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PEDAGOGY

CSPAP Implementation During Student Teaching: Lessons Learned From the Field

*Christopher Barton Merica, Cate A. Egan,
Karie Lee Orendorff, Hayley B. McKown*

Abstract

In the United States, less than half of adolescents meet national recommendations for daily physical activity (PA). Schools are an integral intervention point for achievement of national PA youth guidelines. To help schools achieve PA guidelines, multicomponent Comprehensive School Physical Activity Programs (CSPAP) were developed. Each CSPAP component works synergistically to help students achieve 60 min of PA per school day. Physical educators are expected to implement CSPAP components in their schools, but little is known about the preservice physical education teacher (PPET) perception of CSPAP training experiences in teacher education. The purpose of this research study was to understand PPET perceptions of implementing a component of CSPAP at the elementary and secondary level during a student teaching course. Undergraduate ($n = 5$) and graduate ($n = 4$) physical education majors enrolled in a semester of student teaching were recruited. Data collection encompassed individual semistructured interviews at three distinct phases ($N = 25$): (a) pre–student teaching, (b) between student teaching school placements, and (c) post–student teaching. Data coding first revealed codes, then categories, and eventually four themes emerged,

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each with its own subthemes: (a) preparedness, (b) perceived challenges, (c) implementation, and (d) moving forward. Findings indicate PPETs developed confidence, achieved personal growth and self-actualization, perceived career benefit, and gained a desire for implementing CSPAP in the future. Additionally, implementing CSPAP components during student teaching can increase confidence and desire to implement CSPAP in the future. Further research needs to explore if CSPAP experiences during preservice training influence in-service teachers' CSPAP involvement.

Engagement in physical activity (PA) provides numerous health benefits, such as the reduction of chronic disease (e.g., obesity, heart disease, type 2 diabetes) related to sedentary behavior (National Physical Activity Plan Alliance [NPAPA], 2018). Nationally, the drop in PA levels is alarming (NPAPA, 2018). Fortunately, due to a school's existing infrastructure (i.e., access to mentors, facilities, equipment) and access to school-aged children, K–12 schools are an ideal intervention site to implement health-enhancing PA programs (Centers for Disease Control [CDC], 2013; Institute of Medicine [IOM], 2013).

Of the courses in a K–12 school curriculum, physical education is the most advantageous for school-aged children to accumulate levels of PA (IOM, 2013; Society of Health and Physical Educators [SHAPE America], 2018). SHAPE America (2018) recommends school-aged children receive weekly allotments of physical education instruction per week: 150 min for elementary schools and 225 min for secondary schools. Although national organizations establish guidelines for PA and physical education instruction per week (IOM, 2013; SHAPE America, 2018), the majority of K–12 schools do not meet the recommendations (NPAPA, 2018) and alternative avenues for PA accumulation are needed.

For students to achieve the academic outcomes of physical education and the recommended allotment of daily PA, the CDC partnered with SHAPE America to develop the Comprehensive School Physical Activity Program (CSPAP; CDC, 2013; Society of Health and Physical Educators, [SHAPE America], 2020). A CSPAP is a “whole-of-school” model with five components that provide opportunities for school-aged children to achieve recommended

levels of PA, while supporting physical education as the cornerstone (SHAPE America, 2020). The development of an effective CSPAP requires a school PA leader (PAL; Beighle et al., 2009; Carson, 2012). Among members of a school faculty, physical educators are poised to be PALs and leaders of CSPAP due to their ability to plan developmentally appropriate PA and organize among school stakeholders (Carson, 2012). Even though physical educators are ideal school PALs and CSPAP leaders, most preservice and in-service physical educators do not receive prerequisite training (Dauenhauer et al., 2018).

To be effective PALs of CSPAP, physical educators need training experience in organizing and implementing expanded PA programs (Stoepker et al., 2020), and physical education teacher education (PETE) programs are poised to train PPETs for such training with CSPAP implementation (Beighle et al., 2009; Dauenhauer et al., 2018). Competent CSPAP implementation requires PPETs to understand the essential steps toward program development and be provided hands-on experiences implementing components in a school setting (Stoepker et al., 2020; Webster et al., 2016).

As PETE programs add CSPAP-related experiences and content knowledge within coursework requirements (Castelli et al., 2017), research findings indicate positive outcomes for PPETs (Drewson & Lackman, 2020; Goh et al., 2020, 2019; Kwon et al., 2018; McMullen et al., 2014; Webster et al., 2017). Specifically, incorporating a CSPAP component implementation during practicum coursework increases levels of PPET confidence, competency, and value to lead future CSPAPs in K–12 schools effectively (Drewson & Lackman, 2020; Goh et al., 2020, 2019; Webster et al., 2017). However, there is limited research investigating PPETs perspectives of implementing components of a CSPAP during a student teaching internship experience (McMullen et al., 2014). Thus, the research question is, “what are PPET experiences of implementing CSPAP during student teaching?” Therefore, the purpose of this research study is to understand PPET perceptions of implementing CSPAP components at the elementary and secondary (i.e., middle school or high school) levels during a student teaching internship experience.

Method

Design

University institutional review board approval was attained prior to conduct of this research study, and informed consent letters were signed by participants prior to gathering of data. A single case study was employed. This provided multiple points of converging evidence for investigation of the real-world context of PPET experiences implementing CSPAP (Yin, 2014).

Setting and Participants

Participants were recruited via a convenience sample of PPETs ($N = 9$; $n = 5$ undergraduate students, $n = 4$ graduate students) from a university PETE program in the Pacific Northwest. Participants were recruited over three consecutive academic semesters (i.e., 2019 spring and fall semester, 2020 spring semester). Data collection concluded once we determined data saturation had occurred (Glense, 2016). We assigned pseudonyms throughout this article to protect participants' anonymity.

The PPETs ($N = 9$; $n = 3$ females) with self-identified ethnicities ($N = 9$; $n = 7$ White, $n = 1$ Pacific Islander, $n = 1$ Hispanic) were enrolled in a semester-long student teaching internship course. The PPETs were placed in rural and urban demographic areas within the Western United States. All PPETs had previous experiences teaching at the elementary and secondary levels during teaching methods courses and took preliminary coursework that included CSPAP-related content knowledge and mini-CSPAP program implementations (e.g., bike safety, staff wellness, before school PA promotion).

Student Teaching Course Structure

Each PPET enrolled in a 16-week internship course that included an 8-week elementary placement (i.e., K–5) and an 8-week secondary level placement (i.e., some combination of 6–8). During both placements, each PPET followed a three-step process: (a) observation of their mentor teacher, (b) co-teach with their mentor teacher,

and (c) transition into a lead instructor role. Additionally, the PPETs attend a twice-weekly pull-back class with a university instructor, who also served as a blinded researcher and one of the authors of this study. The pull-back class included discussion of student teaching requirements, teaching performance assessments, and signature student teaching assignments (e.g., technology integration and CSPAP implementation). The student teaching course instructor had no knowledge of which PPETs were participating in this research study until course grades were entered.

For the pull-back class, students completed a CSPAP project implementation at each placement. The CSPAP project required PPETs to implement a CSPAP component other than quality physical education at each student teaching placement. The CSPAP project included a six-step process: (1) establish a team or committee, (2) conduct a needs assessment, (3) set project goals, (3) identify outcomes or changes that will occur from the implementation, (4) develop a comprehensive plan for component implementation, (5) implement the CSPAP project, and (6) evaluate the implementation via outcome data. For the course, the projects were evaluated on a 5-point scale (i.e., *missing/unacceptable* to *excellent/advanced*) that assessed five major components, each with its own indicators. Example components and indicators include (a) establish a team or committee, designate a PAL, conduct an assessment of existing PA opportunities, and generate a vision statement, goals, and objectives for the CSPAP (indicators: conduct an assessment of strengths, gaps, and priorities for the CSPAP; write objectives to achieve CSPAP goals; etc.); (b) identify and plan the activities for your CSPAP (indicators: identify implementation resources, PA offered, times and facility space secured, etc.); and (c) evaluate your CSPAP (indicators: identify a plan for evaluation including engaging stakeholders, align program goals with evaluation, explain how outcome data will be used, etc.). The CSPAP projects that PPETs implemented included school jog-a-thons, staff wellness initiatives, professional development clinics, pedometer step challenges, and before- and after-school PA opportunities for students. Table 1 provides examples of PPETs' CSPAP implementations with project descriptions.

Table 1
Example CSPAP Projects

CSPAP project title	CSPAP component	Program description
Recess Running Club	During-school PA	Program implementation designed to increase PA during school. The fourth-grade students at an elementary school recorded their laps on the playground as part of a promotion for cardiovascular health. Incentives and awards were included.
Classroom Brain Breaks	Staff involvement during-school PA	The PPET trained classroom teachers on the importance of PA and how to include PA in the classrooms (e.g., brain breaks). The PPET then provided resources and modeled several different strategies for integrating PA during class time to classroom teachers.
Technology Training for Assessment and Activity	Quality physical education	The PPET led a series of professional development clinics for school district physical education teachers. The professional development included teaching other physical education teachers to use technology for assessments and PA tracking (e.g., QR codes, Google Forms, Plickers/Plagnets, pedometers).
Staff Wellness Promotion	Staff involvement	Program implementation targeted middle school faculty/staff. The CSPAP included informational nights and “workout nights” in the school weight room to promote staff access to school facilities and teach faculty/staff how to use exercise equipment properly.
Before-School Yoga	Before-school PA	The CSPAP program targeted high school students and included before-school yoga in the gymnasium led by the PPET.

Table 1(cont.)

CSPAP project title	CSPAP component	Program description
Parent–Child Fun Run	After-school PA Staff involvement Community engagement	A parent–child fun run event led at the elementary level for all grades. The CSPAP event included community vendors, prizes/contests; parents participating as volunteers and participants; and staff involvement to organize, plan, and run the event. The fun run also served as a fundraiser for equipment and has become a yearly event.
Staff Pedometer Challenge	Staff Involvement	High school faculty/staff participated in a month-long pedometer challenge. The weekly step-leaders were entered into a prize drawing at the end of the month.
Active Travel to School	Before-school PA After-school PA Staff involvement	Active travel to school promotional events at the middle school and high school levels. The CSPAP included an event that provided maps for safe walking and biking routes to school. The PPET established meeting points for students to participate in active travel to school together. This was a 1-day event but was continuously promoted throughout the remainder of the school year.
Learn-to-Swim Event	Community engagement	The PPET expanded a school district-wide “Learn to Swim” program for fourth-grade students. This CSPAP included a weeklong swim lesson curriculum for all fourth graders in the school district. Swim-lesson volunteers included community members and school district staff.

Note. CSPAP = Comprehensive School Physical Activity Program; PA = physical activity; PPET = preservice physical education teacher.

Data Collection

Interviews ($N = 25$; $n = 2$ interviews cancelled because of COVID-19) were collected at three time points per semester: (1) before the first CSPAP implementation, (2) between student teaching school placements, and (3) after the second CSPAP implementation. Interview questions were asked in a semistructured format. This format resembled guided conversations (Yin, 2014) and allowed for in-depth responses from participants. Table 2 provides example interview questions and follow-up questions used. Table 3 provides quotes that represent the themes and subthemes. In addition, a written final project from each PPET was collected for data analysis with the interview data. The written project included information about the six-step process of the CSPAP project.

Data Analysis

Interviews were audio recorded and transcribed verbatim, and pseudonyms were assigned to participants. After each interview phase during the first semester (i.e., spring 2019) of data collection, interviews were transcribed and coded for the development of subsequent rounds of interview questions. During the second and third semesters (i.e., fall 2019 and spring 2020) of participant interviews, the same interview protocols developed for the first semester (i.e., spring 2019) were used. At the completion of data collection, constant comparison (Yin, 2014) was used in recoding the first semester interviews alongside the second and third semester interviews. Additionally, each PPET's written final project was analyzed for the PPET experience with completing CSPAP objectives, goals, implementation, and program evaluation. The coding of interview and written project data first revealed codes, then categories; eventually, four themes with individual subthemes emerged (Glense, 2016). Table 3 provides examples of PPETs' responses to interview questions that resulted in the identification of themes and subthemes.

Data Trustworthiness

Trustworthiness of data was increased through multiple strategies. First, two forms of researcher reflection were used: (a) prospective reflection of the research design during planning and methodology development (i.e., appropriate types of questions,

Table 2*Date Sources and Example Questions*

Data source	Example question	Follow-up question
Interview 1: Pre-Student Teaching <i>N</i> = 9; <i>r</i> = 24:20–33:02, <i>M</i> = 28:46	Please describe your experiences with implementing CSPAP prior to your student teaching course.	<i>How have those experiences prepared you for your CSPAP implementation?</i>
	To what extent do you feel it is important as a physical education teacher to promote PA outside of physical education?	<i>Do you view this as part of your job moving forward?</i>
	What barriers or challenges do you see with implementing CSPAP programs in schools?	<i>Are there different barriers or challenges at the elementary level versus the secondary level?</i>
Interview 2: Between School Placements <i>N</i> = 9; <i>r</i> = 20:56–41:33, <i>M</i> = 30:58	What success did you experience in implementing your CSPAP?	<i>How did this success make you feel?</i>
	Do you think you will implement a program like this in the future? Why or why not?	<i>If not this program, what about another program or CSPAP component? Why or why not?</i>
	What benefits did you get out of a CSPAP implementation during your internship?	<i>What benefits did your school receive from the CSPAP implementation?</i>
Interview 3: Post-Student Teaching <i>N</i> = 7; <i>r</i> = 20:42–55:57, <i>M</i> = 40:14	Describe how your CSPAP implementations has prepared you to be a PAL.	<i>Explain how you identify yourself as a PAL after your CSPAP implementations.</i>
	What are your major take-home messages from implementing CSPAPs at both levels?	<i>Describe your future involvement with these types of CSPAP implementations in the future.</i>
	What value, if any, do you see in physical education teachers implementing CSPAP.	<i>What value, if any, do you see for you implementing CSPAP in the future?</i>

Note. CSPAP = Comprehensive School Physical Activity Program; PA = physical activity.

Table 3
Themes and Subthemes

Theme	Subtheme	Quote
Preparedness	CSPAP components	“I feel more confident doing physical activities with students during school, after school, or before school. Our whole major is based around PA, teaching motor skills, knowledge, and getting people confident in those skills and knowledge” (Marty, Interview 1).
	Previous coursework experiences	“This program provided practicums and real teaching experiences throughout the last two years, which gave me confidence. I was able to bring that confidence of my teaching ability into my CSPAP” (Elizabeth, Interview 3).
Perceived challenges	Secondary level	“It’s difficult at the high school level, because there’s dance team, there’s debate clubs, there’s rugby, water polo, swimming...all these different things going on” (Doug, Interview 1).
	Elementary level	“One of the barriers at the elementary level...if you have a before- or after-school kind of CSPAP implementation, you’re relying on parents to be able to get them to and from, which can be tough with parent availability” (Emmett, Interview 1).
	Facilities and resources	“If you don’t have the materials, it makes it hard to run a successful CSPAP” (Marty, Interview 1).
	Support	“Getting your staff involved or the very first person you need to talk to about it would probably be your administration, getting support from those individuals is important” (George, Interview 1).

Table 3 (cont.)

Theme	Subtheme	Quote
Implementation	Successes	“Community members came out, connected, and got excited for a PA-based school event” (Mary, Interview 3).
	Challenges and barriers experienced	“Getting students to participate in extracurricular activities, because a lot of them are like, ‘Oh, I already practice. I already have football practice. I already have soccer practice. I already have gymnastics, so I don’t want to do more activities” (Doug, Interview 2).
	Impact (school, staff, students, family, community)	“I think the CSPAP definitely showed the faculty and staff that [physical education teachers] care about them and we want them to be physically active and be healthy as well” (Marty, Interview 3).
	Lessons learned from implementation	“My CSPAP experience made me appreciate and care about students’ PA and their physical education experiences” (Emmett, Interview 2).
Moving forward	Personal growth and self-actualization	“It really opened my eyes to how important it is to be able to provide opportunities for others to be physically active and the lack of knowledge adults have of being physically active and healthy” (Marty, Interview 2).
	Perceptions of CSPAP importance	I think implementing CSPAP is one of the most important parts of our job. Getting the students active, and then also advocating for PA in their lives, and promote living a healthy balanced life” (Mary, Interview 3).
	Career benefit	“I believe this prepared me to do this comfortably in the future, like I can just put something on like this anywhere I go, and I know what I need to do now” (Doug, Interview 3).
	Physical educator role	“This experience gave me a peek into what my role can be as a physical educator in the whole school, as a PAL, rather than being siloed in my gym or my classroom” (Emmett, Interview 2).

interview times) and (b) selective and retrospective reflection after each interview. This improved future research and limited researcher bias (Corbin & Strauss, 2008). Second, member checking at the transcript and themes level was employed. Third, investigator triangulation (Yin, 2014) was employed with multiple analysts coding data and challenging categories, codes, and themes presented until all conflicts were resolved (Glense, 2016). Finally, a clear audit trail of data collection and analysis, along with researcher debriefing, was conducted throughout the research process.

Findings

The findings illustrated PPETs' perspectives of implementing CSPAP throughout a student teaching internship experience. Four themes emerged, each with its own subthemes. Theme 1 was Preparedness, with two subthemes: (a) CSPAP Components and (b) Previous Coursework Experiences. Theme 2 was Perceived Challenges and Barriers of CSPAP, with four subthemes: (a) Secondary Level, (b) Elementary Level, (c) Facilities and Resources, and (d) Support. Theme 3 was Implementation, with four subthemes: (a) Successes, (b) Challenges and Barriers Experienced, (c) Impact (school, staff, students, family, community), and (d) Lessons Learned From Implementation. The fourth and final theme was Moving Forward, with four subthemes: (a) Personal Growth and Self-Actualization (b) Perceptions of CSPAP Importance, (c) Career Benefit, and (d) Physical Educator Role.

Preparedness

The first major theme was Preparedness. The PPETs expressed their perceived level of preparedness for CSPAP implementation on the basis of previous coursework experiences. The PPETs perceived level of preparedness was a major factor for which CSPAP component they felt comfortable implementing during student teaching and as a future in-service physical education teacher. The two major subthemes were (a) CSPAP Components and (b) Previous Coursework Experiences.

CSPAP Components

Of the five CSPAP components, implementing quality physical education and promoting PA with students was the component for

which the PPETs felt most prepared. The PPETs expressed confidence leading PA with students during school, after school, or before school. Mary stated, “Physical education and PA during school, and then after school too. I could see myself doing stuff with that. Not staff involvement yet, and not community involvement yet” (Interview 1). The feeling of unpreparedness and lack of confidence to implement staff involvement and family and community engagement components were a commonality among PPETs. George described, “Community involvement would be my least prepared part of a CSPAP. I think it would take a lot more time and research in finding who are stakeholders in the community and who you can get on your side” (Interview 1). Another reason PPETs felt unable to implement community and family components was their lack of experience engaging with parents and the community. Their previous PA programming experiences primarily focused on in-school initiatives, which limited PPET confidence for community and family engagement. However, some PPETs felt it was feasible, such as Biff, who said,

The most difficult component is involving community and building a relationship, but there are ways to tap into the community right away. For example, organizing a 5K race at your school. That’s a practical way to connect with the community. (Interview 2)

Because of their in-school programming experiences, it seemed the PPETs were highly motivated to implement CSPAP components that focused on student PA. However, a lack of experience communicating with parents and school staff was one possible reason for PPETs to feel unprepared to implement CSPAP components related to staff involvement and family and community engagement.

Previous Coursework Experiences

Prior to student teaching, PPETs participated in coursework experiences with CSPAPs and expanded PA programming in K–12 schools. The previous coursework experiences prepared the PPETs for their CSPAP implementation during student teaching. For example, Elisabeth stated, “This PETE program provided practicums and real teaching experiences throughout the last two years, which gave me confidence. I was able to bring that confidence of my teaching

ability into my CSPAP” (Interview 3). Biff also noted the importance of CSPAP content knowledge in previous coursework as a benefactor to prepare for implementation. He stated, “The didactic portion that I got from the PETE program, like the lecture, instruction, and the projects that I worked on, were helpful to understand and implement CSPAP” (Interview 2).

Even though PPETs felt their previous coursework and experiences helped in their preparation to be successful for CSPAP implementation, they also stated a desire for more CSPAP experiences in K–12 schools. Biff explained, “It would be nice to have implemented more components of CSPAP as part of the physical education program. I know that’s difficult with all the practicums and internships we already do, but maybe having some sort of CSPAP course” (Interview 2). The PPETs hands-on experiences implementing components of CSPAP within previous coursework were perceived as a contributor for CSPAP success during student teaching. The PPETs were able to draw on their previous coursework experiences and use those experiences to build on the larger CSPAP implementation during student teaching.

