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PEDAGOGY

Teachers' Perceptions of Using Movement in the Classroom

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Abstract

A mixed-methods design was employed to explore classroom teachers' perceptions of using movement in the classroom. Questions on a written survey and in interviews were focused on gaining understandings of teachers' knowledge of the connections between movement and learning, their perceptions about movement as a teaching strategy, and the role of schools in addressing physical inactivity. Teachers reported a lack of knowledge related to movement in the classroom but were willing to learn more and add movement to their "teaching toolbox" with support and training. They also believe that schools should have a role in increasing physical activity opportunities in youth.

Children throughout the world are facing an unprecedented obesity epidemic. Obesity is one of the most significant public health issues facing the international community in this century (World Health Organization [WHO], 2014). According to Onis, Blossner, and Borghi (2010), 43 million preschool children worldwide are estimated to be overweight or obese and 92 million are at risk for overweight (p. 1259). Despite that obesity data can be challenging to compile, the International Association for the Study of Obesity (IASO, n.d.) provides statistics for various countries. Selected sta-

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tistics from the international community include 21.1% of girls and 23.1% of boys are overweight or obese in Brazil, 24.0% of girls and 22.0% of boys are overweight or obese in Australia, and 34.7% of girls and 32.7% of boys are overweight or obese in Italy (IASO, n.d.). Obesity is a problem affecting significant numbers of children around the world.

Obesity is a condition mediated by genetic, behavioral, and environmental factors (Daniels et al., 2005). Data from the National Health and Nutrition Examination Surveys (NHANES) collected in 1976–1980 and 2009–2010 show the prevalence of obesity in the United States has more than tripled for those aged 2 to 19 years (5.0% to 17%; Ogden, Carroll, Curtin, Lamb, & Flegal, 2010). The potential health effects of obesity on the well-being of youth are devastating. Excess body fat is associated with high blood pressure, type 2 diabetes, high cholesterol, stroke, several cancers, and some forms of arthritis (Dietz, 1998; Singh, Mulder, Twisk, Van Mechelen, & Chinapaw, 2008). Health risks are not the only concerns; in several large-scale studies, BMI has been shown to have a significant negative correlation with academic performance in children (Castelli, Hillman, Buck, & Erwin, 2007; Datar, Sturm, & Magnabosco, 2004). Recent progress has been made in the fight against obesity, but more work still needs to be done, especially in light of the significant effects overweight and obesity can have on children and the adults they become.

A major factor contributing to childhood obesity is a lack of physical activity. It is recommended that children and adolescents participate in daily physical activity for at least 60 min; however, the physical activity patterns of youth have been on a steady decline nationwide. Results from the Centers for Disease Control and Prevention (CDC, 2012) Youth Risk Behavior Survey, which collects data from students in Grades 9–12 in the United States, indicate that 13.8% of students had not participated in physical activity on any day in the past 7 days and only 49.5% reported that they were physically active 5 or more days in the past 7 days. Only 28.7% reported meeting the recommended amount of physical activity in the past week. Clearly, adolescents are not meeting the recommended amounts of physical activity.

Schools have been identified as ideal settings to help young people improve and maintain healthy eating and physical activity behaviors

to prevent or reverse obesity (Institute of Medicine of the National Academies [IOM], 2013; Lagarde et al., 2008; Pate et al., 2006). After the family, school is one of the most influential institutions in children's social, emotional, and cognitive development. Schools are also a place where students are physically inactive, with up to potentially 6 hr a day of sedentary behavior (Donnelly et al., 2009). The WHO and more recently the IOM and the White House Task Force have called upon schools to adopt policies and implement strategies to increase the physical activity levels of students (IOM, 2013; Lagarde et al., 2008; White House Task Force on Childhood Obesity, 2010). Selected recommendations from these documents include conducting needs assessment, implementing schoolwide policies, supporting quality physical education, engaging all stakeholders within the school environment, and increasing opportunities for physical activity in the classroom. Schools have one of the most promising opportunities to address the global issue of physical inactivity in youth directly.

