Movement Integration
- Red Hawk Movement Teacher Tool Kit
- Beaverton School District Brain Boost
- CEI Teacher Tool Kit for PA Breaks in the Secondary Classroom
- The Walking Classroom
- Take 10!
Physical Activity Before & After School Resources

Guidance Documents

• NAA Afterschool Healthy Eating and Physical Activity Guidelines
• Afterschool Alliance: Kids on the Move

Before & After School Programs

• Build Our Kids Success (BOKS)
• SPARK After School
• CATCH Kids Club

Active Transportation

• Safe Routes to School
• Walking School Bus
Staff Involvement Resources

Resources to Present to Staff

- [Google Slide Presentation for Classroom Teachers](#)
- [Interactive PDF: Physical Activity Resources for classroom teachers](#)
- Staff involvement to support physical activity
- School employee wellness