Perceived Challenges and Barriers

Prior to implementing CSPAP during student teaching, the PPETs indicated perceived challenges and barriers toward CSPAP implementation in K–12 schools. Based on the perceived challenges and barriers expressed, four individual subthemes emerged: (a) Secondary Level, (b) Elementary Level, (c) Facilities and Resources, and (d) Support.

Secondary Level

Prior to CSPAP implementation, the PPETs perceived that challenges and barriers for CSPAP implementation existed at middle school and high school settings. A major challenge perceived among PPETs was getting students in middle school or high school to “buy-in” and participate in a CSPAP. Harry expressed, “I think buy-in from high school students themselves is a barrier. Sometimes in high school they have their mind set on certain things. They have more of a free will, I guess” (Interview 2). In addition, the abundance of after-school sport programs or club activities was perceived as a barrier with secondary students having more independence to

choose how to spend their free time. The willingness to participate in after-school activities was accompanied by the belief that secondary students are generally less motivated to be physically active. For example, George said, “I think as students get towards the secondary level, they tend to shy away from being physically active for whatever reason, it starts around that time” (Interview 2). Furthermore, PPETs felt the school faculty at the secondary level would not be open to support and promote schoolwide CSPAP initiatives. Biff described, “At secondary levels, during-school PA breaks would be difficult to implement schoolwide. A lot of teachers aren’t receptive to the idea, and they like to run their classrooms a certain way” (Interview 2). The PPETs overwhelmingly perceived secondary students and staff to be less likely to participate in CSPAP due to a lack of interest and motivation for expanded PA opportunities.

Elementary Level

The need for support from parents was perceived as a major barrier and challenge to CSPAP implementation at the elementary level. The PPETs perceived elementary student reliance on parent and guardian transportation as a major challenge for CSPAP implementation. Emmett commented on the issues of transportation for before- and after-school CSPAP initiatives: “Elementary students have to rely on their parents to bring them to school. If students ride the bus, the bus may not get to school early enough for students to participate” (Interview 1). Moreover, PPETs felt if parents of elementary students do not value CSPAP activities or have time constraints between work, family, and extracurricular activities, it ultimately affects the ability for that student to participate in before- or after-school CSPAP opportunities.

Another perceived barrier at the elementary level was available time for physical education teachers to initiate a CSPAP. The PPETs perceived elementary physical educators to be constrained during school hours due to a lack of prep periods, instances of teaching at two different schools, or limited instructional time during the week with elementary students. Harry noted, “I know there could be a time conflict at the elementary level of being able coordinate with staff or even teach fellow teachers PA breaks . . . It seems elementary physical education teachers are limited with available free time” (Interview 1).

Facilities and Resources

The PPETs perceived facility space and resource availability to be a major barrier to implementing quality CSPAP programs. Specifically, PPETs noted many elementary school gymnasiums are smaller and often double as the school cafeteria, which is a potential risk for student safety. Elisabeth emphasized, “Elementary schools don’t have huge facilities for during-school or before- and after-school PA opportunities . . . it is hazardous to have students in there with equipment” (Interview 1). In addition, there was a possible limitation to opportunities for PA before or after school at the secondary level due to facility usage by athletics (Doug, Interview 2). Furthermore, resources were identified as a barrier. Emmett explained, “I think a big challenge is resources. Schools have to get creative with what they’re going to do, because they usually don’t have the technology, money, equipment, or the staff available to put something on” (Interview 1). The perceived facility and resource challenges for implementing a CSPAP were the size and availability of school PA facilities and availability of financial resources.

Support

The PPETs perceived CSPAP implementation success was dependent upon the support from school stakeholders (i.e., administrators, faculty, family, community). Biff noted, “Teachers have their own objectives as well. They have their own things that they want to accomplish in the classroom, so convincing them that they should do your brain break or whatever it is, could be difficult” (Interview 1). Because of the nature of CSPAP being comprehensive and “whole-of-school,” the value for developing a support system was deemed of high importance. The PPETs believed CSPAP implementation could not be successful without a unified support system of school stakeholders:

If your staff does not want to get involved, it is hard to implement a CSPAP by yourself as a physical education teacher without a support system. I think that one of the big challenges of implementing a quality CSPAP program is developing that support system, so you are not alone to implement all the components. (George, Interview 1)

Furthermore, PPETs perceived the local community's belief and support of PA, education, and health as potentially impeding challenges to overcome. Harry elaborated, "If the community doesn't necessarily appreciate education as much, that could be a barrier" (Interview 2). The role of a school staff and administrator support system was believed to be a contributing factor for multicomponent CSPAP implementation sustainability. Conclusively, PPETs perceived a lack of support from school and community stakeholders as a major barrier for CSPAP implementation.

Implementation

The third theme was Implementation. Through their CSPAP implementation experiences, PPETs learned important facets of expanded PA programming while facing successes and challenges along the way. The four subthemes were (a) Successes, (b) Challenges and Barriers Experienced, (c) Impact, and (d) Lessons Learned From Implementation.

Successes

After implementing CSPAP components, the PPETs reflected on their experience and indicated various forms of success. Mary explained the success collaborating with her mentor teacher during the planning process: "The success we had during planning was our organization, we set deadlines" (Interview 2). In addition to the success of stakeholder collaboration, PPETs indicated positive student experiences from their participation in the CSPAP, for example,

Students enjoyed it and got into a bit of a competition... They all wanted to run and get the most laps on the track and have the highest step count on their pedometers. Plus, everyone participated, and no one quit. (Biff, Interview 3)

Moreover, PPETs felt success from accomplishing CSPAP objectives and goals established from conducting a PA needs assessment for their school. Doug explained, "What I thought was successful was our goals and objectives we accomplished. One of those goals was to at least have 60% of the school attend. And we did hit that target" (Interview 2).

The PPETs expressed feelings of success on the basis of feedback from school faculty, students, and participation from individuals in

the community. Doug expressed his success on the basis of feedback received after organizing a high school staff pedometer challenge: “All this positive feedback from the staff members afterwards and saying that this is possibly something that they’ll pick up on and carry on throughout the rest of the time here” (Interview 3). Marty noted similar praise from his building administrator: “I actually felt really confident afterwards. I walked out and the principal pulled me aside, and said, ‘You did an awesome job. If you need me to sign anything . . . because that was a great professional development’” (Interview 3). The PPETs experienced success in many forms from their CSPAP implementation.

Challenges and Barriers Experienced

Prior to CSPAP implementation, the PPETs expressed their perceived challenges and barriers for the elementary and secondary levels. After completing the CSPAP implementation during student teaching, PPETs reflected on the challenges and barriers they encountered. These obstacles included recruiting students to participate, being organized, using effective communication, and gathering support from school faculty. Lorraine noted recruitment challenges with high school students to participate in before-school PA: “Nobody came the first two days. I had to repeat myself to multiple classes about coming. It felt annoying, but it helped . . . Next time I will do the activity in class and promote it as a before-school activity” (Interview 2).

Prior to the CSPAP implementation, PPETs perceived a lack of school faculty support as a potential barrier for effective implementation. The PPETs’ perceptions became a reality while they promoted and recruited faculty to participate in their CSPAP event. George explained, “The staff wasn’t interested. They thought it would be a hassle. I brought it up at one of our staff meetings and I didn’t get a lot of positive feedback” (Interview 2). The PPETs also indicated the challenges of being organized and communicating throughout the implementation process. Collaborating with individuals from all areas of the school required clear communication. Marty noted the importance of personal communication: “Communication was a barrier. . . My strategy was putting a face to an email, essentially, and making sure the principal realized that this was something that I really wanted to do, and it wasn’t just words on a paper” (Interview 3).

The challenges and barriers PPETs experienced included gaining interest from students, school faculty, and staff. In addition, PPETs noted the challenges of communicating between various entities across school campuses for successful collaboration and CSPAP implementation.

Impact

The PPETs reflected on the CSPAP impact for the community, school, staff members, and student population. Doug noted the community was positively impacted from participating: “I saw a lot of community involvement . . . a lot of close friends and family. I saw a lot of parents walking with their kids. That was awesome” (Interview 2). In addition, the PPETs noted implementing a CSPAP impacted other school faculty and staff’s viewpoint of the physical educator role in school. Marty explained, “It helped show other staff members that I am a professional, take pride in what I do . . . I think the CSPAP implementation was kind of eye-opening to certain faculty and staff” (Interview 3).

In addition, the PPETs indicated that students who participated in the CSPAP were positively impacted. Biff expressed positive student impact from training classroom teachers brain breaks: “The students were very receptive to it. The teachers seemed to like it a lot . . . The students seemed to appreciate it and I received a lot of positive student responses” (Interview 2). In addition, PPETs believed CSPAP participation enhanced student motor skill competency. George noted the student impact of participating in an elementary swim meet: “Learning new skills, getting to go to a pool and participate. Some of our students had never been in the water before and some were terrified of the water. It made a big impact for those individuals” (Interview 2). The PPETs believed members of the general community, school faculty, and students were positively impacted from participation in their CSPAP.

Lessons Learned From Implementation

Implementing CSPAP during student teaching enabled PPETs to learn the importance of establishing relationships and collaborations among school stakeholders. Specifically, PPETs expressed that gaining support from administrators, faculty, and students helped them to be effective at implementing CSPAP. George noted, “The biggest

thing I'm going to take away is the process. [CSPAP] takes time. Building relationships with staff, students, or community, and pushing for things in the PA realm that you want to do . . . They're not going to happen overnight" (Interview 3). Additionally, the PPETs learned to consider student CSPAP interests, for example, "You have to know your targets and change your approach. Elementary students are excited when you give them red tickets [rewards], but that will not work at the middle school and high school. You must know your audience" (Mary, Interview 2).

Prior to CSPAP implementation, PPETs felt unprepared for family and community engagement implementation. However, their experiences enabled them to grow in this area. Doug noted, "If I plan on having events like this, I'm going to get to know the parents, going to get to know the community" (Interview 2). Mary also noted similar lessons learned: "I learned I can be part of something bigger than just my physical PE classes" (Interview 3). Furthermore, the PPETs learned the importance of effort and determination. Biff explained, "I think that the biggest thing I learned is that a CSPAP is possible at any school; it just requires some effort" (Interview 2). George also elaborated on this point: "I have the drive to implement these things and do what's necessary, even when things may not go my way or get hard" (Interview 3). The PPETs also expressed implementing a CSPAP is not as daunting as they initially perceived. Lorraine explained, "CSPAP seems big and scary, but really it's not. There are so many little ways that even I am starting to do here . . . I feel a lot more comfortable, and I know I can do it in the future" (Interview 3).

Moving Forward

The fourth and final theme was moving forward. PPETs expressed they had achieved personal growth and approached self-actualization from their CSPAP implementation experiences. The four subthemes were (a) Personal Growth and Self-Actualization, (b) Perceptions of CSPAP Importance, (c) Career Benefit, and (d) Physical Educator Role.

Personal Growth and Self-Actualization

The PPETs indicated areas of personal growth and self-actualization after their CSPAP implementation experience. Marty noted, "Implementing a CSPAP gave me the opportunity to grow as a leader

and show that physical education teachers are not just someone back in the corner giving the teachers prep time” (Interview 3). On the basis of the experience of organizing and leading a CSPAP, PPETs expressed self-actualization in their leadership abilities, for example, “It made me realize I am a teacher. I warmed up 900 students, I told all the parent volunteers what to do . . . I learned that confidence from doing these CSPAPs” (Mary, Interview 3). In addition, PPETs expressed similar feelings of personal growth in planning, communicating with faculty, and being a leader. For example, Doug had “a lot of self-realizations about myself. I got out of the habit of procrastinating, and took on a leadership positions, like creating spreadsheets, making flyers” (Interview 3). Additionally, Lorraine noted, “Even regardless of what level it is at, I feel prepared. Even if it is at a high school level, I think I can find ways to implement different CSPAP components” (Interview 3). Other PPETs echoed similar feelings of self-actualization from the experience, for example, “It showed me you can do it . . . I didn’t feel stressed doing it at all, and it wouldn’t be much harder to implement in the future wherever I get hired” (Elisabeth, Interview 2). Finally, implementation experiences helped them develop a passion for the teaching profession:

I learned that I truly care about the students outside of the time that they are in my class. I think I always felt that, but working through the implementation made me realize how important it is to truly put in the extra effort for the students outside of the physical education setting. (Emmett, Interview 2)

Perceptions of CSPAP Importance

On the basis of the CSPAP implementation experience, PPETs perceived CSPAP to be important for promoting PA to K–12 students through the discovery of new activities and PA opportunities. Emmett explained, “Just helping [students] realize the opportunities and resources that they do have available, even in a small town like this, to live a healthy, active lifestyle. I think it was a big benefit for the community” (Interview 2). Additionally, Harry expressed, “Even if it’s a minor CSPAP, it’s one step in the right direction. I think there’s a lot of great value that can come out of implementing a CSPAP program” (Interview 3). The PPETs expressed CSPAP as an important

tool for physical educators to advocate for healthy active lifestyles and promote physical education programs:

CSPAP is a great way to advocate for your program. I think this is a great way to show the community, staff, and students that you actually care about what you do. Not only that you want to do a great job in your classroom, but also outside your classroom and create a better community as a whole. (Marty, Interview 3)

Career Benefit

The PPETs believed their CSPAP experience benefited their future teaching careers, specifically during interview process, for example, “I think it makes you look a little bit better. It shows that you have experience and are willing to work outside of just your gym” (Emmett, Interview 2). In addition, PPETs benefited from the professional relationships developed among school faculty and community partners. The PPETs believed the connections built among school and community stakeholders would not have been possible without their CSPAP implementation, and these relationships came with benefits (e.g., professional references). Furthermore, the PPETs believed their CSPAP experience prepared them for the nuances of being a physical educator in K–12 schools, for example, “I’m just feeling more prepared for whenever I get a job, and wherever I get a job” (Lorraine, Interview 3).

Physical Educator Role

The PPETs believed implementing a CSPAP created an opportunity to become a PAL and altered their view of the physical educator role in schools. Biff noted, “[CSPAP] makes you more than just a physical education teacher. It really makes you the PAL at the school” (Interview 3). As a PAL in the school, the PPETs believed the physical educator role included organizing and leading CSPAP. For example, Lorraine said, “I think that it is extremely valuable for physical education teachers to be the number one advocate for PA by organizing and leading CSPAP in a school” (Interview 3). Furthermore, PPETs identified physical educators as PA role models and school-wide advocates for PA behaviors inside and outside the classroom setting. Emmitt explained,

For me, the appreciation of a physical educator's role in our school is not just teaching physical education in a gym. It is about connecting the whole school and trying to promote a healthy, active lifestyle for both the students and the staff. (Interview 2)

On the basis of the CSPAP implementation experience, PPETs believed their role within the school as physical educator aligned with the characteristics of PAL discussed in Carson (2012).

Discussion

This qualitative case study furthers understanding of PPETs' perception of implementing a component of CSPAP at elementary and secondary levels during a student teaching course. Further, it highlights the PPETs' CSPAP pre- and post-implementation experience. The findings point to PPETs learning the nuances of implementing a CSPAP in K-12 schools and collaborating among school stakeholders (i.e., faculty, administrators, family, community members). In addition, the participants' comments show that implementing CSPAP components during student teaching improves PPETs' confidence in leading future CSPAPs and that there is value in CSPAP in K-12 schools.

The first major finding is PPETs' perceived level of preparedness to implement CSPAP components. From this study, research findings indicate PPETs feel most confident leading CSPAP components related to previous coursework involvement (i.e., components related to PA with students) and less confident leading components of family and community engagement. The literature about PPET preparedness for CSPAP component implementation is largely unexplored, but our research findings underscore similar outcomes from PPET literature examining preservice CSPAP preparation (Kwon et al., 2018; McMullen et al., 2014). For example, some preservice teachers from PETE programs with CSPAP training feel insufficiently prepared to promote and implement PA beyond physical education (Kwon et al., 2018). PETE programs should provide novel experiences with CSPAP components related to family and community engagement to better prepare PPETs to be PALs.

The second major finding is that PPETs perceive specific barriers for implementing CSPAP at the elementary and secondary

levels (e.g., limited facilities) and that CSPAP implementation is not sustainable without administrative support. These findings are indicative of literature regarding challenges and barriers for expanded PA programming and CSPAP implementation success (Hunt & Metzler, 2017; Michael et al., 2019; Webster et al., 2015). Content knowledge and experiences related to the aforementioned barriers should be included within PETE preparation of PPETs for CSPAP adoption and sustainability. For example, PETE programs should create opportunities for PPETs to establish collaborative partnerships with school faculty and administrators as part of the planning process for CSPAP implementation experiences in the field.

Another finding is PPETs' belief of it being easier to implement CSPAP at the elementary level than the secondary level. This finding echoes McMullen et al.'s (2014) of PPETs in a student teaching internship struggling to recruit, motivate, and communicate effectively with high school-aged students in a before-school PA program. The rates of CSPAP adoption at the high school level is comparably low to adoption at the elementary level (Brenner et al., 2017). Thus, the CSPAP preparation of PPETs in PETE programs should include developing strategies for PPETs to recruit and motivate secondary students, given the indicated barriers associated with this level.

An increase in levels of confidence, personal growth, and self-actualization from CSPAP involvement throughout the student teaching internship course experience is another finding in this study. In addition, CSPAPs bring about successes, challenges, and barriers for PPETs as well as a positive impact on the school, staff, students, family, and general community. These findings reinforce the findings of research regarding CSPAP-related experiences of PPETs implementing expanded PA programs in K–12 schools (Goh et al., 2020, 2019; Webster et al., 2017). The limited research on implementing CSPAP in PETE practicum coursework indicates these experiences bring about feelings of competency and autonomy in PPETs (Goh et al., 2020). Thus, PETE programs should include field-based CSPAP experiences at both the secondary level and the elementary level to provide PPETs the requisite skills to fulfill the role of a PAL and leader of CSPAP (Beighle et al., 2009; Stoepker et al., 2020).

Implementing components of CSPAP broadens the lens through which PPETs view the role of a physical education teacher within a school. In addition, PPETs perceive CSPAP as an important advocacy tool for physical educators and believe a physical education teacher should be a PAL who advocates and promotes healthy, active lifestyle behaviors. CSPAP experiences can help PPETs to develop the requisite skillset to become successful PALs (Carson, 2012; Stoepker et al., 2020) and the confidence, ability, and desire to implement CSPAP as future in-service teachers.

Limitations

We acknowledge the limitation of the participant sample size and demographics of participants (i.e., $N = 9$), the geographic area of student teaching placement (i.e., Western states), and the limitation of only three interviews during one semester of student teaching. We also acknowledge our inherent bias within the research process, due to our relationship with the participants as instructors in preliminary coursework. However, despite present limitations, the results of interview data are valuable.

Conclusion

The findings contribute to the minimal body of literature on PPETs' perspectives and experiences implementing CSPAP components in PETE (Drewson & Lackman, 2020; Goh et al., 2020, 2019; Kwon et al., 2018; McMullen et al., 2014; Webster et al., 2017). The implications from our research provide evidence for PETE programs to include practical experiences with CSPAP during student teaching. Further research needs to explore if CSPAP implementation experiences in PETE influence CSPAP involvement of in-service teachers.

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PEDAGOGY

Lessons Learned During the Pandemic: Shaping the Future of Physical Education in India

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Abstract

On March 24, 2020, the Government of India ordered a nationwide lockdown for 21 days, limiting the movement of the entire 1.3 billion population of India as a preventive measure against the COVID-19 pandemic. Similar to other educators around the world, teachers in India instantly began plans to initiate virtual learning at a scale never seen before. The purpose of this study was to examine the lessons learned from Indian physical education (PE) teachers and provide strategies for leveraging what has been learned during the COVID-19 pandemic to improve the field of PE in India and beyond. The number of responses recorded in this study was 282 across the country with a response rate of 80.57% of whom 52 (18.50%) were female and 230 (81.5%) were male. The high percentage of males in this study mirrors the Indian population of PE teachers, of which the majority are male. Respondents completed the online survey of six Likert scale closed-ended statements and four open-ended questions that were the focus of this research. Mixed responses were received on the confidence level of use of technology now as opposed to pre-pandemic.

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Half of the respondents (51.24%) reported being comfortable using technology, and 44.83% reported slight confidence using the technology. The deductive and inductive qualitative analysis led to five themes: (a) effective instruction, (b) technology in teaching, (c) PE, (d) student experiences, and (e) general success. This study's results can be considered as an opportunity to revamp the curriculum of PE and include proper information and communication technology-related material in the PE teacher training courses. Lesson planning through a virtual mode that readies preservice trainee teachers to tackle similar types of challenges in near future can be offered during training.

On March 12, 2020, the World Health Organization proclaimed a global pandemic as a result of the COVID-19 outbreak. The health, economic, and educational repercussions felt for all of 2020 and beyond were just beginning. The COVID-19 pandemic gripped countries across the globe with many facing mandatory lockdowns that resulted in the closure of stores, businesses, restaurants, and schools, with schools among the first to face the rapid shutdown of all in-person activities. The COVID-19 pandemic, according to the United Nations (2020), caused the biggest disruption of education systems in history, affecting approximately 1.6 billion students in over 190 countries across all continents (United Nations, 2020). Closures of schools and other learning spaces impacted 94% of the world's student population and closer to 99% of countries that are considered low and lower-middle-income (United Nations Sustainable Development Group, 2020).