Schools should be considered as one of the main institutions for addressing physical inactivity not only because of the amount of time spent at school and the influence schools can have on student development, but also because of the increased amounts of research that suggest that physical activity can have positive benefits on academic outcomes. Evidence from multiple studies and research reviews suggests that physical activity improves many academic outcomes, including overall academic success, cognitive performance, reading and math skills, increased on-task classroom behavior, creation of positive learning experiences for students, and improved levels of concentration (CDC, 2010; Fredericks, Kokot, & Krog, 2006; Lowden, Powney, Davidson, & James, 2001; Mellecker, Witherspoon, & Watterson, 2013; Robert Wood Johnson Foundation, 2009).

Regardless of the method to increase physical activity in schools, classroom teachers are critical stakeholders (Lagarde et al., 2008). Bringing teachers on board with movement initiatives is essential, but can be difficult (Lagarde et al., 2008). Given the significant opportunity schools have to affect physical inactivity and the obesity epidemic, it is critical to understand teachers' perceptions about movement to increase movement in schools. To date, there have been recommendations about the need for movement in schools,

studies in which specific movement curricula and/or programs (some of which include teacher perceptions) are examined, but limited research on broader teacher perceptions about using movement in the classroom. Therefore, the purpose of this study was to examine classroom teachers' perceptions about integrating movement in the classroom to gain a better understanding of the extent to which physical activity is being used in classrooms, teachers' understanding and opinions of using movement in the classroom, and potential resources necessary to assist teachers in increasing the use of movement in the classroom.

Method

Methodological Design

A mixed-methods research design with an emphasis on qualitative methods was implemented to examine classroom teachers' perceptions about integrating movement in the classroom. The researchers used an exploratory approach, based on grounded theory methodology and principles, for the qualitative portion of the study to gain a deeper understanding of the perceptions and needs of a particular group, in this case classroom teachers (Creswell, 1998; Strauss & Corbin, 1990). The quantitative portion of the design (Movement Survey described below) was used to support the main qualitative methodology.

After participants submitted the Movement Survey, one researcher conducted individual semistructured interviews with participants, allowing for the researchers to gain an in-depth understanding of classroom teachers' perceptions about using movement in the classroom. The semistructured interview format afforded the researchers the opportunity to probe more deeply into participants' responses and ask follow-up questions, leading to richer, more robust data. Having one researcher conduct all the interviews allowed for consistency in the data collection process and enhanced the quality of the data. This also provided an opportunity for independent analysis of the data by each researcher, which minimized bias.

Participants

Seventeen participants enrolled in the study (15 females, two males). After data analysis was completed, the researchers deter-

mined that data saturation had been reached, and no additional participants were recruited. The average age of the participants was 39.7 (± 10.7) years, and the teachers had an average of 11.3 (± 6.8) years of teaching experience. Selected demographic data of participants are provided in Table 1.

Table 1
Subject Demographics

Gender (Female)	88%
Age	39.7 (± 10.7)
Number of Years Teaching	11.3 (± 6.8)
Grade Level	47% High School 24% Middle 29% Elementary
Subject Area	24% Science 18% Health Education 17% Health Education and Physical Education[a] 24% History/Social Studies 6% Mathematics 6% Foreign Language
Level of Education (Master's Degree)	77%
Previous Professional Development	82%

[a]These participants were included because they taught health education in a traditional classroom setting in addition to physical education.

Data Collection Procedures

The researchers obtained institutional review board approval from Boston University. Merrimack College entered into an authorization agreement with Boston University. The researchers implemented convenience, purposeful sampling to recruit classroom teachers currently practicing in the field. The researchers directly contacted teachers known to them and requested participants to recommend colleagues (snowball sampling). Teachers interested in the study returned informed consents to one of the researchers

and enrolled in the study. Upon enrollment, teachers completed a Movement Survey, which included demographic information, a series of Likert scale questions related to movement in the classroom, and an open-ended question for further comments. The interviews lasted 15–30 min, were conducted over the phone or in person, and were recorded for data transcription.