On March 24, 2020, the Government of India ordered a nationwide lockdown for 21 days, limiting the movement of the entire 1.3 billion population of India as a preventive measure against the COVID-19 pandemic. This also involved the closure of 1.5 million schools in the world's second-largest educational system, impacting 247 million children and adolescents enrolled in elementary and secondary schools. Of these students, nearly 84% resided in rural communities and 70% attended government-funded schools. In addition, an estimated 6 million youth were not attending schools before the COVID-19 crisis began (UNICEF, 2021). As a part of these school closings, the National Programme on Technology Enhanced Learning, Study Web for Active Young Expiring Minds (SWAYAM),

e-Pathshala, DIKSHA portal, SWAYAM Prabha, and the National Repository of Open Educational, among others, were shared with students by the Ministry of Human Resource Development of India. The intention was so students could capitalize and continue their learning during the lockdown. The ministry also issued an advisory for higher education institutions to continue teaching using an on-line mode and requested teachers to teach from home. COVID-19 changed the traditional teaching model to fully virtual where many of the teachers and students had limited exposure and tools to engage successfully in online learning (Joshi et al., 2021).

Similar to other educators around the world, teachers in India instantly began plans to initiate virtual learning at a scale never seen before. While virtual learning was not new, it was challenging, even when extensive planning was involved (Choi & Park, 2006). Further, student access to technology in many areas of the world, including India, was limited, thus delivering instruction, or even simply contacting students, was challenging. Add in the abrupt nature of the implementation, and education had what some have referred to as a “crisis” to address.

With the onslaught of moving parts and the chaotic nature of implementing change, education administrators were forced to target their efforts and teachers were forced to modify expectations. Physical education (PE), a component of the overall education system, did not escape the impact of COVID-19. Physical educators were forced to make expeditious changes from delivering face-to-face PE to offering online PE. Also during the pandemic, physical activity levels dropped, further demonstrating the need for PE and physical activity promotion (Bates et al., 2020). While PE was not the only source of physical activity absent from the lives of youth during a pandemic (recess, playgrounds, youth sports, etc.), PE is frequently regarded as a fundamental element of initiatives aimed at promoting physical activity in schools (Dunton et al., 2020).

While we found studies on the delivery of online PE (Daum & Buschner, 2012; Mohnsen, 2012; Williams, 2014), much of this work examined voluntary virtual learning before the COVID-19 pandemic. Further, we found no studies examining the use of online PE in India. Thus, the purpose of this study was to examine the lessons learned from Indian PE teachers and provide strategies for leveraging

lessons learned during the COVID-19 pandemic to improve the field of PE in India and beyond.

Method

Participants

In this study, we invited all PE teachers who attended Physical Education Foundation of India (PEFI) virtual programs. The PEFI is one of the country's most well-known and renowned organizations, with a team of top educators, PE experts, and sports professionals dedicated to fostering a long-term sports culture in India. PEFI works to improve PE by raising awareness among policymakers, decision-makers, institutions, parents, and students about the importance of PE and sports in shaping a brighter future for children. PEFI is a National Sports Promotion Organization as designated by the Ministry of Youth Affairs and Sports, Government of India.

The total number of responses recorded in this study was 282 across the country with a response rate of 80.57% (282/350), of whom 52 (18.50%) were female and 230 (81.5%) male. The high percentage of males in this study mirrored the Indian population of PE teachers, of which the majority are male. Teachers in the study taught various levels: 38 (13.52%) were primary teachers (Grades 1–5), 112 (39.82%) trained graduate teachers (Grades 6–10), and 132 (46.97%) postgraduate teachers (Grades 11–12). Age classification was reported: 137 (69 ± 39.69) were 35 or younger, whereas 145 (73 ± 42.00) were older than 35. Ninety-one (32.38%) had 5 to 10 years of experience, 61 (21.70%) 6 to 10 years, 60 (21.35%) 11 to 15 years, 33 (11.74%) 16 to 20 years, and 37 (13.16%) more than 20 years. Teachers reported teaching modality during the lockdown as 17 (6.04%) hybrid, 21 (7.47%) mostly/face-to-face, and 244 (86.83%) mostly/all online.

Instrument

In an effort to learn more about the experiences of their professional development attendees during the pandemic to provide them better services, PEFI provided a survey. The online survey questions consisted of three sections: (a) demographic items, (b) six Likert-scale closed-ended statements, and (c) four open-ended questions that were the focus of this research. The closed-ended questions

focused on participation in Facebook Live sessions, experience, quality of the sessions, confidence after attending the sessions, teacher's ability to impart the same in the future, and parental support. The open-ended questions focused on teachers' successes, barriers, technological tools, as well as lessons learned. The questions were "Describe successes you have had while teaching during the COVID-19 pandemic," "Describe the primary barriers you have faced while teaching during the COVID-19 pandemic," "Discuss the technology platforms and tools you have had access to and used during the pandemic," and "What have you learned during Virtual Classes?"

Data Collection Procedures and Data Sources

The approval for conducting this study was obtained from the PEFI office. After obtaining approval, an introductory email was sent with a survey form to all teachers who had attended PEFI virtual programs (i.e., webinars, Facebook Live, and faculty development program) between March 2020 to January 2021. Teachers were asked if they would consent to the study and then were asked to complete the survey and send it back. A reminder was also sent to the teachers in the official PEFI WhatsApp group.

Data Analysis and Trustworthiness

We worked together to analyze the qualitative data (four open-ended questions), using a collaborative data analysis approach (Richards & Hemphill, 2018). As suggested by Richards and Hemphill (2018), a six-step process including preliminary organization and planning, deductive and inductive coding, development of a preliminary codebook, pilot testing of the codebook, final coding process, and reviewing the codebook and finalizing themes was used in data analysis. Given the structure of the open-ended questions, deductive coding was used first because the data were affiliated with each specific question asked. Acknowledging the deductive coding, we began inductive coding, where we read the data multiple times and developed initial codes within each topic on the basis of the deductive codes. A research team meeting was conducted and initial themes and codes were discussed. Then the codebook was piloted. Next, another team meeting occurred in which coding was discussed, and a final codebook was created. All of the data were

recoded with the final codebook. Then all of the data and each code together were reviewed and discussed until everyone agreed the codes were correct. Once all data were coded, we gathered again to review the coded data and create a thematic structure.

Trustworthiness of data was ensured by the use of multiple data analysts (Elo et al., 2014), and in addition to the rigorous data analysis process, we kept an audit trail and researcher journal during the data coding and thematic analysis process. During the coding and generation of themes, we also searched for negative cases throughout.

Results

The majority of the teachers ($n = 243, 86.17\%$) reported attending 0 to 50 PEFI sessions and 39 (13.83%) 51 to 100 sessions. Of those, 70.81% rated the Facebook Live sessions of PEFI as a very good experience and 93.95% agreed these sessions refined their existing PE knowledge. Of those who took part in sessions, 83.27% reported they would impart the same kind of teaching modality in their school. Mixed responses were received on the confidence level of the use of technology now as opposed to prepandemic. Half of the respondents (51.24%) reported being comfortable using technology, and 44.83% reported slight confidence using technology. Most (70.10%) agreed on the sustainability of the PEFI session after COVID-19. Support-wise, the majority of the respondents (79.35%) received full parental support and 9.60% received partial parental support during the online classes. With regard to technology applications, 18.86% of participants reported using Zoom and 9.60% Google Meets. Other tools used were YouTube and WhatsApp. Less than half (38.79%) of teachers reported using two or more tools to teach during the pandemic.

This section presents five overarching themes reaching across all four questions on the basis of the deductive coding: effective instruction, technology in teaching, PE, student experiences, and general success.

Theme 1: Effective Instruction

When discussing their experiences during COVID-19, many teachers reported the positive impact of the pandemic and teaching virtually on their teaching. Specifically, teachers reported their use of modeling and presentation skills. Some of these newfound

skills were derived from acquiring information from new resources. One teacher said, “How to teach activities in the demonstration as well as how effectively I can present my activities, latest methods, presentation techniques, slides explanation, sharing of knowledge by experts” (PET 213). Participants also reported an invigorated attention to the accuracy and quality of the knowledge they were sharing with students. One teacher acknowledged the differences between online and virtual: “Practical teaching and online mode teaching is so different but I tried my level best to give proper knowledge about the topic whatever I teach, yes, but this online mode enhanced our technical knowledge” (PET 215). While discussing their improvement in teaching, teachers cited their improvement and comfort with teaching while on camera: “Using digit gadget or different platform and using technology and in delivering the lecture in front of the camera” (PET 263). Another teacher said, “At the starting stage, online teaching looked unfavorable than classroom teaching. But after few times I arrange all the necessary equipment required for effective online teaching. Now I enjoy teaching online too” (PET 233). One teacher reported several positive outcomes from teaching online during the pandemic: “Online education enables me and the student to set their own learning pace, and there’s the added flexibility of setting a schedule that fits everyone’s agenda. it also allows students to attend classes from any location of their choice so they would get fewer chances to miss the classes” (PET 133). Finally, teachers were open to finding new ways of teaching and improving their teaching practices. One stated, “Time management, presentable, new innovative way of teaching to make the student’s interest alive. Short games before 5 minutes get over, etcetera” (PET 41).

Theme 2: Technology in Teaching

Teachers had much to say about the use of technology in PE delivery during the pandemic. Although many of the teachers mentioned the theme of “Technology in Teaching,” their experiences did vary. Some teachers were clearly frustrated because of the technological infrastructure in their region with access to resources such as the internet and electricity being an issue. One teacher said, “Basically, I am from a rural area network problem and electricity is a big issue for me” (PET 10). Other teachers echoed this response by reporting network issues in their area. Other issues were related to

the acute onset of online instruction as a result of the spread of the virus. This resulted in minimal training related to this new modality of teaching for many. One teacher said, “I felt many difficulties in the starting time of online teaching. I hadn’t idea how I use technology to maintain continue teaching” (PET 109). Another said a barrier they experienced was “lack of technical knowledge and no knowledge of use” (PET 72). While these issues were very real, one teacher suggested that while the pandemic was clearly a difficult time, they came to realize “you can teach the students or coach the players by using the technology also without wanting the physical appearance” (PET 249). Teachers were also keenly aware of the advances and progress that were quickly made in their comfort level with using technology and how that helped them educate students about the process. One teacher stated,

It was an excellent experience for me when I started my online classes. Students and parents both were not sure that this online teaching procedure will be successful or not, but gradually they understand and cooperated with the teachers. I also learned lots of techniques from PEFI to teach in an online class because I attended lots of online PEFI programs and I used them in my online classes and succeed. (PET 244)

Finally, one teacher suggested many benefits that arose from using technology as a tool for teaching during the pandemic: “I became a techy person to manage online classes, work–home balance, more innovative ideas to teach and motivate students for doing indoor physical activities to keep them healthy and fit” (PET 133).

Theme 3: Physical Education

In their responses, teachers provided statements specific to PE. These statements related to their comfort teaching PE, the types of PE experience they offered, and how they could provide feedback. One teacher discussed their progress in comfort with online PE: “Initially, it looked awkward, but I accepted it positively, and gradually I improved a lot. Moreover, I conducted online inter-house competitions and various other physical fitness challenges or run, walkathon kind of virtual events. Took online assessments too” (PET 9). One teacher even eluded to the modality being completely new

to students and how they were able to keep some of their curricular activities: “New to students in online classes. It is a totally different experience teaching sports online if the individual sports mean it’s a different ball game. I teach team sports Handball in outdoor, so I was able to give some fitness and basic movement” (PET 54). Other teachers discussed overcoming obstacles to use an online platform to help students with psychomotor skills. One teacher said, he “faced difficulties” but was ultimately able to use Zoom to help students correct their performance. Other teachers expressed a sense of satisfaction in the PE offering they were able to generate via the use of technology. One teacher stated, “I am satisfied with teaching online because as per the syllabus I have covered all the topics with the help of [PowerPoint], discussion, and solving doubts of students. Also I have conducted live PE classes for the students” (PET 148).

Theme 4: Student Experiences

Many teachers were focused on and concerned about the student experiences during the pandemic. Many of their comments centered on the initial complications with technology, awareness of families, and perseverance over time. One teacher said,

Initially, students and parents were not aware of online classes so I was not getting any cooperation. But gradually students were attending the online classes and discussed their problems with me and I tried my level best to solve their problems. Lastly, students were satisfied with me and started cooperating. So lack of awareness of online classes of students and parents I faced the problem. (PET 244)

Teachers also reported struggles with a protocol such as camera use and how that can impact the student experience. Specifically, this teacher discussed how camera use impacts students during PE:

Most of the students hide their camera and also we did not see whole class together because of the screen fits only 15 to 16 students. For academics it’s OK, but in physical education classes where you have to judge and rectify each student’s movement, so we will not able to do so and also if by chance the internet is slow, then it will be a delay in communication from both sides. (PET 224)

Still, other teachers reported a concern with how content was expected to be delivered for PE. They stated, “The children were not fully prepared for such online classes. The course was completed with the lecture method, which I think is more suitable in higher education” (PET 152). PE teachers were able to include parents to improve the education experience of students during the pandemic in ways they had not been able to before. This was a positive advancement. One teacher said, “As the classes were online, the biggest barrier was the internet issue, which got resolved by time. Other than that developing interest among students and parents was one barrier which was removed by making classes interesting even by involving parents in them” (PET 203).

Theme 5: General Success

Teachers also reported a general sense of success and positivity when reflecting on their experiences. One teacher suggested the virtual learning allowed them to “implement knowledge and self-improvement” (PET 163). Other teachers had a reserved sense of positivity in that they now knew that content could be delivered online, but they were still not convinced of its utility. Specifically, one teacher said, “I have learned it very well that virtual classes may be an option for education during such situations, but it’s not the ultimate medium for education” (PET 182). Within the theme of general success, one teacher focused on the overall connection that was generated at some schools: “Students, parents, and teachers are connecting to each other” (PET 247). Within general success, teachers expressed the importance of connection among students, parents, and teachers to get through the pandemic and make connections. Specifically, one teacher said, “A very caring and sharing connection between teachers, students and parents as well. It’s amazing to see how to stick together at times. Sharing is caring” (PET 278).

Discussion

The cause of 4,44,563 deaths in India since January 2020, the coronavirus pandemic impacts every aspect of life, including education. The effects on teaching and learning are evident in every nook and corner of India. The early stage of the pandemic shows a lack of preparation for taking on this kind of challenge, and the pandemic-initiated shift to online instruction provides numerous challenges to

PE teachers. In PE, a traditionally marginalized subject (Richards et al., 2018), one challenge for teachers is the lack expertise in remote PE instruction, which may lead to “trial-and-error” methods (Jeong & So, 2020). The starting phase of lockdown in March 2020 reveals neglect of PE by the schools because of the practical components, but this is less of a problem now that schools realize the importance of PE class to sustain the physical activity levels of the students. The effects of the COVID-19 pandemic may be lower levels of physical activity in children and higher rates of obesity in youngsters, according to preliminary research (An, 2020; Dunton et al., 2020; Guerrero et al., 2020; Rundle et al., 2020). Like most other teachers, PE teachers are also not well versed with online teaching, but so many professional organizations are coming up with innovative ideas to prepare PE teachers for online delivery of classes. For example, PEFI has organized several virtual events such as Facebook Live sessions, webinars, and faculty development programs to train Indian PE professionals to use technology in teaching. This study examines the lessons learned from Indian PE teachers and provides strategies for leveraging lessons learned during the 2020 pandemic to improve the field of PE in India and beyond.

The five themes emerging from the data analysis process include effective instruction, technology in teaching, PE, student experiences, and general success. In regard to technology, technology (poor internet connection; electricity) can initially be an obstacle for physical educators during pandemic times, with many experiencing stress and struggling with the use of technology. Over time, physical educators can improve their technology use by working relentlessly. Physical educators may also learn a great deal of new skills and tools associated with technology during an event such as a pandemic. Technology may prohibit the organization of online sports/field days and regular physical activity classes, but physical educators are more confident to give online assessments to students. As well, there are inequities of technology such as not all students having access to the requisite tools for learning and this prevents physical educators from teaching some experiences to students.

School support followed by parental support is another barrier to sustaining online PE classes for a longer period. However, as the findings suggest, when parents and students along with teachers are

patient, teachers can make great strides to improve PE, instruction, and experiences for students. Moving forward, schools along with parents and students must continue to demonstrate patience. The future of education is uncertain because of the unknown future of the pandemic; however, regardless of what may come, physical educators have the ability to revolutionize PE. From PE offerings to becoming accustomed to technology to learning to connect with students virtually, the pandemic presents challenges, but teachers and students can solve these by stepping up. Students' experiences are a strength of this study, and despite challenges, they support their PE teachers during online classes.

This is prime time to revamp the curriculum of PE in India and include and update proper information as well as utilize information and communication technology-related material in the teacher training courses. Before the pandemic, online teaching was not popular in PE within India, but now school administrators are instructing PE teachers to develop a good PE curriculum. They also envision big challenges for the future. This study shows that physical educators are a bit nervous about designing a new curriculum for the students. Teachers have concerns about the logistics of implementing and adapting curricula previously taught in a face-to-face setting (Centeio et al., 2021). An alternative approach to teaching the lesson plan virtually by the preservice trainee teachers is already underway at some higher education institutions, but there is an urgent need to make it mandatory during teacher training courses so that preservice teachers can prepare to tackle similar challenges of online learning in PE in the near future.

However, online classes and assessments cannot substitute for the conventional mode of teaching (Joshi et al., 2021), but the role of technology and its extensive use in imparting education cannot be neglected. There is a need for ongoing training and provision of resources that keep this process moving and continue to leverage the use of technology. With the COVID-19 pandemic comes the demand for effective technology integration in the classroom; as a result, professionals and scholars must begin to study how technology can be utilized to promote learning in the context of PE while increasing physical activity in lessons.

Conclusion

PE is one of the most important aspects of the educational and teaching processes, especially in the digital era. But the fact is online learning cannot continue at the same pace as in a classroom setup. Although online classes and exams cannot completely replace traditional teaching methods, the role of technology and its widespread application in education cannot be overlooked with the impact of the COVID-19 pandemic. This is high time to revamp the curriculum of PE and include proper ICT-related material in the PE teacher training courses. Lesson planning through virtual mode that makes preservice trainee teachers ready to tackle similar types of challenges in near future can be offered during training. Subject experts must begin to investigate how technology can be used appropriately to support learning within the context of PE while also maximizing physical activity in lessons. PEFI and other organizations must come forward to align their objective with other stakeholders of the society, and hands-on training sessions/workshops need to be organized for in-service PE teachers. A famous proverb “every dark cloud has a silver lining” reminds schools along with parents that they need to be patient and calm, for it is obvious that when the disaster of COVID-19 passes, PE teachers may be revolutionized by this experience. No descriptive study can be done without having limitations and this study has a low return rate, which we consider a major limitation. This low rate may be due in part to teachers’ engagement in online classes and assessments that occurred during the time the survey was distributed. For the future, a cross-sectional study can be conducted to pan India for other important issues related to the COVID-19 pandemic and virtual teaching and learning.

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PEDAGOGY

Credit Hour Analysis of Adapted Physical Education Courses in Higher Education

Ashley Phelps, Aaron J. Mason, Adriana Lucero

Abstract

Adapted physical education (APE) is a critical piece to the physical education puzzle. However, this topic is often overlooked from a preparation standpoint in physical education teacher education (PETE). The purpose of this study was to analyze the number of APE credit hours offered in undergraduate PETE programs across the United States. The 2018 Carnegie Classifications were used to help differentiate between types of institutions. Ranging degrees of institutional classification may be a contributing factor to the number and type of credit hours offered. Data analysis indicated that majority of PETE programs in the United States only offer one APE course in the PETE curriculum. Findings from this study are critical to understanding the preparation of preservice physical education teachers (PPETs) in PETE. Findings may also contribute to a conversation on credit hour allocation and whether PPETs are being sufficiently prepared to teach in an inclusive and adapted environment.

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The school setting is an integral venue for promoting physical activity (Centers for Disease Control and Prevention [CDC], 2013). For elementary and secondary students with disabilities, a structured and quality adapted physical education (APE) program can positively impact their health and well-being (Pan & McNamara, 2020). Such an impact is important because students with disabilities are at greater risk of health disparity than their peers (Haegele et al., 2020; Hinckson & Curtis, 2013). Therefore, quality APE can be a place where physical activity can be made accessible to all. Alongside a historic movement toward integration (Alquarini & Gut; Block & Krebs, 1992; Yell, 1995), many students with disabilities are being mainstreamed into general education settings at unprecedented levels (National Center for Education Statistics [NCES], 2018). Furthermore, to satisfy least restrictive environments (LREs), federal law states: “to the maximum extent appropriate, children with disabilities, including children in public or private institutions or other facilities, are educated with children who are nondisabled” (Individuals With Disabilities Education Act, 2017). This is important to note as inclusion is an everyday matter in education.

The literature suggests teachers who are inadequately prepared will likely struggle to adapt their teaching to meet the needs of their students (Block et al., 2016; McNamara et al., 2022). Beyond the students’ needs, teachers worldwide do not feel prepared to teach and adapt their instruction for students with disabilities (Hutzler et al., 2019). Furthermore, in the United States, not all teachers are doing coursework in adapted physical activity in their undergraduate and graduate programs (Beamer & Yun, 2014). This is a symptom of a larger problem, and Block et al. (2016) suggests one course on APE is not sufficient for the preparation of physical education teachers. If a teacher does not feel competent in their ability to adjust their mode of instruction, their behavior and attitude toward inclusive and integrated ¹ settings is impacted, potentially leading to negative experiences for students with and without disabilities (LaMaster et al., 1998). Some sport pedagogy experts suggest integration is a potential contribution to teacher burnout (Fejgin et al., 2005). Even though integrated practices may not have a causal relationship to

¹ Integration is the situation of students with disabilities being present in class with students without disability, commonly referred to as mainstreaming.

burnout, this notion raises questions about the demands, support (or lack thereof), training (or lack thereof), and constraints (Payne & Fletcher, 1983) being placed on physical education teachers. To clarify, we do not blame physical education teacher education (PETE) preparation programs, but we see a need to analyze how these outcomes may be addressed during postsecondary preparation. As a profession, teaching physical education can be stressful and effect a teacher's mental, physical, and emotional health (Bartholomew et al., 2014). Therefore, how can physical education teachers navigate this environment of increased integration while meeting job demands and the needs of *all* students?

The literature suggests that adequate preparation is key for teachers to teach APE (Block & Obrusnikova, 2007) and that the physical education teacher is an integral part of the student's physical education experience (Haegele & Sutherland, 2015). Inadequate training and lack of experience may lead to negative perceptions of integrating students with disabilities into general classes (Block & Obrusnikova, 2007). Furthermore, perceived competence, quality of experience, and APE coursework are dire components to a teachers' positive beliefs, with perceived competence being the strongest predictor of positivity (Obrusnikova, 2008). For clarity, perceived competence is a teacher's belief they have the skills necessary to accomplish teaching tasks successfully. Negative beliefs may be due to lack of adapted training in PETE programs (Tant & Watelin, 2016). It is clear that in-service and preservice teachers need more preparation about the topic of successful integration practices for APE (i.e., Hardin, 2005; McNamara et al., 2022). This can be explored through an analysis of the number of credit hours U.S. PETE programs offer or require.

Credit Hour Analysis of Adapted Physical Education Courses in Higher Education

Though preservice teachers need to participate in quality APE training, university and college structures vary in terms of degree-granting authorities. A course added at one university may not be feasible at another where many varying initiatives (i.e., social-emotional learning, social justice training, trauma-informed instruction, content knowledge, pedagogical knowledge, technology integration) already compete for concern and better coverage in an

environment of shrinking professional training. The 2018 Carnegie Classifications (carnegieclassification.iu.edu) help to clarify whether there are institutional differences in the offering of APE courses in U.S. PETE programs. These differences may be indicative of the APE preparation of preservice physical education teachers (PPETs). In the following section, we examine research concerning APE courses and credit hour offerings.

Research on Adapted Physical Education Courses in Physical Education Teacher Education

A survey from Piletic and Davis (2010) of 136 PETE faculty who teach an Introduction to APE course in the United States indicates that most (83%) PETE programs offer 3 credit hours in APE. A replication of the Piletic and Davis study from Kwon (2018) of 75 PETE professors who teach an APE course in the United States reveals that a little over half of PETE programs (51%) offer one course in APE. Both Piletic and Davis and Kwon provide valuable information and much needed evidence about APE training in PETE programs. However, the use of surveys may lead to nonexhaustive response rates and therefore not comprehensively capture the status of APE coursework. This study uses this as its empirical focal point.

With most PETE programs in the United States offering, at minimum, a 3-credit hour APE course (Block et al., 2021; Depauw & Karp, 1994; Rizzo et al., 1997), some scholars question what is missing from current preprofessional programs and what can be included in a second course or second practical experience to help strengthen an undergraduate PETE program (Block et al., 2021). These questions raise implications that need addressed and directly concern APE preparation in PETE in the United States. For a better understanding of the course climate in U.S. PETE programs, an exhaustive evaluation of APE credit hour requirements can help solidify the type of preparation PPETs are encountering throughout their undergraduate PETE program. Conducting this type of research may lead to future programming recommendations. Given current arguments, this research can also empirically embolden advocacy efforts in APE.

This study uses 2018 Carnegie Classifications to analyze APE credit hour offerings in U.S. PETE programs and whether those course offerings differ on the basis of the type of institution housing

it. Given that universities and institutions vary on the basis of size, type, and orientation toward general/adapted training, a closer analysis may offer more targeted insight into the APE preparation of PPETs. Ultimately, this work confirms or denies the hypothesis that the majority of U.S. PETE programs offer at least one three-credit hour course in APE. Results of this study can support APE preparation in PETE programs to help meet the need for teacher training that prepares the next generation of physical educators to work with all populations.

Method

PETE Program Selection Criteria

Three hundred fifty-eight U.S. PETE programs were identified and categorized into their Carnegie Classifications on the basis of the 2018 guidelines. If curriculum guides were unable to be located, those PETE programs were removed from the APE credit hour database, leaving 308 PETE programs for analysis. Institutions were broken down into three classifications: doctoral universities ($n = 86$), master's colleges and universities ($n = 158$), and baccalaureate colleges ($n = 64$). Doctoral institutions ranged in the amount of research activity required (i.e., very high, high, doctoral/professional practices). Master's colleges and universities varied from large, medium, and small programs, and for the purposes of this study, baccalaureate colleges fell under one of two classifications: arts and sciences and diverse fields. Table 1 shows the breakdown of the 2018 Carnegie Classifications.

Google and the Peterson Index were the main search engines used in identification of undergraduate PETE programs in the United States. The programs included in this study required teaching licensure. Data were compiled into a spreadsheet in which the institutions were classified and APE credit hours were recorded. Curriculum guides were located for each PETE program. Hyperlinks to those curriculum guides were inserted into the spreadsheet. This became the database for the study. Curriculum guides were used in identification of whether PETE programs offered an APE course. If the PETE program offered an APE course, the number of credit hours for that course was recorded. The database was then used for interrater reliability. Credit hours for a little over 25% of the entries

Table 1
2018 Carnegie Classifications

Type of institution	Doctoral	Master's	Baccalaureate
Levels	<ul style="list-style-type: none"> • Very high research activity • High research activity • Doctoral/professional 	<ul style="list-style-type: none"> • Large • Medium • Small 	<ul style="list-style-type: none"> • Arts & sciences • Diverse fields
Benchmark	20 or more doctoral degrees or 30 or more professional practice doctoral degrees awarded ^a	50 or more master's degrees and fewer than 20 doctoral degrees awarded*	50% of the degrees offered are bachelor's degrees*

^aNumber of degrees awarded each year.

were cross-checked. There was no need for IRB approval because this study did not conduct human subjects research. The dataset in this study was part of a larger preexisting dataset used previously and was not indicative of program quality.

Data Collection

In the spring of 2021, a database of PETE programs and corresponding curriculum guides were compiled and APE credit hours were located via each of the curriculum guide hyperlinks from the database. Programs that did not offer an APE course were excluded from the study. This ensured there were no missing values.

Interrater reliability was conducted through random selection of 80 PETE programs (i.e., a little over 25% of the APE credit hour database). The research team was trained in search protocols for using the dataset as well as course search strategies. The second rater was trained to use the Ctrl+F function to target these course terms:

“APE,” “Adapted Physical Education,” “APA,” and “Adapted Physical Activity.” Furthermore, not all course catalogs were available or navigable through the website itself, so the same process was followed when course offerings were located in downloadable PDF forms. A second rater double-checked the first raters work, and the percentage of agreement between the two raters was 81.35%, which is more than the 80% cut point for sufficient interrater reliability (Meyers et al., 2017). There were no disagreements between raters during the peer debriefing stage.

Data Analysis

After collection and cross-checking of the data, descriptive statistics and frequencies were run. An ANOVA was also completed for differences in APE credit hours on the basis of type of institution in which the PETE program was located. The Statistical Package for the Social Sciences (SPSS) software (Version 26.0) by International Business Machines Corporation was used in data analysis. A p value of $< .05$ for ANOVA indicates a significant difference.

Results

Master’s colleges and universities made up 51.3% of the sample. The majority (31.8%) of the institutions were larger master’s colleges and universities. APE credit hours ranged from 1 to 17 credits with institutions averaging 3.35 credit hours for APE ($SD = 1.726$). Of the 358 PETE programs identified, 50 either did not offer an APE course or the curriculum guide could not be located. The ANOVA test result did not show a statistically significant difference in the number of APE credit hours offered on the basis of the type of institution, $F(2, 305) = 1.714, p = .182$. Since there was no significance, a post hoc test was not conducted nor were effect sizes calculated. Table 2 displays the mean APE credit hours offered on the basis of the type of institution.

Discussion

Our initial analysis confirms universities and colleges offer similar amounts of APE training regardless of size or research production, on the basis of the 2018 Carnegie Classifications. The finding of approximately 14% of PETE programs giving no indication of APE content-based coursework in which PPEs can enroll, with initial

Table 2*Adapted Physical Education Credit Hours*

Institution type	<i>M</i>	<i>SD</i>	<i>N</i>
Doctoral	3.47	1.720	86
Master's	3.44	1.893	158
Baccalaureate	3.00	1.195	64

exclusion of these schools from the study, is similar to the findings of Beamer and Yun (2014). Our results empirically strengthen and support the notion that universities and colleges offer about one course on APE, or 3 credit hours (Beamer & Yun, 2014; Block et al., 2021; Depauw & Karp, 1994; Rizzo et al., 1997). Meanwhile, on the basis of the experiences and perspectives of physical education teachers, more training is essential for teachers' longevity in the profession and for teachers to provide a quality physical education experience for students (Block & Obrusnikova, 2007; Hutzler et al., 2019; Tant & Watelin, 2016; McNamara et al., 2022).

Perceived competence is the strongest predictor of positive belief (Obrusnikova, 2008), and targeted adapted training can improve teaching outcomes (Laughlin et al., 2019). However, even after one experience, preservice teachers need more practicum time (i.e., APE practice during field experiences; Perlman & Piletic, 2012). Whatever the educational philosophy, whether rooted in behaviorism (Reimann, 2018), social learning theory (Bandura, 1977), or self-determination theory (Deci & Ryan, 2000) a common limiting factor is time and experience in contextually relevant situations. As K–12 students with disabilities continue to be integrated in physical education at unprecedented levels (NCES, 2018), it is imperative that PETE programs adjust their curricula to foster inclusive conditions and prepare teachers to be ready to offer appropriate modifications and accommodations for students with disabilities (Holland & Haegele, 2021).

The last decade shows an increase in the prevalence of childhood disability (Kansra et al., 2021), and difficulties with mobility, cognition, independent functioning, hearing, vision, and self-care impact nearly 1 in 4 adults (CDC, 2020). This statistic, which is already considerable, does not necessarily factor in mental health

and/or undiagnosed mental health issues such as anxiety, depression, or other trauma-related conditions associated with childhood abuse or neglect. Furthermore, as medical research and big data are trending forward, all fields in education should be aware of adverse childhood experiences and their negative effects in both childhood and adulthood (Anda et al., 2006; Westermair et al., 2018). “Extreme, traumatic or repetitive childhood stressors such as abuse, witnessing or being the victim of domestic violence, and related types of abuse are common, tend to be kept secret, and go unrecognized by the outside world” (Anda et al., 2006, p. 2). The bottom line is PETE programs need to train PPEs to be advocates for the importance of mental health.

Problematic Suggestions and Rationale

According to O’Conner and Jess (2020), “consensus is not a requirement and, if the least path of resistance is adopted, the outcomes may indeed be unproductively bland” (p. 416). Consensus also faces major challenges such as teacher certification resting within diverse state government organizations and idiosyncratic policies and practices (i.e., state departments of education; Mitchell et al., 2021). By taking stock in public policy waves (Lawson et al., 2021), we make suggestions to prioritize needs for the appropriate APE instruction on the basis of the least restrictive environment (LRE), in integrated contexts. Further, we act as continued stewards of PETE by suggesting the continued use of innovative models (i.e., teaching personal and social responsibility [TPSR], social-emotional learning [SEL] strategies, restorative justice [RJ], sport education model [SEM]) and pragmatic examples that may bridge both practitioners and researchers who are equally important to students with and without disabilities. According to other research and our analysis, one or two APE courses is not sufficient in PETE. The only ways forward are transdisciplinary and interdisciplinary lenses (O’Conner & Jess, 2020), applied through collective action (Lawson et al., 2021) and infusion (DePauw & Karp, 1994) approaches. As we suggest the infusion of adapted strategies into PETE curricula (DePauw & Karp, 1994), SEL strategies may be stranded across courses. While research uses SEL in physical education settings with typically developing students (Richards et al., 2019), this construct can be utilized with students with disabilities in physical education. SEL programs

in schools can address behavioral problems and assist students with success in the classroom (Durlak et al., 2011). This type of learning construct is imperative for all students and can support students with disabilities. In this regard, teaching SEL skills in physical education with a blend of the skill-theme approach (Graham & Parker, 2013) and TPSR model (Hellison, 2003) may lead to improved SEL skills in elementary students with and without disabilities (Richards et al., 2019).

The skill-theme approach can be used in PETE to teach PPETs to customize specific skill themes (i.e., locomotor, nonmanipulative, and manipulative skills) and movement concepts (i.e., spatial awareness, effort, and relationship) in physical education with little to no equipment (Gentry & So, 2019). Educating PPETs on the importance of a mastery climate for children with and without disabilities in physical education is important because it allows for student-centered learning (Valentini & Rudisill, 2004; Wilhelmsen et al., 2019). Unfortunately, physical education teachers commonly teach large class sizes with minimal equipment, which makes it harder for teachers to teach and students to learn with one another. Utilizing the skill-theme approach can help challenge the whole class at appropriate developmental levels and lower the attention placed on students with disabilities.

RJ also has use in education to enhance mutual respect among teachers and students and to foster positive relationships (Anfara et al., 2013). RJ circles allow for discussion of undesired behaviors within an inclusive physical education setting. Through RJ circles, the entire class can build relationships, make connections with one another, and build SEL skills. The TPSR model can also educate PPETs in supporting students with disabilities.

The TPSR model (Hellison, 2003) supports students fundamental life skills through physical movement. Teachers can use this model to teach awareness talks, and the model needs to include one of the five SEL competencies (i.e., self-awareness, social awareness, self-management, relationship skills, and responsible decision-making) as the focus of the lesson. All-inclusive group discussions provide an opportunity for students to share and self-reflect on their use of SEL competency in physical activity. Ultimately, when electing a model

or combination of approaches, teachers need to reflect on developmental appropriateness for all students.

Teaching PPETs to implement the SEM (Siedentop et al., 2020) can help enhance quality integration and foster inclusionary opportunities. One component in particular, *persisting teams*, allows students and their teams to become familiar with one another over time. The *teams* grow to understand each individual's strengths. As students become teammates over the *season*, consistent communication fosters deeper—not necessarily better—friendships through less avoidant behavior and increased positive behaviors (Rocamora et al., 2019). Though SEM is promising, there is a need for more research on the feelings of students with disabilities about the extent to which they feel included. Adapted sports (e.g., sitting volleyball or goal ball) can be the focus of a season and can increase disability awareness—though the use of adapted learning activities should be approached with care and ideally include the perspective of persons with disability (Maher et al., 2022).

Teachers can also merge other complementary adaptations from game-based models such as Teaching Games for Understanding (Griffin & Butler, 2005), Game Sense (Light & Robert, 2010), and Teaching Sport Concepts and Skills: A Tactical Approach (Oslin et al., 2006). Teaching using small-sided games, grouping similarly skilled competitors, and employing modified or simplified rules and equipment adjustments (i.e., lower nets, larger racquet faces, larger/slower trainer volleyballs) are also appropriate accommodations that require careful and strategic consideration (see Lieberman et al., 2008, pp. 35–37).

Even though we highlight a variety of models that can be taught to PPETs in their PETE programs with inclusion in mind, the underlying components of these models are important for teachers to understand for strategic integration that helps foster conditions that enhance students' feelings of inclusion. Other models such as Cooperative Learning (Dyson & Casey, 2016) may better target social cohesion and cooperation, so teachers must choose curricular models to fit their (or their program's) vision for physical education with respect to student needs. Furthermore, there are philosophical arguments being made about sport and the developmental appropriateness of competition (Aggerholm et al., 2018), a concept that

teachers and teacher educators need to ponder while trying to empathize with each viewpoint, intended outcome, and/or unintended consequence. Regardless of model, researchers need to continue to look into APE preparation within PETE programs and ways to strengthen this area.

Strengths and Limitations

Findings from this study contribute to the literature on credit hour research and allocation in U.S. PETE programs, bringing to light a lack of APE credit hours and number of APE courses offerings within PETE programs. This study provides PETE faculty, teacher educators, PPETs, and in-service physical education teachers with an idea of how PETE programs are preparing their future physical educators. This knowledge may allow this field of individuals to come together and share a unified voice on the importance of preparing PPETs to integrate students with disabilities proficiently into physical education so they feel included and not forgotten or bullied by their teacher and peers. Although this study presents some strengths, it has some limitations.

First, since most information about college course offerings are made easily accessible and available to both current students and prospective students, we can reasonably assume the course offerings are accurate and up-to-date. However, the temporal nature of this project may affect that results due to curriculum changes, new course listings, and other technological errors between initial data extraction and the interrater reliability agreement process, with a majority of website information changing or being updated from Time 1 to Time 2. Moreover, broken links and lack of available information as well as a few PETE programs closing hinder our results. These factors limit our PETE program selection pool. Another limitation of this study is the search for the quantitative output in terms of courses offered as well as the number of credits. Therefore, this study does not capture information about the quality of included PETE programs.

Conclusion

There are many ways for PETE programs and teachers to make forward progress. However, some of the outcomes are within the agency we carry as teacher educators, preservice physical education teachers, and in-service physical education teachers. Embracing a

collaborative and collective active way of doing may also enhance our ways of being and lead not only to change but also to sustainable change. Regardless of methodology, researchers can embrace rigor while innovatively studying the problems they wish to change for the better. Findings from this study highlight the need for more APE coursework and/or the infusion of these concepts through a standard approach in PETE.

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PEDAGOGY

A Pedagogical Content Knowledge– Based Course Classification Process for Physical Education Teacher Education Curricula

Dong Zhang and Yan Luo

Abstract

This study aimed to formulate a course classification process for identifying and classifying courses in the curriculum for physical education teacher education (PETE). The study recruited five experts in physical education (PE), PETE, and pedagogy. The participants were professors at a college in the Northeastern United States. The five participants were interviewed about how to identify a pedagogical content knowledge (PCK) course. A PCK-based classification process was formulated. Additionally, the second part of the study analyzed the curriculum of a PETE program in the Northeastern United States to elucidate the implication of the classification process. The PCK-based classification process can identify if a course is a PCK course and classify its level on the basis of the course syllabus. However, evaluators can collect evidence through additional paths, such as class observation. The process may increase the objectivity and credibility of the evaluation of the PETE curriculum and comparison studies.

Currently, the majority of states in the United States require teacher candidates to achieve at least a bachelor's degree in teacher education, whereas other schools require master's degrees. Physical education (PE) teachers are also living under this circumstance. In

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the United States, students need to graduate from physical education teacher education (PETE) programs, which typically span 4 years, and to obtain teacher licenses to be qualified as PE teachers. For the teaching profession of PE, schools, parents, and society ask teachers to gain sufficient knowledge to educate school children. Moreover, teachers are expected not only to understand the subject matter but also to acquire sufficient ability to teach. Four forms of teacher knowledge include general pedagogical knowledge (related to instruction, organization, and management of classes), content knowledge (teacher understanding of the subject matter, such as games and sports), pedagogical content knowledge (PCK or content knowledge; the ability to help students understand the subject matter), and curriculum knowledge (ability to create the appropriate curriculum for courses; Shulman, 1986, 1987). Specifically, PCK denotes a combination of teacher knowledge, which includes instructional strategies to teach particular topics, the ability to create the appropriate curriculum in a particular field, understanding of student needs, and understanding of the meaning of teaching (Grossman, 1990, p. 25).