Instruments

The researchers designed the Movement Survey to help support the data collected during the interviews as a means of data triangulation. The survey included basic demographic information (age, years teaching, grade level taught, etc.) as well as a series of statements. In the first six questions, participants were asked to rate their knowledge about movement and physical activity (responses ranging from 1 = *no knowledge* to 5 = *very knowledgeable*), and in the next 10 questions, they were asked to rate their feelings and attitudes about using movement in the classroom (responses ranging from 1 = *strongly disagree* to 5 = *strongly agree*). Likert scale questions are included in a table in the Results section. Space was provided for participants to include additional comments. Responses for this section were limited, so data are included with the interview data.

The researchers designed the interview guide using a semistructured format because they wanted to maintain consistency throughout the interviews to enhance the integrity of the data without losing the opportunity to follow up with questions and/or delve more deeply into responses. One researcher conducted all interviews to further support the quality of the data. The researchers developed the interview guide specifically for this study. Teachers answered open-ended questions regarding their use of movement, their understanding of connections between movement and learning, and the role of schools in addressing students' lack of physical activity. Selected questions from the interview guide are presented in Table 2.

Table 2
Questions From the Interview Guide

Questions related to movement in the classroom
What do you think of when you hear the phrase "movement in the classroom" or "classroom-based physical activity"?
Do you use movement in your classroom?
What is your understanding of the connections between movement and learning?
What do you think are the benefits of using movement in the classroom?
What do you think are the barriers and/or challenges of using movement in the classroom?
Do you think that teachers should integrate movement into the classroom? Why or why not?
What types of supports or resources would you want and/or need in order to incorporate movement into your classroom?
Questions related to movement in schools
Do you believe that lack of movement and physical activity in schools is a problem? Why or why not?
Do you think that schools should have a role in increasing students' physical activity levels outside of physical education and recess? Why or why not?
What practices does your school currently use to get children active during the school day?

Data Analysis

For the quantitative data, basic descriptive statistics—mean and standard deviation—were calculated for the Likert scale question. In addition, the total score of knowledge of movement and attitude

toward movement was calculated by adding the score for each item together (i.e., the range for the knowledge score was 6–30 and for the attitude score was 10–50). Internal consistency for each scale was calculated. To explore which demographic factors were related to knowledge and attitude scores, ANOVA and correlations analyses were performed using SPSS 21.0, with alpha set at $p < .05$.

The qualitative data were analyzed using the general inductive process, as described by Thomas (2006), which allowed the researchers to uncover the most dominant themes from the data as they related to the purpose. Initially, both researchers read the transcripts independently and in their entirety to gain a sense of the data and to evaluate the data without bias. The researchers continued this holistic evaluation of the data multiple times, and during the second and third "read-throughs," the researchers assigned labels for emerging themes that they then organized into the major themes. Upon completion of the independent reviews by the lead authors, the researchers reviewed the themes and supporting data via phone and e-mail. Both researchers discovered the same themes in the data, so minimal discussion was needed to come to consensus. The researchers shared the results with the third author, who was not a researcher on the project, but served as an independent reviewer with knowledge of the subject matter of the study. The third author confirmed the themes.

Data Credibility

A minimum of two strategies should be implemented during a qualitative investigation (Creswell, 1998). Four were used in this study: peer review, multiple analyst, member checks, and the survey. The third author, who reviewed all transcripts, final themes, and conclusions, conducted the peer review. The multiple analyst triangulation was completed by the two lead authors when they independently completed data analysis. Participants reviewed the final transcripts before analysis, serving as the member check. Finally, the survey, which was a second form of data collected in the study, served as triangulation for the interview data.

Results

Quantitative Data

Quantitative data were used primarily as a method of triangulation to support the qualitative data. A summary of the knowledge and attitude scales is presented in Table 3. Table 4 shows the means and standard deviations of both scales by demographic factors. Internal consistency was calculated for both scales. Alpha for the knowledge scale was .76 and for the attitude scale was .84.