Studies of PCK in PE focus on several aspects. Many examine the relationship between teacher PCK and students learning performance (Creasy et al., 2012; Iserbyt et al., 2017; Kim et al., 2018). Alternatively, other studies target the development of PCK of pre-service teachers (Jenkins & Veal, 2002) and assessment of the PCK of PE teacher (Araújo et al., 2017). The PETE curriculum is an essential part of a PETE program and needs continual assessment, review, and refinement. As such, the future of PETE programs is mainly dependent on the quality of the curriculum (Bahneman, 1996). In this regard, the framework of PETE programs needs to include three areas, namely, foundational subdisciplinary, curriculum and instruction, and PCK coursework and field placement experiences (Wiegand et al., 2004). PETE programs need to feature sufficient PCK courses, including those for teaching preservice teachers on the pedagogy of subject matters related to PE, which should be organized into three age-related sections, namely, elementary school, middle school, and high school.

However, despite the importance of PCK to PETE programs, research on the number of PCK courses offered by programs or the

use of PCK as the theoretical framework for analysis of the courses is limited. Traditional studies on course or curriculum analysis mainly emphasize structure and pedagogy issues, whereas others cite PCK or highlight the importance of PCK (Andriamampianina & Moussa, 2005). However, as a course analysis standard, PCK needs more sufficient scholarly attention. Through the lens of PCK, researchers or administrators can associate curriculum analysis with the teaching quality of preservice teachers, which PCK best represents. Thus, the objective of this study is to develop a PCK-based process for evaluating courses in PETE programs. Specifically, the study formulates a process for answering several questions:

- What should be the content of the PCK-based classification process?
- How should the PCK-based classification process be used?
- Which research areas should the PCK-based classification process be implemented?

The first section of this article pertains to the formulation of the PCK-based classification process, whereas the second pertains to the application of the process, using a PETE program as an example. This study is meaningful because scholars and administrators can use the process to estimate the occupancy of PCK courses in a PETE curriculum. Moreover, the outcomes can be used for comparison among PETE curricula and may be a valuable factor in evaluation of PETE curricula.

Method

This study aimed to formulate a PCK-based classification process for PETE curricula. One study on grounded theory used qualitative data to develop a theory, where the theory could be substantive, that was specific for a situation (Merriam & Tisdell, 2016). This study used interview data to build a practical classification process, whereas the data analysis process was inductive. In the second part, this study used a deductive process to assess a PETE curriculum and explain the use of the process, which was described in the first section.

Participants

The study purposefully selected faculty members who could provide insight into how the construct of PCK would traditionally be

embedded in a PETE curriculum. This study recruited five faculty members from the Department of Physical Education and Health Education of a college in the Northeastern United States. All faculty were experts on PCK and PETE who completed terminal degrees in education, teacher education, curriculum studies, or PE.

Data Collection

Interview

Data were collected through interviews with the five faculty members, who were provided with the necessary information about the study, semistructured interview guidelines, and institutional review board permits via email as an invitation to participate. All professors agreed to participate. Prior to the interviews, the participants signed informed consent forms and acknowledged the researchers would protect their rights and personal information. With their permission, the interviews were audiotaped with two smartphones in the case that one of the equipment failed. Interview guidelines were created on the basis of the research questions. An example interview questions was “What do you expect the students to do in a PCK course?” This question aimed to obtain information about the critical elements of a PCK course. Furthermore, all questions in the guideline were neutral and did not include any leading question.

PETE Curriculum

The study assessed the curriculum of a PETE program in the Northeastern United States to elucidate the use of the process. The syllabi of the courses were obtained from the department chair and instructors.

Data Analysis

The researchers transcribed all recorded interview data. Data analysis enabled the emergence of codes and themes from the research questions. This constant comparative process was intended to reduce data and construct themes that answered the research questions and provided cautious interpretations that represented the beliefs and experiences of the participants.

The PCK-based classification process was used in analysis of the sample curriculum. This elucidated the manipulation method. The curriculum was analyzed in three steps. First, all courses were

screened, and this allowed for selection of potential PCK courses requiring classification. The screening process was mainly dependent on course descriptions given that the class included any content knowledge related to PE. However, not all potential PCK courses were classified through this process. Thus, the full syllabi was read and courses that only included content knowledge and no pedagogical knowledge were excluded. The second step included analysis of PCK courses, in which each course was classified as a specific level out of five levels. Finally, the proportion of PCK courses in the PETE curriculum was calculated via level and credit hours.

Trustworthiness

The transcripts were double-checked with the participants for accuracy. We analyzed the data separately the first time then combined the results. Meanwhile, peer debriefing was used for avoidance of bias. We also requested the experts to review the data and results to ensure the efficiency of the classification process.

Results

Part I

Part I of the study aimed to analyze the interview data. This analysis answered questions about course screening, syllabus evaluation, critical elements of a PCK course, and PCK evaluation.

Course Screening

Physical Education Content Knowledge. The course screening required content or subject matter related to PE be included in the course due to the nature of PCK. The precondition of a potential PCK course was delivery of content knowledge for PE. Thus, the PCK-based classification process appropriately evaluated only potential PCK courses. Therefore, the first task was identifying the components of content knowledge for PE.

All participants made comments about content knowledge of PE including knowledge related to fundamental movements, sports, and physical fitness. Example comments included “Everything that is . . . related to movement, all things related to fitness, all things related to sports” and “It’s like the things that you want students to learn to take away with them after stay 12 years of experience in PE.”

They mentioned skill learning as one objective of PE. They also cited other types of knowledge, tactics, strategies, rules, and games, among other things related to fundamental movement, sports, and physical fitness, for inclusion in the content knowledge of PE. Example comments included “It could be skill cues. It could be the rules of sports or the objectives of sport” and “So, I mean that could be the rules of specific sports, the strategies of sports . . . it could be like other movement related.”

The participant-provided standards were similar to the National Standards for K–12 PE of the Society of Health and Physical Educators (SHAPE America, 2014), but the SHAPE America standards included social skills and personal values as the objectives for student learning in PE. Thus, for the purposes of this study, content knowledge for PE needed to consist of all knowledge related to fundamental movements, sports, physical fitness, social interaction skills, and personal values. In the PETE curriculum, any course intending to prepare preservice PE teachers to teach at least one piece of content knowledge of PE was considered a potential PCK delivery course.

Pedagogical Content Knowledge for Physical Education. The next step was identifying the appropriate courses for assessment of the potential PCK courses selected on the basis of content knowledge for PE. This study used JeongAe’s (2011) six components of PCK in PE, namely, knowledge of PE as a subject, physical curriculum, subject teaching methods, students’ learning of physical activity, PE assessments, and PE instructional environment. This was an advanced step for screening potential PCK courses.

Methods Comparison. This study filtered courses for content knowledge for PE with the assumptions that these courses possibly included all potential courses delivering PCK and that other courses were inefficient in developing the PCK of students. Alternatively, the study assumed the PCK component method would filter out skill classes if the main objective of the courses for the preservice teachers was to learn instead of teach movement skills. Thus, this study used both standards, namely, content knowledge of PE and the PCK components of PE, for more effective course screening.

Evaluation Evidence

All interviewees reported the syllabus was the most important evidence for the course classification, with a syllabus providing useful information, including course description, objectives of the course, class schedule, assignments, and course expectations. Example comments included “I would come back to the objectives on the syllabus. What are the intended outcomes for the course? That should be the tip for what the focus is,” “lesson plans of the faculty members, the syllabus, the course objectives would be, I think, the biggest indicator. And then what assessments the faculty member used to evaluate the student throughout the course. I think those would all be good pieces of evidence,” and “I mean probably the syllabus; you could get most [evidence] from if you were trying to look at.”

Alternatively, although a few participants cited the essentialness and usefulness of a syllabus, they also said it was insufficient. They addressed this concern by suggesting alternatives for gathering evidence for course classification such as observations and interviews with students and teachers. Example comments included “So, a syllabus, observations, interview with a teacher, interview with . . . a random group of students . . . should show a decent amount of [evidence]” and “Maybe do four observations over the course of the semester. Interview the teachers, interview the students, and start seeing, like, across all this collective, like, living data.

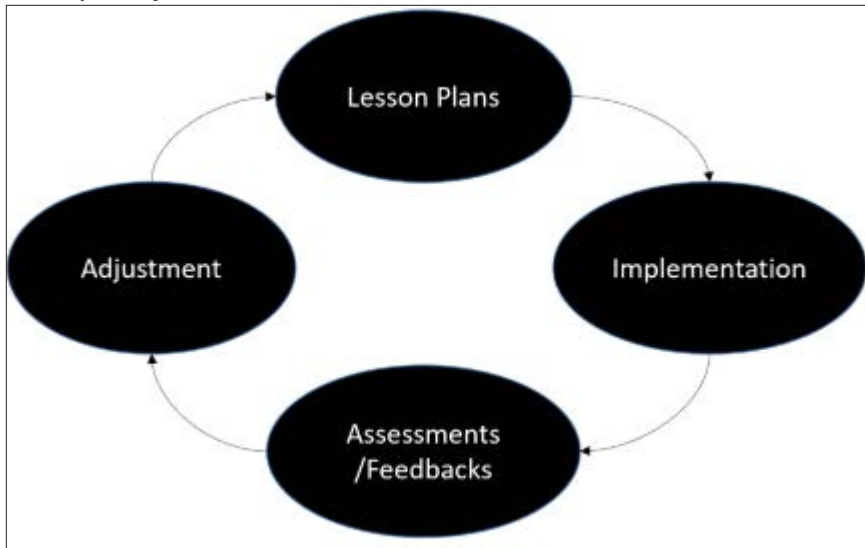
As such, the syllabus was the most important and necessary evidence for the classification process. Interviews and observations were extra resources for the evidence, but not be indispensable, because these methods cost more time and manpower.

Critical Elements of a PCK Course

The participants identified the four critical elements of a PCK course, namely, writing of lesson plans, implementing the plans, assessing learners or receiving feedback from instructors, and applying experiences to new lesson plans. An example comment was “Are they lesson planning? Are they implementing a lesson plan? Are they assessing within the implementation of the lesson plan? And how are they using data from assessing?”

Figure 1 illustrates a cycle, which explains the interconnections among these elements. The adjustments are derived from the

Figure 1
The Cycle of PCK Critical Elements



assessment and feedback steps and are accumulated throughout the process. Preservice teachers may obtain feedback or rethink their lesson plans during the writing and application. Moreover, adjustments can be derived externally, such as feedback from instructors, and internally, such as the experiences of preservice teachers.

Course Classification

Given its future application, classifying the process according to the opinions of the interviewees and the number of critical elements produced five levels, although a scale that is two degrees higher is appropriate for statistical analysis, even if the variable is noncontinuous, such as the Likert-type scale (Ary e. al., 2010):

- **Level 1.** The course is identified as a PCK course but does not expect students to practice any critical element.
- **Level 2.** The course expects students to implement one critical element.
- **Level 3.** The course expects students to implement two critical elements.
- **Level 4.** The course expects students to implement three critical elements.
- **Level 5.** The course expects students to implement all critical elements and repeat the cycle.

An example comment was “the next level might be that it’s focused on general pedagogical knowledge, but . . . the students are going to be expected to . . . use some content knowledge . . . and then the next level might be that they are integrating . . . learning content within the course as well as pedagogical knowledge.”

Part II

The second part of the study aimed to elucidate the use of the PCK-based classification process. An undergraduate curriculum was selected from a PETE program of a college located in north-east America. This 4-year program was for teacher licensure and required students complete a minimum of 120 credits. The curriculum included four parts, namely, general education program (40 to 46 credits), major requirements (grouped into 46 credits for core requirements, 5 credits for additional skill requirements, and 16 credits for specific field/practicum requirements), teacher licensure requirements (27 credits), and electives (a minimum of 120 credits). The syllabi were considered the primary evidence for this analysis.

Primary Course Screening

The subjects of the PCK-based process were courses that deliver PCK at certain levels. Courses not intended to teach content knowledge and PCK of PE were excluded from the analysis. The first step of the course screening ruled out the two sections of the curriculum, namely, general education program and electives. Specifically, the general education program aimed to develop the general knowledge of students about the world and society. This PETE program did not feature specific requirements compared with other programs in this department. Thus, courses under the general education program could not be considered a class that developed PCK and this study excluded electives for this reason. The program lacked a list of courses for elective enrollment. Thus, the students could take any class outside of the required courses to meet the requirement of 120 credits. However, the chance for a student to enroll a PCK course as an elective was meager and this could be ignored.

Advance Course Screening

Courses in another two sections, namely, major requirements and teacher licensure requirements, were the primary subjects of

analysis. However, not all courses in the two sections intended to develop the PCK of the students. At this step, all courses unrelated to content knowledge or PCK of PE were screened via the methods for identifying subjects using the PCK-based classification process. Meanwhile, all remaining courses after this screening step were further classified in the next step. Table 1 presents the result of the screening process. The syllabi of the courses were read as evidence for decision making. However, reading all information on the syllabi at this step was not a requirement. The course description and purpose were sufficient for determining whether a class delivered content knowledge or PCK of PE.

Table 1
Course Screen Result

Courses excluded—totally 45.5 credits	
Non-PE content knowledge concentration	Non-PCK concentration
Math course; College Writing I & II; Sheltered English Immersion; Foundations of Multicultural Education	Instruction to Dance; Physiology of Exercise & Lab; Kinesiology/ Biomechanics & Lab. Outdoor Pursuits; Psychology of Sport; Sociology and Heritage of Sport and Physical Education; Physical Health and Wellness; Anatomy and Physiology Concepts I & II and the Labs; Physics for Movement Science and the Lab

Course Classification

At this point, all courses retained after the screening process were at least Level 1 PCK courses because the class objectives were to instruct the students how to *teach* the content knowledge of PE. For further classification, the study analyzed the assignments and assessment methods of the classes.

Table 2 displays the result of the PCK course classification. Forty-nine credits of classes in the PETE curriculum were identified as PCK courses, including 7 credits Level 1 courses, 5 credits Level 2 courses, 1 credit Level 3 course, 3.5 credits Level 4 courses, and 32.5 credits Level 5 courses. Courses under Level 1 included goals to deliver a certain level of PCK but did not ask students to engage with

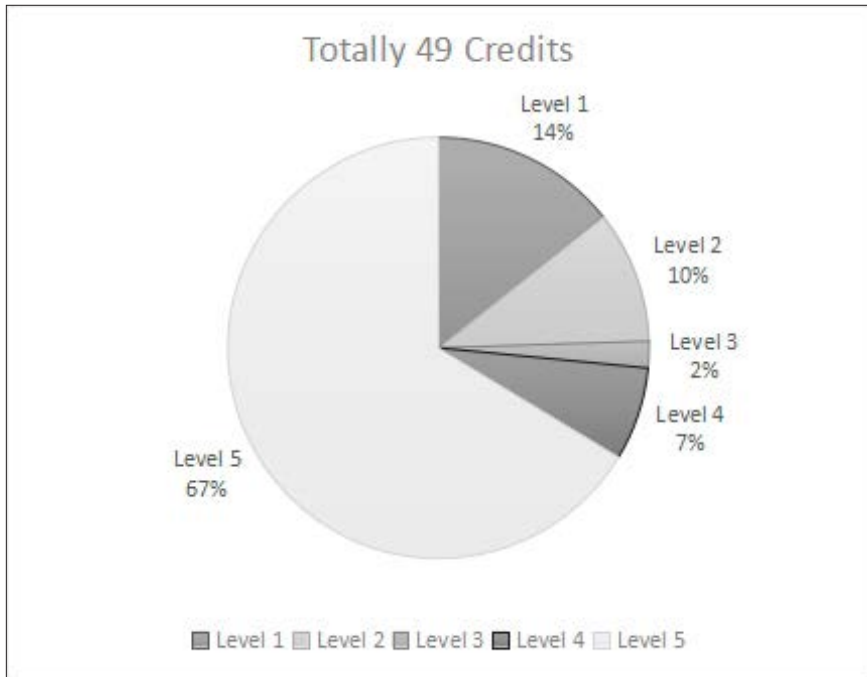
the four critical elements (Figure 1). The eight Level 2 classes had skill requirements and expected students to write lesson or practice plans but did not necessitate their application or implementation of authentic teaching. Only one class was classified as Level 3, because the course only expected students to write lesson plans and conduct peer teaching but excluded other critical elements. Courses under Level 4 shared similar structures, that is, instructors required the students to write plans, students taught appropriate age children through their plans, and instructors reviewed and provided feedback to students. However, teaching was a one-time experience. In other words, students were only allowed to teach again after receiving feedback from instructors. Level 5 courses included all classes for methods and fieldwork. The students were required to complete these courses by applying and repeating the cycle of PCK teaching multiple times.

Table 2
PCK Courses Classification Result

Level	Credits	Course
1	7	Lifespan Motor Development; Motor Learning and Skill Acquisition; Outdoor Adventure; Physics for Movement Science Laboratory
2	5	The Skill Requirements Classes: Educational Gymnastics; Target Games; Basketball; Territorial/Invasion Games; Volleyball; Striking Games; Track and Field I; Racket Sports—Net and Wall Games
3	1	Fitness for Life
4	3.5	Skill Themes and Movement Concepts; Assessment in Movement and Sport & Lab
5	32.5	Instructional Strategies in Physical Education & Lab; Adapted Physical Education Programming; Adapted Aquatics; One Coaching and Officiating Course; Elementary Physical Education Methods and Pre-Practicum: Grade K–2 and Grade 3–5; Secondary Physical Education Methods and Pre-Practicum: Grade 6–8 and Grade 9–12; Specific Fieldwork/Practicum Requirements

Statistically, for the graduation requirement of 120 credits of the PETE program, 40.8% of courses aim to develop the PCK of students at different levels. Figure 2 depicts the proportion of the courses that compose each level in the PCK courses.

Figure 2
Distribution of PCK Courses



Discussion

This study aims to develop the classification process to identify and classify PCK courses in PETE curricula. In the United States, the majority of higher education programs are evaluated by government agencies, professional institutions (e.g., authorized universities or institutions), or departments to which the programs belong. The traditional evaluation methods for PETE curricula are typically qualitative (Melnychuk et al., 2011; Tjeerdsma & Metzler, 1998). However, results derived from the traditional evaluation system are considered subjective. Although rubrics and standards to guide evaluation are available, the conclusions are highly dependent on the personal opinions of evaluators. This study does not intend to

question the efficiency and professionalism of the traditional evaluation systems for PETE curricula. Instead, it proposes that adding irrefutable quantitative evidence increases the credibility of the conclusions of the evaluation.

The proposed PCK-based classification process can extract quantitative data from qualitative evidence. This process uses course credits to indicate the statistics of the PCK courses in a PETE curriculum. The logic of the course screening process logic is a course that can be considered a PCK course must meet two requirements. First, the course has to deliver content knowledge of PE. The National Standards of SHAPE America (2014) are widely recognized and used around North America (Walton-Fisette & Sutherland, 2020). In this regard, the process uses national standards to minimize the risk of missing a class related to content knowledge of PE. Second, a course can include PE content knowledge and develop the PCK of students at the same time. As such, the course can be considered a PCK course.

A key finding from the interviews is that most professors use methods classes to explain an ideal PCK course. The primary aim of a method class is to develop the PCK of students and enable them to apply these methods to fieldwork experience. Students can gain from a method course skills to not only teach physical activities and sports but also manage a class, teach different populations, communicate, and use other skills for inducing a teaching environment to teach (McCullick, 2000, p. 34). Thus, a typical method class can be considered the standard of PCK courses.

The statistics for PCK courses in a PETE curriculum lack high reference value if not compared to other curricula or standards. For example, the occupation of PCK courses in a PETE curriculum (in this study, 40%) may be relatively high or low according to standards or other curricula. Furthermore, the PCK-based classification process may be helpful to curricular comparison studies. The majority of studies compare the construction of different curricula (Andriamampianina & Moussa, 2005; Chi et al., 2007). According to the nature of qualitative research, the external validity of the results is highly limited. However, the comparison can be more straightforward and the results can be more transferable if the statistical result obtained through the proposed classification process is used.

Another issue of the traditional studies on curricular comparison is the lack of a lens or theoretical framework (e.g., Zhang & Chang, 2011). In essence, scholars discuss the lacking aspects of the target curriculum compared with the standard curriculum. Nevertheless, the evidence is weak. The PCK-based classification process can set the focus for studies on curricular comparison to render them less divergent and general.

Limitations and Future Study

One limitation of this study is the participants belong to the same PETE program. Thus, their philosophies and knowledge may be similar and be influenced by the program. Experts from other programs may provide different perspectives that can improve the classification process.

Future studies can use the PCK-based classification process to conduct multiple comparison of PETE curricula. Thus, researchers may create a standard for identifying the appropriate proportion of PCK courses in a PETE program or for comparing the results between the curricula, using a recognized excellent curriculum.

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PHYSICAL ACTIVITY

School Websites: Local Contexts of Physical Activity and Physical Education Information

Aaron J. Mason, Hans van der Mars, David Kahan, Kahyun Nam

Abstract

As the digital age continues to evolve, websites provide a potential way for physical education (PE) programs and schools to offer information on how they handle the topic of physical activity (PA). Charter schooling and charter schools have become substantially prevalent over the last 30 years, and the trend does not appear to be slowing. A variety of studies to gather information about PE and PA have already been conducted (Hill et al., 2010; Kahan & McKenzie, 2020; Kahan & McKenzie, 2021; Kahan et al., 2019). Specifically, Kahan and McKenzie have performed a variety of website analyses in the state of California, content-analyzing the sites to surveil PA and PE information on school websites. Further, they have looked at school factors such as local demographics, school size, religious affiliation, and public/private/charter affiliation. By following an intended partial-replication protocol, we looked to surveil Arizona-based charter schools to study the local context of another charter “hotspot.” We collected data through data collection protocols communicated by Dr. Kahan (circa June 2019). By conducting a quantitative descriptive study, we looked at characteristics and ran binary regression models to look for inferentially underlying trends. Descriptively, most findings mirrored those of previous research, with marginal presence of

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any information specific to PE and PA. We found significant predictors for website information for the categories of sports, PE frequency, presence of a PE teacher, school levels, and recess. We found similarities and differences between school types, but these targeted certain factors that may be expanded on or used to guide future website analyses both in Arizona and nationally. This is significant because as the prevalence of charter schools continues to grow, it is important to keep students sufficiently physically active and physically educated throughout a school day.

The National Center for Education Statistics (NCES, 2021a) reported Arizonan students to spend an average of 6.43 hr/day, 32.15 hr/week, or 5,787 hours/year at school. Given this substantial proportion of time spent in school, Kelder et al. (2014) identified school sites as crucial venues for students to engage in physical activity (PA) and reach the guideline of at least 60 min/day of moderate-to-vigorous PA (MVPA; U.S. Department of Health and Human Services, 2018). In 2008, the Society of Health and Physical Educators America (SHAPE America) published an official position statement that introduced the Comprehensive School Physical Activity Program (CSPAP) model (Webster et al., 2020) to increase the amount of PA throughout the school day.

Comprehensive School Physical Activity Program and Policy

The CSPAP is a framework for planning and organizing various components of school systems and practices that aim to increase PA opportunities for both students and school staff (SHAPE America, n.d.). This initiative builds upon the Whole School, Whole Community, and Whole Child (WSCC) framework developed to support public health on the basis of the ecological systems theory (Bronfenbrenner, 1992). The CSPAP components consist of (a) quality physical education (PE), (b) before- and after-school PA opportunities, (c) PA during school, (d) family and community engagement, and (e) staff involvement. The overarching goals of CSPAP are to ensure students engage in 60 min/day of MVPA and to create a healthy and active school culture for not only students but also the staff and the community at large.

The local educational governing policies and policymakers have the responsibility to ensure widespread CSPAP implementation so students have opportunities to be active through quality PE and other PA opportunities (e.g., recess, before-school programs, classroom PA breaks, extracurricular programming). The historical impact of the No Child Left Behind era has not been supportive of the CSPAP initiative. For example, during this time, PE has not been included in the core curriculum (Barnd & Harris, 2004) and thus has been considered a noninstructional expenditure, which has led to the loss of PE time, teachers, and programs (Chakrabarti et al., 2015; National Public Radio, Robert Wood Johnson Foundation, & Harvard School of Public Health, 2013). However, the more contemporary Every Student Succeeds Act era has been more favorable to marginalized “specials” (e.g., PE) and recess in terms of increased focus on movement, and the act has been arguably more important financially, per Title II and Title IV.

A survey conducted by National Public Radio, Robert Wood Johnson Foundation, and Harvard School of Public Health (2013) indicated that from 2005 to 2013, guardians’ overall approval of schools’ curricular emphases, as it relates to PE, significantly declined, from a 35% approval rating to a 25% approval rating, respectively. One in 5 parents reported PE was underemphasized, and 3 in 10 parents reported and assessed the time amount in PE with a C, D, or F. Parental ratings suggest there are inadequate levels of PE being delivered in schools.

Trends in Public Charter School Prevalence and School Website Analysis

A public charter school is funded publicly through tax dollars and is governed by an organization that has a legislative contract (i.e., a charter) with a district, state, or other entity (NCES, 2021b). Charter schools were first enacted in Minnesota in 1991 but at the turn of the century began expanding at a rapid pace. From 2000 to 2017, enrollment in charter schools increased and even outpaced public school enrollment in comparative growth. Specifically, charter school enrollment increased by 2.7 million students, whereas public schools only added 600,000 students. Charter policies vary from state to state, and this trend does not affect each state equally or proportionally. On the basis of their total populations, states such

as California and Florida have a larger number of charter schools than other states. However, other states are more proportionally experiencing school chartering trends at higher rates. For example, the states with the highest proportions of enrollment are Arizona (17%), Colorado (13%), and Louisiana (11%).

Despite these climbing rates of charter enrollment, trends concerning PA opportunities remain understudied. A contemporary tool for assessing PA and PE trends in practice and policy is web-based surveillance (McKenzie, 2019). Advantages of website content analysis are it does not suffer from low survey response rates and the content is accessible 24 hours a day (Kahan & McKenzie, 2019). This type of surveillance can be used for monitoring PA and PE policies. An additional advantage of this type of inquiry is it can be tailored to local context. For example, websites of 37 school districts and 860 randomly selected schools within those districts were analyzed for the prevalence of posting PE schedules and associated PE documents related to stipulations set forth in a lawsuit settlement litigated against said districts for not providing PE minutes in accordance with state educational code requirements for elementary schools. While most district websites posted such documents, only 11% of the schools posted PE schedules (Kahan & McKenzie, 2019). Kahan and McKenzie (2021) suggested that PA and PE information on school websites was sparse overall. Interestingly, private schools offered more information compared to public charter schools.

Though website analysis is not completely novel (Hill et al., 2010; Washburn & Sinelnikov, 2016), additional empirical evaluations can be conducted in other contexts, whether charter school or public school, of educational policy. They can inform national and state entities (e.g., school districts, medical/insurance organizations) to either strengthen current policy or inform researchers of coming trends in a form of future forecasting. Furthermore, replication strengthens the empirical basis of both the data and possible interventions, suggestions, and/or implications that come from such data.

Local Legal Contexts

As the state with the highest proportionally affected location of charter attendance, at 17%, Arizona is a prime example of a state in need of more evaluation. Importantly, the Recess Law (Senate Bill [SB] 1083), signed into law in 2018, mandates that all K–5 students

be allotted at least two recess periods a day (see www.azed.gov/pe/recess). Unfortunately, because of the wording of the legislation, reporting these measures through state oversight processes is not empirically impermeable; the law does not include reporting requirements regarding district adherence or sanctions for not providing students with adequate levels of PA. Thus, evaluations of school website information can provide a proxy indicator of SB 1083 adherence. Such data can inform key stakeholders (e.g., school administrators, state education departments, politicians, parents, researchers) about the current conditions of and progress toward creating healthy, active school environments. This groundwork is the first step for gaining evidence for evaluating PA and PE on the basis of local context, state laws, and CSPAP practices. This information also informs continued conversation about the role of policy in ensuring students achieve minimum rates of health-optimizing levels of PA through access to quality PE and other PA opportunities, such as daily recess time (McKenzie & van der Mars, 2015; Metzler et al., 2013; van der Mars, 2018).

The purpose of this study was to analyze K–6, K–8, and 6–8 charter school websites and better understand the available PE and PA information represented in a singular state context. Secondly, we explored whether information posted on school websites followed the mandate of Arizona SB 1083 in terms of offering at least two recess periods a day for elementary (K–5) students. Additionally, we examined the associations between demographic variables (e.g., school location, school size, school type, median income of surrounding neighborhood) and website variables. Finally, in our replication of Kahan and McKenzie’s (2020, 2021) study, we extended a small but growing evidence base on website analyses of PE, sport, and extracurricular activities. We included recess variables, cross-checked the state certification variables for teachers, and assessed the presence of adapted physical education (APE) to better understand what charter schools communicate to the public.

Method

School Selection and Data Extraction

A list of 609 charter school names from the Arizona Department of Education (ADE, 2014) Charter Search was extracted. Schools

were then categorized into grade levels of (a) K–5, (b) K–8, and (c) 6–8. Demographic variables were acquired for each school, which included school operation status (active or inactive), grades served, enrollment numbers, year opened, county, city, and median income of zip-coded location. Operation status, grades served, year opened, county, and city were acquired from the ADE Charter Search website. Enrollment numbers were extracted from the NCES (2021c) enrollment kiosk. Median income for each zip code was calculated with the U.S. Census Bureau (2019) fact-finder app.

Because the focus of the project included recess, only K–6, K–8, 6–8, and 7–9 schools were further evaluated. Given a small proportion of 6–8 and 7–9 schools, these categories were combined. Out of 261 eligible schools, 15 were inactive, three public schools were miscategorized as charters, one was a fully private school, and one school was not yet open, leaving 241 schools. After initial exclusion, a randomized list was generated for the random selection of the sample. Finally, during analysis, two more schools were excluded because their websites communicated closure of the school, leaving 239 schools for data extraction.

The lead author analyzed the websites systematically and investigated tabs, moving left to right or top to bottom depending on page layout. Typical tabs included about us, our school, academics, athletics, curriculum, calendar, enrollment, parent resources, staff contact, and student information. Furthermore, student handbooks and school wellness policies were also downloaded (as PDF documents) and vetted for pertinent information to the study (e.g., recess frequencies, PE policies, PE or APE curricular information). As Kahan and McKenzie (2021) noted, to complete a quantitative content analysis, coders need to use category rules to assess differences in content from sources. The following variables were coded with an occurrence or nonoccurrence criterion guided by, though not identical to, Kahan and McKenzie's (2021) original study, in pursuit of replication:

- **PE mention:** whether PE was or was not present on the website
- **PE prominence:** the centrality of presence of PE on the website (e.g., was PE mentioned on the primary screen; was there an accessible drop-down menu; were the links navigable?)

was coded categorically, allowing for assessment of visibility and usability features

- **APE mention:** whether APE was or was not present on the website
- **PE curriculum:** a description including scope and content identified generally, such as fitness activities, games, and locomotor skills, or specifically, such as badminton and soccer, as well as its sequence—grade by grade or upper elementary versus lower elementary; additionally, curricular verbiage mentioned, such as Fitness for Life (Corbin et al., 2018), Dynamic Physical Education (Pangrazi & Beighle, 2019), or Sport Education (Siedentop et al., 2020)
- **PE frequency and PE duration:** described either generally, such as regularly and every week, or specifically, such as twice weekly and daily; further, duration defined by scheduled length of a lesson (i.e., 30, 45, or 60 min).
- **PE teacher description:** if teacher was listed on the website, we used a combination of website information and ADE educator certification lookup to check for teacher endorsements in PE and/or general teaching licensure in Arizona
- **Recess frequency and recess duration:** described generally, such as daily, or specifically, such as twice daily; further, duration defined by the cumulative time of one recess session (i.e., 10, 15, or 20 min)
- **Interscholastic sports program:** a minimum of two schools compete and includes at least one sport opportunity or team identified
- **Noninterscholastic extracurricular PA program:** at least one PA opportunity such as dance, karate, running club, rec games, or after-school PE
- **PA images:** at least one still image or automatically playing video overview (typically on the home page) depicting at least one student engaged in PA; images categorized as PA/PE only, sport only, or both PA/PE and sport; posed sport images, such as team photos, included; we did not assess galleries or videos, unless they could be seen without interacting with or clicking on links

Data Coding and Treatment

Demographic variables were created on the basis of the Kahan and McKenzie (2020) study and the ADE Charter School Directory. School zip codes were entered into the U.S. Census Bureau's factfinder app, and median income was extracted. After extraction, and on the basis of the median family income in Arizona of \$58,945, we coded these values dichotomously into either higher income bracket (1 = \$58,945 + \$1.00) or lower income brackets (2 = \$58,945 - \$1.00). To greater contextualize differences among rural and urban cluster locations, we also used zip codes to find population density and dichotomously coded urban clusters as 1 (population over 50,000 people) or 0 (population under 50,000 people). Grade levels at each school were coded as 1 (lower elementary and upper elementary; K–6) and combinations of grades within this span, 2 (lower elementary–upper elementary–middle school; K–8) and combinations including the seventh grade within this span, or 3 (upper–elementary–middle school–lower high school; 4–9). For coding the school enrollment, we used total enrollment based on NCES statistics including all grade levels present, subsequently calculated balanced tertiles, and coded a school as 1 (small, ≤ 190 students), 2 (midsize, 191–495 students), or 3 (large, > 495 students).

Following demographics, we adapted and created variables for webpage content. PE mention was coded as 0 (no verbiage) or 1 (verbiage included). APE mention was coded as 0 (no verbiage) or 1 (verbiage included). If PE was mentioned, PE Prominence was coded as 0 (not prominent = evidence of PE was present only in the form of a PE teacher being listed with no other reference on the website, PE items [e.g., the need for appropriate footwear] being mentioned in the student handbook, and/or the PE link being broken); 1 (somewhat prominent = evidence of PE was present in terms of PE being briefly mentioned in “curriculum,” in a handbook, or on the educational program's webpage, being misclassified as athletics [i.e., called athletics instead of PE], or being mentioned in daily schedules); 2 (prominent = evidence of PE in centrally located information hubs such as a principal's welcome, under curriculum tabs, on a PE-specific webpage or teacher's page, and/or detailed in the wellness policy/student handbook).

We coded PE frequency as 0 (not mentioned) or 1 (mentioned). When the specific frequency was present, we entered the lowest value (e.g., every other day = 2) as a continuous variable indicating lessons per week. If PE duration was mentioned, we calculated an average value depending on given information or averaged these numbers if they varied across grade levels (e.g., kindergartners had 30-min lessons and middle schoolers had 50-min lessons).

PE Teacher Presence was coded as 1 (teacher listed by surname on website) or 0 (no teacher mentioned). If a teacher was present, we crosschecked the teacher with the ADE educator lookup and coded as 0 (no information other than name on site and no matching name found on the ADE website), 1 (no information other than name on site and no matching names licensed as teacher or endorsed in PE), 2 (teacher bio indicated licensure and/or matching name displayed teacher licensure—not necessarily PE endorsement), or 3 (teacher bio indicated licensure and PE endorsement and/or matching name located on ADE website). In cases of multiple names (e.g., John G. Smith, John R. Smith), if one of those names registered licensure or endorsement, we applied the applicable code.

Recess frequency was coded as 0 (not mentioned) or 1 (mentioned). When frequency was specifically mentioned, we entered the daily value (e.g., daily recess or twice daily recess) as a continuous value. Recess duration was averaged for daily value (e.g., one 15-min recess and one 20-min recess = 17.5 min). Sport (Opportunity) and Extracurricular PA were coded as 0 (not mentioned) or 1 (mentioned). Furthermore, we aggregated total opportunities for PA before school, at recess, in PE, and after school in sport or non-interscholastic (e.g., karate or running club) as a continuous variable from 0 (minimum) to 5 (maximum). Finally, we coded PA image as 0 (no image on website), 1 (only sport was depicted), 2 (PA or PE was depicted, but not with sport), or 3 (both codes 1 and 2 were present).

Coder Reliability

An independent coder went through website searches and coded the information on the basis of the codebook. The second coder was trained to scour every available tab and PDF downloads of wellness policies or anything that might contain PA or PE information. The second coder was trained to use the Ctrl+F command to target specific information both on the website and in the wellness

policies. Search commands included terms such as “PE,” “Physical Education,” “Adapted Physical Education,” “APE,” “Recess,” “Sport,” “After-School,” and “Before-School.” These search terms ensured a thorough search of each site. We then drew a 10% random sample to allow for an assessment of the primary coder’s reliability. This resulted in intercoder reliability of 91.3% agreement (agreements plus disagreements, multiplied by 100), which means the data can be considered accurate.

Data Analysis

SPSS Statistics 27 (Armonk, NY) was used in the calculation of frequencies and descriptive statistics for measures of central tendency (e.g., means, standard deviations, variance). Replicating Kahan and McKenzie (2020), binary logistic regression analyses were used with the dichotomous variables of PE mention, APE mention, PA image, PE frequency, PE curriculum, PE teacher, recess mention, sport, and extracurricular PA. School demographic variables served as predictors. PE mention and APE mention were used as predictors with PA image, sport, extracurricular PA, and recess mention; PE prominence was used only as a predictor with the sport regression analysis. We dummy coded PE prominence and PA image when they were used as predictors. The stability of the regression was determined on the basis of the significance of the chi-square, Cook’s distance, leverage values, standardized residuals, DFBETA values, and tolerance of variance inflation values.

Results

School Demographics

The 239 schools in the study represented 51 cities and suburbs within 12 of Arizona’s 15 counties. Out of the 12 counties, most charter schools were in Maricopa ($n = 159$), Pima ($n = 33$), and Yavapai ($n = 13$) counties. In terms of enrollment statistics, 91,670 students attended charter schools, with high between-school variability ($M = 403.8$, $SD = 329.5$). Data were unavailable for 12 of the schools. Most schools ($n = 192$) were in urban clusters, or zip codes with more than 50,000 residents. Most of the schools (59.4%) were located in areas where the a household income was below the median in Arizona (\$58,945) and the rest of the schools (40.6%)

were located in areas where the a household income was above the median income in Arizona. In areas where the a household income was below the median in Arizona, salaries varied ($M = \$43,646$, $SD = \$9,225$), and this trend was observed with greater magnitude in the higher income areas ($M = \$80,051$, $SD = \$17,736$). For further clarity, this salary information was based on census data for median household income, thus providing a picture of what each family earns and reports to the Internal Revenue Service in each zip code.

Most schools included elementary or combined elementary and middle school grades (K–5; 56.1%), followed by contiguous elementary and upper elementary schools (K–8; 36.8%). There were few freestanding middle schools (6–8; 7.1%). Although school size was categorized by enrollment tertiles, as school sizes increased so did the variability within school size categories: small ($M = 117.7$, $SD = 49.8$), midsize ($M = 312.3$, $SD = 81.7$), and large ($M = 780.3$, $SD = 288.3$) enrollment. Table 1 compares schools of varying levels that included PA, PE, and sport.

Table 1
Frequencies for PA, PE, and Sport Offerings

Grade level	Website content					
	PA images		PE mentions		Sport offerings	
	None %	Present %	None %	Present %	None %	Present %
K–6	43.2	56.8	28.4	71.6	71.6	28.4
K–8	40.3	59.7	20.1	79.9	37.3	62.7
6–8	52.3	47.7	23.5	76.5	52.9	47.1
Total	42.3	57.7	23.4	76.6	46.9	53.1

Note. PA = physical activity; PE = physical education.

Extracurricular Programs and Physical Activity Images

Just under half (46.0%) of school websites included information about the presence of an interscholastic sports program. Few school websites (2.9%) included information about the presence of both sports and an extracurricular program. Conversely, 24.7% of school websites advertised noninterscholastic extracurricular PA opportunities. Cumulatively, about one eighth of school websites (12.6%) had no information pertaining to PE, recess, sports, or nonsporting

activities (e.g., karate, dance). About one fifth (22.4%) of school websites offered information about one of the movement opportunities. About one fourth (24.3%) included information about two of the five possible PA opportunities (including PE). Just over one fourth of school websites (28.9%) presented information about a combination of three of the opportunities (e.g., PE, recess, or sport/dance/karate/yoga/other recreational movement). About one eighth (12.1%) of schools provided information about all four opportunities.

Recess and Adapted Physical Education

Only just over half the school websites (54%) mentioned recess, and only 42 school websites (17% of total) offered more detailed information such as frequency and duration of recess. Out of those that mentioned recess, one school offered recess three times a day, 17 (7.1%) schools offered recess two times a day, and 24 schools (10%) offered recess once a day. Recess duration varied, and school websites reported 15- (2.5%), 20- (7.1%), 25- (1.3%), and 30-min (3.3%) recess periods. Only 10 (4.2%) school websites offered information about APE services.

Physical Education and Teacher Information

Most school websites (76.6%) mentioned “physical education.” About one third of school websites (31%) prominently displayed PE-related information; one fourth (25.9%) somewhat prominently presented information; just over one fifth (21.3%) did not prominently display PE information, but some evidence was present; and a final fifth (21.8%) presented no evidence of PE. Few school websites ($n = 42$ or 16.7%) included information on lesson frequency per week: 1 day (30%), 2 days (15%), 3 days (2.5%), 4 days (27.5%), and 5 days (25%). Fewer school websites mentioned duration of lessons, but those that did reported PE duration of 25 (0.4%), 30 (1.7%), 40 (4.6%), and 45 (0.4%) min. Socioeconomic factors were significantly related to whether or not the school website mentioned PE. For curriculum, about one third (33.5%) of websites mentioned details about PE sequencing or content, and about two thirds (66.5%) did not. Teachers responsible for teaching PE were listed on less than half of the school websites (45.2%). Thus, a slight majority of the

websites (54.8%) did not list their PE teachers. When they were listed and crosschecked, 14 (13.1%) were licensed and endorsed in PE, 19 teachers (17.8%) were licensed teachers (though not endorsed in PE), 50 teachers (46.7%) were not licensed as per ADE, and 25 teachers' names (22.4%) were not present in the ADE database.

Regression Models

Table 2 shows the constants and significant predictors for the nine regression models run. All regressions showed no (or minimal) levels of outlier influence while demonstrating no multicollinearity. PE frequency (40%), PE curriculum (37%), and APE mention (36%) explained the greatest variance between predictors and outcomes. Extracurricular PA opportunities (25%) and PE mention (18%) explained the least. Models included 0 to 6 predictors (maximum of 13) and seven predictors (total) surpassed medium ($OR = 2.5$) or large ($OR = 4.3$) effect size criteria. There were 24 significant cases (Table 3), though most ($n = 17$) were significant because their absence negatively predicted the presence of the outcome variable.

The most prominent predictors for sport offerings were school size ($OR = 345.5$), socioeconomic status ($OR = 3.3$), and PE frequency ($OR = 3.0$). For PE frequency, school size (middle school status) was a strong predictor ($OR = 3.7$). For presence (and website visible presence) of a PE teacher, school level—both middle school ($OR = 6.7$) and the N/A coded level (enrollment data not available on 2019–2020 school year; $OR = 6.2$)—served as strong predictors. When recess was mentioned, school level (elementary) served as a predictor ($OR = 4.0$), as well as school size level (enrollment not available for 2019–2020; $OR = 6.2$).

Discussion

The school website is not only meaningful to the organizations' ability to facilitate communication, engagement, and learning (Taddeo & Barnes, 2016) but also has implications in terms of marketing the school's digital visibility (Scott, 2011). This creates or enables potential for expressing or sustaining a reputation that nevertheless reflects positively, negatively, or neutrally on the school (Park & Lee, 2009) in an increasingly digitally reliant society. Therefore, efforts to develop and/or maintain websites are not to be overlooked.

Table 2

Binary Logistic Regression Analyses for PA and PE Listed on School Websites

Characteristics of predictors	β	SE β	χ^2	<i>p</i>	OR (95% CI)
PA Image					
Constant	2.32	1.24	3.51	.06	—
Socioeconomic	-0.85	0.35	5.92	.02	0.43
Sport/intramurals	-2.05	0.39	28.11	0	0.13
Sport/intramurals					
Constant	0.09	1.44	0.00	.95	—
School (K–8)	-2.38	0.75	10.12	<.001	0.09
Socioeconomic	1.20	0.41	8.66	0.003	3.33
Urban cluster	-1.62	0.50	10.46	<.001	0.20
PE frequency	1.10	0.55	3.98	.046	3.01
PE curriculum	-0.96	0.45	4.46	.035	0.38
PA image	-2.11	0.41	27.15	0	0.12
Extracurricular					
*No significant relationships	—	—	—	—	—
PE frequency					
Constant	0.55	1.56	0.13	.723	—
School size (6–8)	-2.26	0.90	6.24	.012	0.10
Sport/intramurals	1.31	0.60	4.80	.029	3.71
PE curriculum	-2.68	0.51	28.03	0	0.07
Recess mention	-1.08	0.51	4.48	.035	0.34
PE curriculum					
Constant	2.15	1.39	2.38	.123	—
Socioeconomic	-0.68	0.35	3.75	.053	0.51
Recess mention	-0.72	0.37	3.80	.051	0.49
Sport/intramurals	-1.02	0.41	29.41	.013	0.36
PE frequency	-2.55	0.47	29.41	0	0.08
PE teacher					
Constant	0.14	1.19	0.01	.907	—
School size (6–8)	1.90	0.84	5.12	.024	6.69
School size (2019–2020 schools)	1.93	0.84	4.71	.030	6.22
Extracurricular PA	-0.99	0.35	8.06	.005	0.37

Table 2 (cont.)

Characteristics of predictors	β	SE β	χ^2	p	OR (95% CI)
Recess mention					
Constant	3.25	1.41	5.30	.021	—
School level (K–6)	1.39	0.67	4.24	.040	4.01
School size (2019–2020 schools)	1.67	0.74	5.03	.025	5.29
Socioeconomic	-0.75	0.40	0.37	.022	0.47
APE mention	-2.66	1.29	4.62	.032	0.07
PE frequency	-1.16	0.49	5.55	.018	0.31
APE mention					
Constant	-1.565	2.28	0.471	0.493	—
Recess mention	-3.357	1.486	0	0.024	0.03
PE mention					
Constant	246.181	30795.58	0	0.994	—
Recess mention	-1.218	0.369	10.918	0.001	0.30
Extracurricular PA	-1.022	0.497	4.23	0.04	0.36

Note. $N = 239$. PA = physical activity; PE = physical education; CI = confidence interval.

Students in Grades K–8 spend almost 12,000 hours in the care of schools (NCES, 2021b; Sallis & McKenzie, 1991). The Centers for Disease Control and Prevention (CDC, 2021) recognizes Comprehensive School Physical Activity Programs (CSPAP) as a feasible approach to offering students at least half of the recommended 60 min of MVPA in a school day. Along with PE as a cornerstone component of the CSPAP, this programming leverages before-school, after-school, and during-school opportunities for PA with staff and family/community engagement.

Websites are now a primary means of communication with students and parents. Thus, they are a practical way of not only engaging but also educating stakeholders of a school's plan for students to move throughout the school day. In an alternative sense, PA researchers, concerned parents, and/or community public health providers can check via website surveillance the degree at which schools promote and encourage daily PA. Moreover, having PA information accessible and available provides at least some reassurance that movement and physical health are a societal priority and not an afterthought.

Table 3
Fit, Influence, Collinearity Diagnostics, and Explained Variance of Logistic Regression Models for Presence of Website Information Concerning Physical Education and Physical Activity

Model	N	Wald's			R^2_{cs}	R^2_N	R^2_{HL}	Cook's D > 1.0 (%)	Leverage > 2 Mlev (%)	Standardized	DfBeta > 1.0 (%)	Tolerance min	VIF max
		χ^2	df	p						residual > 2.0 (%)			
PA Images	239	65.66	15	0	0.24	0.32	8.45	0.0	0.02	1.7	0.0	0.70	1.58
Sports/intramurals	239	129.77	16	0	0.42	0.56	3.55	0.0	0.02	2.2	0.0	0.16	6.28
Extracurricular PA	239	44.40	15	0	0.17	0.25	13.31	0.0	0.20	2.6	0.0	0.64	1.57
PE frequency	239	66.25	14	0	0.24	0.40	15.49	0.0	0.19	3.2	0.0	0.68	1.48
PE curriculum	239	73.22	14	0	0.26	0.37	6.59	0.0	0.02	2.2	0.0	0.69	1.44
Teacher	239	37.07	14	< .001	0.14	0.19	7.11	0.0	0.19	1.8	0.0	0.67	1.50
Recess mention	239	57.75	14	0	0.21	0.29	15.77	0.0	0.20	1.9	0.0	0.67	1.48
APE mention	239	26.67	15	< .032	0.03	0.36	1.47	0.0	0.13	4.7	0.0	0.67	1.49
PE mention	239	30.86	11	< .001	0.12	0.18	7.34	0.0	0.12	1.2	0.0	0.70	1.43

Note. PA = physical activity; PE = physical education; APE = adapted physical education. R^2_{cs} , Cox and Snell; R^2_N , Nagelkerke; R^2_{HL} , Hosmer–Lemeshow.

This study joins a growing foundation of research using website surveillance of PA and PE information on school websites (e.g., Hill et al., 2010; Kahan & McKenzie, 2020; Kahan & McKenzie, 2021; Kahan et al., 2019; Washburn & Sinelnikov, 2016). This growing trend is important because these analyses have legal and policy-based implications (e.g., Kahan & McKenzie, 2019; Thompson et al., 2018). Though Arizona charter schools represent a portion of other data accumulation efforts (Kahan et al., 2019), this study is the first to complete an exhaustive examination of nonsecondary charter schools in the state. This partial-replication study provides thorough information about PE teacher credentials, as well as mentions of APE. Future research can use the results of this study to further knowledge of charter school PE and other PA offerings, to enhance generalizability and highlight differences between school types (e.g., public, private, charter, religiously affiliated). Moreover, the regression analyses provides a greater depth of understanding differences between elementary, middle school, and K–8 school sites.

The results of this study echo and reflect themes of other studies that many schools are not utilizing their websites to promote or explicitly define what PE and other PA opportunities are provided throughout the day (Kahan & McKenzie, 2019; Kahan et al., 2019). However, the discrepancies between what is present and what is not are particularly interesting. For example, most schools mention PE in some fashion on their website, yet only about a third of schools mention it prominently. This reinforces PE as a marginalized subject, when other school subjects (e.g., English language arts, mathematics) are more often and more prominently displayed. While PE is mentioned frequently, those responsible for delivering the program (the PE teachers) are visible on less than half of websites. Furthermore, of those who are featured on the websites, only about 2 out of 10 teachers are licensed and endorsed in PE, while close to half of the teachers are not even licensed. It is also concerning that many schools display wellness policies, yet so few outline the PE specifics in these policies—whereas the CDC (2021) recognizes PE as the cornerstone of campus-wide comprehensive PA programs.

In regard to the law, this website analysis centers on one locale and generalizability of the results requires caution. The Recess Law (SB 1083) requires two recess periods be allotted for Grades K

through 5. Only about half (54%) of the school websites mention recess. Controlling for level (elementary excluding middle levels) improves results to almost two thirds of the websites referring to recess. This indicates recess may be more developmentally appropriate terminology for the younger age (6–12) group, though it should still be important for older students to participate in movement opportunities throughout their school day. As it pertains to the elementary group, only about one fifth of school websites mention how many recess periods per day are offered. From that small group ($n = 17$), almost 6 out 10 specify that the school offers only one recess a day. This clearly violates the SB 1083 recess policy signed into law in 2018. Though the recess law affects K–5, other grade bands such as middle school and K–8 schools mention recess at comparable rates, which is positive. Yet more work needs to be done to promote and ensure (a) school are adhering passed legislation and (b) students are receiving the minimum expected recess periods.

Another area of concern is the absence of information regarding APE. Few schools mention adapted services. This may indicate a global disparity in charter schools. Many of the schools have information concerning fair and equal enrollment practices. However, though speculative, the lack of visibility of services indicates an alternative reality in enrollment of students with disabilities. That is, few students with disabilities find their way into charter schools. A concerning feature of the charter school websites is information about pay-to-enroll preschool options that may act as a barrier to lower income families. The pay-to-enroll process ensures that students who enroll in earlier services lock in or save a spot for kindergarten and grades beyond. Along with other factors such as transportation logistics or prior sibling enrollment, this approach has societal potential for enrollment pooling and social stratification. For example, car-owning families may possess greater flexibility in dropping off and picking their children up from school grounds, whereas families who do not own a car may have to find closer cost-free options.

Regarding extracurricular activities, less than half of the school websites mention interscholastic sports programs and about one quarter mention stand-alone noncompetitive movement activity opportunities. Compared to schools in Kahan and McKenzie (2020), Arizonan charter schools on average offer more information about

interscholastic sports programs in contrast to Californian charter and private schools, though only a fraction of a percentage differentiates the latter. Almost 6 out of 10 Arizona schools depict images of PA/sport on their website, which is well below the percentages of California charter school websites, where almost 3 out of every 4 websites includes such images (Kahan & McKenzie, 2019).

The regression models show strong predictors for sport being mentioned such as socioeconomic status, PE frequency, and school size. Websites of schools in higher income communities are 3 times more likely to mention sport offerings. If a school website mentions PE frequency, it is 3 times more likely to mention sport offerings as well. Interestingly and unexpectedly, school size (larger schools) predicts that a school website is 5 times more likely to mention sport. However, after further investigation, we noticed school size “3” was a dummy code for schools on which the NCES had not gathered enrollment information. All schools in this category began enrolling students in 2019 or later, thus enrollment numbers were not yet statistically reportable. This unexpected result implies a temporal aspect that newer schools are more likely to display PA information on their websites more prominently. One explanation is that newer schools have to compete for prospective students, thus making marketing an important aspect of charter schools (Wilson & Carlsen, 2016).

The major predictor for PE frequency being present on websites is school level—suggesting that middle schools, as well as schools established in 2019 or later, are more likely to report on PE frequency. A possible explanation for this is middle schools use more computer-based communication strategies, such as for homework purposes. This increases the need for more visibility or accountability on more organically trafficked middle school websites. Interestingly, both factors increase the likelihood of PE frequency being mentioned almost sixfold. A major difference in relation to this study’s school-level comparison (i.e., middle school vs. elementary) is the mention of recess. Reflecting an inverse relationship, elementary schools are 4 times more likely to reference recess. Newer schools are roughly 6 times more likely to mention and offer greater details concerning recess dosage.

Implications

Overall, conducting website analyses is a cost-effective method of looking at school practice and functioning surrounding PE and PA practices. As evidence builds, more specific connections and comparisons can be made locally, regionally, and nationally and internationally. The current body of literature is small, but results from the studies may have legal and procedural effect. For example, PE minutes increase in schools involved with lawsuits (Thompson et al., 2018). In a local context, the same processes can be applied to bills and laws such as Arizona's SB 1083 Recess Law.

Though this study focuses on charter schools, other studies include other school types such as public schools. Few schools use their websites to prominently display information about PA, which is an important target for initiatives such as Healthy People 2030 (Office of Disease Prevention and Health Promotion, 2021). As these large health promotion organizations evolve, they might push lawmakers to ensure that schools are following CSPAP programming and/or standardize movement reporting for all school types. A few smaller bills or changes may elevate PA and PE to greater priority in the eyes of stakeholders. Parents do value PE (National Public Radio, Robert Wood Johnson Foundation, & Harvard School of Public Health, 2013), and focusing on improving website infrastructure can lead to more accountability and thus healthier and more active school days.

The results of this study show there are both similarities and differences between regions and school types. Arizona charter schools appear more apt to offer PA information than do their California counterparts. Analyzing these trends may be rooted in socio-economic trends, and discovering what is happening financially may lead to greater equity in school quality or practice. The debate may shift away from charter versus public toward a more targeted analysis such as income differentials between zip codes. Furthermore, in terms of equity, students with disabilities may benefit from analyses like this study. Such results may encourage schools to ensure appropriate services and credentialed teachers are in place to teach the skills necessary for students to be active throughout the school day and beyond.

Characteristics of schools and what they choose to report are apparent. For example, recess is more prevalent at the elementary level

and sport offerings are more prevalent at the middle school level. By improving school websites, such as a minimum mandate for posting recess and PE information, charter schools may see increases in student enrollment, especially among students whose parents are interested in their children's health and wellness. Charter school growth is rapidly increasing, and there appears to be no end in sight for this trend. Further, there is legitimate and arguable value in offering choice, especially for people in impoverished and underfunded districts. However, major efforts that ensure schools are adequately funded are needed, in our opinion.

In the current climate, public schools are potentially being forced to compete directly with private options, which, to date, have not been for students and have engaged in aggressive marketing campaigns. In Arizona, local politics further exacerbate this trend, though politics will always heavily influence private, charter, and public education trends. Charter schools receive substantial state funding per every student recruited, which historically went to public schools. Thus, public school districts weaken further financially when they allocate funding toward marketing their district to compete with charter schools. Anecdotally, it is not unusual that selected Arizona public school districts do mass mailings and produce TV commercials that not only advertise their schools but also their sport and PA.

Results from teacher credentialing investigation are also concerning. Not only do many schools not present information about PE teachers, many of the teachers in place are not endorsed as PE specialists. Moreover, many of the teachers are not credentialed as teachers or their names are not accessible through the ADE educator certification lookup. This may be a failure on ADE reporting and/or district reporting protocols, but it is important to have trained physical educators in place to run a quality PE program, according to SHAPE America (2016). Beyond quality PE, having licensed and certified teachers ensures student safety; disciplinary measures may not otherwise be tracked. In terms of "quality" experiences, there is evidence that licensure indeed matters (Behets, 1995; McKenzie et al., 2001).

Strengths and Limitations

This study reflects two important strengths. First, though the field of PE research remains relatively small, groups coming together

to tackle similar problems may result in real-world impact. As with other fields (Open Science Collaboration, 2015), the PE field has a need for replication studies (Locke, 1977). This is necessary because less than 1% of published educational research studies have been replicated in the top 100 education research journals (Makel & Plucker, 2014). Thus, a major strength of this study is it not only gathers common data to compare but also creates discourse for future methodological development.

A second strength of this study is it includes a homogenous (in terms of charter affiliation) representative sample of 609 Arizona-based schools. After inclusion, 239 schools remained with matching criteria to the study's purposes. While this random sample is not as large as those in other studies, the final list is near exhaustive to eligible schools in Arizona, thus enhancing generalizability of findings. Furthermore, the selection of elementary, middle, and combinations of levels remains in line with overarching questions about recess dosage and its relation to state laws.

This project was not without limitations. Though website searches provide for good data reliability and validity, visiting coupled with observing actual practices of schools improves reliability and validity. However, this type of "ground-truthing" has not been completed at the state level due to cost factors. Certain areas of coding may become obfuscated due to website source reliability because some websites lack key information such as the PE teachers' name or even any mention of PE. For example, teachers with out-of-state certifications may slip through the cracks in the teacher certification coding section. This needs to be ameliorated either at the state website (ADE) level and/or through requested access to teacher résumés, which may be perceived as invasive, thus discouraging a school's direct participation in future research. Adding demographic factors such as school level (elementary vs. K-8), though novel, does not come without its challenges in coding, collection, analysis, and interpretation.

A further limitation is the faith people put in websites being a proxy of the policies and curriculums in schools. Because this information is ungoverned in current scholastic landscapes, schools have the choice of whether to post information and sometimes provide only information they deem necessary. This cannot be detected

through website content analyses. Rather, examination of website content may serve as an initial alarm for a more thorough on-site investigation and/or surveying. Relatedly, schools may also not have the financial resources to maintain a website, keep it current, or expand content. The study is cross-sectional and a slice of time; thus, we only capture a snapshot of the websites at that time. As the pressures of marketing increase, schools may be more likely to update their websites with greater frequency. A better study and/or surveillance system can track this in real time, over time. As well, we assume that schools use websites to convey information to parents, students, and others in the community; thus, the focus on these websites has contextual variation of use by all stakeholders (e.g., administrators, parents, students, and students), all further complicated by demographic factors (i.e., socioeconomic status) and developmental capabilities of students (e.g., kindergartners vs. 8th graders). Similar to the prior studies, this study does not have access to harder data, such as pings to the websites, or the digital characteristics of what is commonly searched or accessed on the websites, which may indicate more explicit information to further studies such as this.

Another limitation of this study is the use of multiple diverse projects for which goals may not be in perfect alignment, so only a partial replication followed. For future replicators, suggestions about replication etiquette may be helpful (Kahneman, 2014). Though the suggested communication with original authors exposes a potential Achilles' heel of unbiased objective research, it visualizes a future in which collaboration is key to the advancement of science. The design of the Kahan and McKenzie (2020) study strongly influenced this study. Yet where Kahan and McKenzie (2020) studied school differences on the basis of religious affiliation, this study is more homogenous with a focus on charter school website representations of PA and PE information, as in Kahan and McKenzie (2021). Future efforts can solidify not only design differences but establish agreed-upon criterion by a diverse team of experts. For example, our criterion for PE Prominence is the expected location of information (e.g., on the home page or mentioned in the principal's message). Having detailed website information on PE practice such as duration, frequency, and curriculum is a sign of a positive trajectory for the field. In this study, a school offering such detailed information

scored more highly in terms of PE prominence—which was not the case in the original studies. Though this study has replicative discrepancies, these coding differences open a dialogue for future directions of website surveillance of PE and PA information, which is a step toward addressing the lack of replication research in PE. Finally, if the field and publishers never expect replication, no problem will exist (Amrhein et al., 2019)—they’ll only extend the problem they have been aware of since 1977 or even earlier (see Pelton, 1970).

Suggestions

Though this partial replication provides interesting interstate comparison possibilities, future research can make an effort to standardize the process of website data mining. Given the potential behind this kind of research, more synergistic efforts can enhance surveillance and comparison of PE and PA dosages. Studies can expand criteria by seeking out information on APE services. Moving forward, teacher educators can prepare future physical educators to create simple web pages that contain accessible information and that are easy to navigate (Washburn & Sinelnikov, 2016). However, the sole responsibility should not be put on physical educators, as web design is not included in a typical teachers’ full-time equivalent. At the very least, these teacher educators can encourage future physical educators to advocate for accurate and more comprehensive information concerning PE and other PA opportunities (e.g., days of the week, minutes per period, curriculum used, and overall goals of the program) on their schools’ websites. Perhaps it is here where dual-sided accountability for PE may be established for both educators and their school districts. Many schools fall below the suggested minutes for PE, as reported by parents (National Public Radio, Robert Wood Johnson Foundation, & Harvard School of Public Health, 2013).

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PHYSICAL FITNESS

Comparing the Effects of the Barbell Deadlift and the Plyometric Depth Jump on Vertical Jump Height in Division II Female Collegiate Athletes: A 6-Week Study

Donnie Andrews and Katelyn Zachary

Abstract

Vertical jump performance is vital to many sports and is predictive of power output. Both resistance exercises and plyometric exercises have been shown to increase vertical jump performance. Identifying the type of exercise that increases jump height the most may be useful to coaches and athletes worldwide. The literature has stated that both resistance and plyometric exercises are used in many athletic training programs; however, the plyometric depth jump is often underutilized to increase vertical jump height. This study compares the effects of two types of exercises (plyometric depth jump and traditional deadlift) on vertical leap height in female collegiate athletes. Eleven women's basketball players and 15 women's softball players performed a 6-week training study. The depth jump group ($n = 11$) and the deadlift group ($n = 15$) trained three times per week. Both groups improved in vertical jump height, but the depth jump group had a greater increase, which was nearly significant ($p = .061$). The findings show that the implementation of plyometric exercises, such

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as the depth jump, into training programs could lead to a greater increase in muscular power and vertical jump height than resistance exercises alone.

All physical activities involve the use of muscular force and power. Both traditional resistance training and plyometrics can increase force production and power in an athlete. One measurement of this force production is vertical jump performance (Caruso et al., 2011). Vertical jump can determine an athlete's vertical leap height. Determining which type of exercise increases vertical leap height the most will allow coaches and trainers to build more effective training programs for athletes. These programs can be used in the achievement of the higher level of athletic performance that is so often sought by both athletes and coaches (Stieg et al., 2011). Both strength (or muscular force) and power contribute to maximal human efforts in physical activities. Although similar, the terms differ due to a time component. Muscular strength is simply defined as the amount of muscular force produced at a specific velocity. On the other hand, muscular power is precisely defined as "the time rate of doing work." While traditional resistance training has been shown to increase muscular strength; plyometric training, or activity that allows a muscle to reach maximal force in the shortest amount of time, has been shown to increase muscular power (Baechle & Earle, 2008).

Muscular power is an essential contributor to athletic performance. Vertical jump height is thought to provide a valuable index of the muscular power of the lower limbs (Buckthorpe et al., 2012). To excel in the vertical jump, athletes must use a high amount of force over a brief period (power) while their feet are in contact with the surface from which they are jumping (Caruso et al., 2011).

Resistance training has become a key component in training to enhance sports performance. It has been used by athletes to increase force production. However, most movements in sports occur too quickly for muscles to produce maximal force. Therefore, a muscle's rate of force production, or power, must be increased (Dalen et al., 2013). For power output to be increased from resistance exercise, the athlete must perform explosive lower body exercises. These may elicit postactivation potentiation, which allows for more fast-twitch motor units to be activated. Power output is related to exercise intensity, so explosive lower-body resistance exercises may increase

power (Chiu & Salem, 2012). Because the deadlift is not an explosive exercise, the lift only increases muscular strength.

Plyometric training gained popularity in the early 1970s and has since been used to improve power output. This type of training involves the stretch-shortening cycle (Mirzaei et al., 2014). Each repetition involves three phases: eccentric, amortization, and concentric. During the eccentric phase, the agonist muscles are stretched, or preloaded, with elastic energy. The amortization phase is the short pause between the eccentric phase and the concentric phase. The concentric phase involves the shortening of agonist muscle fibers and uses the stored elastic energy to increase force production. This force production is increased over a short time, increasing power output (Baechle & Earle, 2008). Because the depth jump is a plyometric exercise, it should increase muscular power, thereby increasing vertical leap height.

The purpose of this study was to determine whether the barbell deadlift or the plyometric depth jump would cause a greater increase in vertical jump height in Division II female collegiate athletes and to propose to coaches and strength coaches the proper implementation of these exercises into strength training programs for female athletes. This work also serves as a foundation for future studies that will explore the differences between and the uses of plyometric and resistance training.

Method

The research on resistance training and plyometric training clearly shows that these methods increase vertical jump height. However, a limited number of studies compare the two forms of exercise and their effects on vertical jump height. The primary focus of this project was to determine which type of exercise (plyometric depth jump or barbell deadlift) would lead to the greater increase in vertical jump height. Next, training on the two exercises and the vertical jump would need to occur. Finally, the time frame would need to be decided and the pre- and posttests scheduled so the study could be worked into the training programs of both groups of athletes.

Research Design

This study used quantitative methodology and quasi-experimental research to compare the vertical jump height of subjects before and

after 6 weeks of training. This research project used a two-group pretest–posttest design, but the subjects were not randomly selected or assigned. This study used only female athletes to ensure that sex was not a confounding factor. This is the same reason that pretesting and posttesting were done on the same day and at the same time of day. For the hypothesis, the independent variables are the deadlift and the depth jump. The dependent variable is vertical jump height.

Experimental Groups

Athletes on the women’s softball and basketball teams who had no preexisting injuries were selected to be a part of the study. The women’s softball team performed the barbell deadlift as a part of their workout routines, and the women’s basketball team performed the plyometric depth jump as a part of their workouts. The workouts for this study began 3 days after pretesting and ended 3 days before posttesting.

Pretest and Posttest

Each group came separately to perform the pretest and posttest vertical jumps. The Vertec was used in the measurement of vertical jump. The procedure was explained to them, and they were allowed two jumps. The average of the two jumps was written down as their jump height. Before the athletes jumped, their standing reach height was taken. The standing reach height and the jump height were used in the calculation of the vertical leap height. Upon completing the 6 weeks of training, all of the athletes returned for the posttest. Three softball players and five basketball players did not perform in the posttest due to ankle injuries. The posttest vertical jump height was measured again for each uninjured athlete. Individual change scores were recorded during the pretest and posttest and used in the calculation of group scores, which were further analyzed (Table 1).

Results

A one-way analysis of covariance (ANCOVA) was conducted. The independent variable (Type of Exercise) involved two levels: deadlift and depth jump. The dependent variable was the vertical jump height in inches measured after the exercise period, and the covariate was the vertical jump height in inches measured before the exercise period. The assumptions for ANCOVA were met. In

Table 1

Analysis of Covariance of Two Levels of Exercise Type Using Pre- and Post-Vertical Leap Heights as Covariant and Dependent Variable, Respectively

Source	Type III SS	df	MS	F	Sig.	Partial η^2
Corrected model	128.566a	2	64.283	39.659	.000	.775
Intercept	2.729	1	2.729	1.684	.207	.068
PREVJH	127.835	1	127.835	78.867	.000	.774
Group	6.278	1	6.278	3.873	.061	.144
Error	37.280	23	1.621			
Total	8662.000	26				
Corrected total	165.846	25				

Note. $R^2 = .775$ (Adjusted $R^2 = .756$). PREVJH = pre-vertical jump height.

particular, the homogeneity of the regression effect was evident for the covariate, and the covariate was linearly related to the dependent measure. This means that the ANCOVA was not biased.

The ANCOVA (Table 1) tested the hypothesis that the post-vertical leap height of the two groups would be the same when adjusted for the pre-vertical jump height. The hypothesis could not be rejected. The ANCOVA was not significant, $F(2, 23) = 3.87$, $p = .061$. However, the p value of .06 is very close to .05, which means that the confidence level is 94%. The lack of statistical significance may have been due to study dropouts. The strength of the relationship between exercise treatment and the dependent variable was strong, as assessed by the partial eta-squared statistics, with the exercise treatment factor accounting for 14.4% of the variance in the dependent measure holding constant the vertical jump height in inches measured before the exercise period.

The R -squared was .756, which means that the model explains 76% of the variance. The post-vertical jump height mean of Group 1 (subjects who performed the depth jump) was 18.27, and the post-vertical jump height mean of Group 2 (subjects who performed the deadlift) was 17.93. Group 1 contained 11 subjects, and Group 2 contained 15 subjects. These descriptive statistics show that the subjects

who performed the depth jump had a higher post-vertical jump height average than the subjects who performed the deadlift. There appears to be a practical benefit to the use of the depth jump for increasing vertical jump height in female collegiate athletes.

Discussion

Although many strength training programs include exercises that strengthen the lower body, plyometric exercises may be underutilized to increase vertical jump height. The eccentric loading that occurs during the depth jump allows agonist muscles to gain force by permitting part of the crossbridges to attach before the concentric phase begins. This produces increased joint movements and force production (Moore & Schilling, 2005). Furthermore, the depth jump pertains to the principle of specificity in which training adaptations are specific to the type of training stress (Baechle et al., 2008). Thus, in theory, the depth jump should have a greater effect on the vertical jump than would the deadlift.

A nearly significant change occurred between the pretest score and the posttest score of the plyometric depth jump group and the barbell deadlift group. Overall, both groups showed an increase in vertical jump height; however, the plyometric depth jump group showed a greater increase. A more significant change may have occurred had there been a larger sample size. For this reason, future studies should aim to have a minimum of 25 participants per group. Also, researchers should apply this study to males to see if the same outcome appears.

Replications of this study should lengthen the time frame to at least 12 weeks. The 6 weeks of training may not have been long enough for the athletes to achieve extremely significant results. Also, this study could be applied to athletes who play different sports or to the general population. Because muscular power can be used to determine the mobility and functional capacity of injured individuals, physical and occupational therapists may be interested in this study (Buckthorpe et al., 2012). Finally, the lack of a control group allows for the possibility that the changes in jump height were due to something other than the exercises. Studies should add a control group to strengthen the internal validity and to eliminate this possibility.

Practical Applications

Athletes and coaches are constantly looking for ways to improve sports performance. Training is no doubt a way to do this, but knowing which exercises to include in the training plan is an obstacle in itself. For most athletes and strength coaches, knowing the type of exercise (traditional resistance or plyometric) that will increase vertical jump height the most can be extremely beneficial. Implementation of the most beneficial exercise into an athlete's training routine can lead to the sought-after increase in athletic performance. Moreover, occupational and physical therapists can apply this information into the rehabilitation routines of their clients. Although the general population may not be able to perform the depth jump, other plyometric exercises may elicit the same increase in muscular power. They could also be used by coaches to assess the functional ability of the athletes before the athletes continue their workout.

This research study was successfully done in a strength room, and future studies may be carried out in comparable settings such as performance centers or other training facilities. The successful replication of this study requires the help of a certified strength and conditioning coach, access to basic resistance and plyometric equipment, and knowledge of and access to proper measurement equipment. Studies done with a larger sample size for a longer period may show the need for a deeper implementation of training techniques that increase muscular power. Evidence for the benefits of both resistance training and plyometric exercises on vertical leap height exists; however, it is up to researchers to improve upon this study and thereby gain further evidence for which type of exercise is the most beneficial in improving athletic performance in athletes.

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YOU AND THE LAW

Golf Course Website: A Case Analysis of ADA Title III Website Compliance


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Price v. Escalante – Black Diamond Golf Club LLC
United States District Court for the Middle District of Florida,
Ocala Division
April 20, 2019

Facts of the Case

Joel Price identifies as a resident of Florida who is blind. After he came across the United States Blind Golf Association (USBGA), his interest in learning to play golf grew. Price decided to explore suitable golf courses where he could learn to play, one of which was Escalante - Black Diamond Golf Club LLC (Black Diamond) in Lecanto, Florida. When he researched Black Diamond's golf course website in December 2018, Price's attempt to access the website was thwarted. He alleged that certain parts of Black Diamond's website (www.blackdiamondranch.com) were incompatible with his screen reader, an adaptive device needed for his blindness (*Note.* Price failed to identify what screen reader software he used).

Due to the incompatibility of Black Diamond's website with Price's screen reader, Price claimed that he was prevented from performing the following functions: learning about golf lessons and

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how to book a tee time, requesting membership, booking online a “stay and play” package or house rental, and acquiring information on monthly events, such as partaking of a meal at the club. While Price did not clarify what parts of Black Diamond’s website were inaccessible, he did indicate not being able to link to a newsletter. Nonetheless, Price alleged that the website became a virtual barrier to his interface with Black Diamond, consequently impeding access to the physical location of the golf club. Despite these issues, Price acknowledged his intent to begin golfing the first weekend of each month at Black Diamond, as of Spring 2019.

Case History

Price filed a lawsuit against Black Diamond, claiming its inaccessible website impeded him full and equal enjoyment of Black Diamond’s golf course, on the basis of his disability (blindness). As such, Price argued Black Diamond’s website violated Title III of the Americans With Disabilities Act of 1990 (as amended, 42 U.S.C. §§ 12181–12189), and he sought an injunction to require Black Diamond to make its website accessible. In response, Black Diamond moved to dismiss the complaint, asserting two primary arguments: (1) Price lacked standing and 2) Price failed to state a claim in his complaint.

A requisite in federal cases is that the complainant must establish standing for the case to proceed in federal court. This requires three components, the first being suffering an “injury-in-fact.” Facts must support a threat to a protected interest, which is concrete and actual. Second, there is the need for a causal relationship between the claimed injury and the questioned action of the defendant. Third, the plaintiff must substantiate how a favorable decision will right the supposed wrong. Something stronger than a “some day premise” must exist; the plaintiff must illustrate a real and immediate injury.

Black Diamond’s counsel declared that a website with universal or total compatibility with all screen readers was not a reality. Therefore, a website could be ADA compliant or not, on the basis of the user’s software. Black Diamond argued the plaintiff had not suffered nor had immediate risk of injury, because he was able to schedule regular play starting Spring 2019, regardless of the accessibility of the website. Further, in their complaint, Black Diamond stated a challenge, regarding Price’s argument of suffering an “injury-in-fact”

(*Houston v. Marod Supermarkets, Inc.*, 2013), to enable the court to reference external facts beyond the four corners of the complaint. Specifically, going beyond the four corners of the complaint allows the court to consider other forms of evidence outside of what the parties have brought forward.

Known to be a serial filer, Price has filed more than 100 cases in Florida's Middle District with ADA claims—seven or more against golf courses. Some of these cases include *Price v. City of Ocala* (2019), *Price v. Town of Longboat Key* (2019), and *Price v. Everglades Coll. Inc.* (2018), to name a few. Upon review of Price's other lawsuits, Black Diamond found a point of conflict, noting Price's plans to play golf at TPC Tampa Bay (as indicated in a separate lawsuit) would have conflicted with his planned play time at Black Diamond. Black Diamond further purported the physical and financial likelihood of Price making the 110-mile trek, each way, to play Black Diamond with any regularity, was in question. This, compounded by conflicting statements regarding Price's plans to play golf, begs the question of whether Price has or will have been injured by Black Diamond. As such, Black Diamond contended that Price had not incurred an injury-in-fact nor faced immediate risk of future injury and therefore lacked standing.

To state a claim under Title III of the ADA, the plaintiff must establish three elements: (1) the plaintiff is disabled; (2) the defendant owns, leases, or operates a place of public accommodation; and (3) the plaintiff was denied access to public accommodation by the defendant on the basis of their disability. Price argued Black Diamond's website fell under a "place of public accommodation"—and therefore was subject to Title III of the ADA—as the website content provided information (access) to the physical location of the golf course (public accommodation). Moreover, Price alleged he was denied access to public accommodation due to the incompatibility of Black Diamond's website with his screen reader. While Black Diamond claimed a nexus between the website and golf course, they argued the alleged inaccessible information on their website was available through alternative means of communication, namely, calling Black Diamond.

Case Analysis

Title III of the ADA “prohibits discrimination on the basis of disability in the activities of places of public accommodations . . . and requires newly constructed or altered places of public accommodation – as well as commercial facilities . . . to comply with the ADA Standards” (Civil Rights Division, 2012, “Enactment,” para. 3). A public place of accommodation can include environments such as restaurants, hotels, libraries, and private schools (ADA National Network, 2021). Establishments not included in a public place of accommodation include private clubs and religious organizations. Herein, the Department of Justice (DOJ) regulates implementation, supports explanation of covered individuals and institutions, and enforces Title III of the ADA in court (Americans With Disabilities Act, 1990, § 12181). As a precursor to claiming discrimination under the ADA, it must be determined that a plaintiff who is disabled was denied—due to their disability—the opportunity to use a “place of public accommodation” under the jurisdiction of the defendant. Within Title III of the ADA, golf courses are considered to be a “place of public accommodation” (Americans With Disabilities Act, 1990, § 12181).

Though the ADA does not explicitly discuss the internet, the DOJ has taken the position that the ADA applies to websites. Many ADA cases are initiated on the basis of website incompatibility with screen readers or lack of closed captioning for online videos. However, the DOJ has yet to establish definitive rules or regulations pertaining to website compliance with the ADA; therefore, consensus by the courts does not yet exist. In *Price v. Escalante – Black Diamond Golf Club LLC* (2019), the court focused their deliberation on Black Diamond’s motion to dismiss the case, which alleged Price lacked standing and failed to state a claim in his complaint.

To determine whether a plaintiff has standing, district courts have applied the *Houston* factors. These factors include “(1) the proximity of the defendant’s business to the plaintiff’s residence; (2) the plaintiff’s past patronage of the defendant’s business; (3) the definiteness of the plaintiff’s plan to return; and (4) the frequency of the plaintiff’s travel near the defendant’s business” (*Houston v. Marod Supermarkets, Inc.*, 2013). Regarding the first *Houston* factor, the court determined that there was not an immediate risk of

future injury to Price because the distance between Black Diamond Golf Club and Price's residence was over 100 miles. Next, the court decided that there was no immediate risk of future injury regarding the second factor because Price had never played golf nor had previously been a guest at Black Diamond Golf Club. Regarding the third factor, the court's decision was neutral because they could not determine if Price planned to return to the establishment in the future. Last, the court ruled that there was no immediate risk of future injury toward the fourth factor because Price did not deliberately state plans to travel around this geographic location in the future. Overall, the court determined Price's argument, of Black Diamond's website violating Title III, was not supported by the Houston factors.

To determine whether a plaintiff states a claim on which relief can be granted, district courts consider whether a website is a "place of accommodation" and whether there is a nexus between a website and a place of public accommodation. In this case, the court referenced case law that determines websites are not "places of public accommodation," requiring the plaintiff to prove a nexus between the website and the place of public accommodation. When considering whether a nexus exists, courts distinguish "an inability to use a website to gain information about a physical location and an inability to use a website that impedes access to enjoy a physical location" (*Price v. Everglades Coll. Inc.*, 2018). To state a claim, Price alleged the inaccessibility of a July 2017 newsletter hindered full use and enjoyment of Black Diamond's golf course. The court believed this information was no longer relevant due to its date and that it did not prohibit Price from being a guest at Black Diamond. The court also found no risk of immediate future harm as Price did not provide other inaccessible parts of the website outside of the member newsletter. Therefore, the court concluded Price failed to state a claim.

For the case of *Price v. Escalante – Black Diamond Golf Club LLC* (2019), when taken to trial, the court ruled that "Price failed to adequately plead his standing" and "failed to state a claim," stating there was an absence of proof that Black Diamond's website restricted Price's opportunity to utilize the golf club. Therefore, the District Court granted Black Diamond's motion to dismiss the plaintiff's complaint without prejudice. Price was allowed to amend his complaint to identify the inaccessible parts of Black Diamond's website

and explain how they impeded his ability to access and enjoy Black Diamond's golf course.

Implications

There are recommendations for practitioners in the field of sport to limit legal liability pertaining to discrimination against individuals with disabilities. Because website compatibility with the ADA is an issue, it seems appropriate for website development to incorporate an assessment of interface with assistive devices, such as screen readers for the visually impaired. While it may not be realistic to test all assistive devices, perhaps some of the most common devices, such as Non-Visual Desktop Access (NVDA) and Job Access With Speech (JAWS), can be tested. Furthermore, sport organizations can hire ADA consulting companies such as Accessibility Works or Hounder to test websites for ADA compliance and provide recommendations for modification. This assessment of website compatibility must be ongoing, with yearly modifications to these websites, as deemed appropriate.

To continue to evolve and improve their products and services for all consumers, the sport industry can incorporate direct involvement and input from individuals who identify with the blind or visually impaired community. Engagement of these individuals is critical because of their daily, lived experience.

As the Black Diamond site noted, information access can also be provided through other mediums, such as a phone call. These access points must be clearly defined. For sports organizations to accomplish this, an individual or department within the organization can be responsible for assisting individuals with disabilities. This centralizes ADA compliance in the organization and ensures staff receive proper training to support individuals with disabilities in a more responsive manner.

Finally, several resources are useful for sport organizations to facilitate increased ADA compliance. This begins with partnerships with agencies such as the American Foundation for the Blind (AFB), which supports individuals who encounter blindness or low vision (<https://www.afb.org/>). Such agencies, including the AFB, are more attuned to the needs of their target populations and how to serve them. Other companies and organizations that solely focus upon adaptive technology, such as the National Disability Institute and

Move United, can also be engaged in partnership. Further, ADA consultants, such as Accessibility.Works, can provide direction related to this legislation to sports organizations.

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