Table 3
Likert Scale Question Results

Question	*M*	*SD*
Teacher Perceptions of Knowledge of Movement in the Classroom Response choices were 1 = *no knowledge,* 2 = *little knowledge,* 3 = *neutral,* 4 = *some knowledge,* 5 = *very knowledgeable.*		
The health benefits of physical activity.	4.7	0.5
The relationship between movement and learning.	3.8	0.8
The benefits of integrating movement into the classroom.	3.7	0.8
The relationship between movement and student behavior in the classroom.	3.6	0.6
Student attitudes toward movement in the classroom.	3.1	1.0
Methods for integrating movement into the classroom.	3.1	1.2
Teacher Attitudes (Feelings) Toward Movement in the Classroom Response choices were 1 = *strongly disagree*, 2 = *disagree,* 3 = *neutral,* 4 = *agree,* 5 = *strongly agree.*		
I believe that students would benefit from movement in my classroom.	4.7	0.6
In the future, I would like to integrate movement into the curriculum.	4.6	0.6
I believe that my administration would support integrating movement into the classroom.	4.5	0.6

Table 3 (cont.)

Question	*M*	*SD*
I think that integrating movement into my classroom would be a positive experience for both my students and me.	4.5	0.6
I believe that my students would enjoy if I integrated movement into my classroom.	4.4	0.9
I think that with training and support, I would integrate movement into my classroom.	4.4	0.7
I would like training or professional development about integrating movement into the classroom.	4.2	0.7
I am comfortable integrating movement into the curriculum.	3.6	1.1
I currently utilize movement to help teach concepts in the classroom.	2.8	1.3
I think that integrating movement into my classroom would cause class management issues and would be disruptive.	2.5	0.9

Table 4
Teacher Perceptions of Knowledge of and Attitudes Toward Movement in the Classroom

Demographic information	Knowledge *M* (*SD*)	Attitude *M* (*SD*)
Gender		
Male	20.00 (7.07)	37.50 (14.85)
Female	22.33 (2.97)	40.53 (4.05)
Grade level		
Elementary school	22.75 (4.50)	40.75 (2.87)
Middle school	22.00 (2.83)	43.00 (0.00)
High school	21.82 (3.34)	39.45 (6.47)
Subject taught		
Health/PE	22.67 (2.52)	42.33 (1.51)
Health	24.67 (.58)	42.67 (1.53)
Other	21.18 (3.74)	39.00 (6.42)

Table 4 (cont.)

Demographic information	Knowledge *M* (*SD*)	Attitude *M* (*SD*)
Level of education		
Bachelor	21.25 (4.79)	39.75 (9.00)
Master	22.31 (3.03)	40.31 (4.31)
Professional Development		
Yes	23.00 (2.83)	42.50 (3.87)
No	21.77 (3.59)	39.46 (5.72)

The descriptive statistics showed that teachers were knowledgeable about the health benefits of physical activity but reported limited knowledge related to movement and learning in the classroom. The teachers were the least knowledgeable in the statements about student attitudes toward movement in the classroom and methods for integrating movement into the classroom. In terms of teacher attitudes, they expressed a strong interest in integrating movement even though most were not currently using it. ANOVA analysis showed no differences of knowledge and attitude scores in terms of gender, grade level, subject taught, level of education, and professional development opportunities. Teachers with previous professional development opportunities also showed a higher trend of scores on both scales.

Correlation analysis showed that teacher age was negatively correlated to the knowledge score, $r = -0.52$, $p < .05$, indicating that the younger the teacher is, the more knowledge of movement in classroom the teacher has. In addition, years of teaching was negatively correlated to the attitude score, $r = -.59$, $p < .05$. This indicates that teachers with less teaching experience tend to have better attitudes toward movement in classroom.

Qualitative Data

An overview of the major themes and subthemes is provided in Figure 1. In-depth descriptions with data from the interviews are presented next.

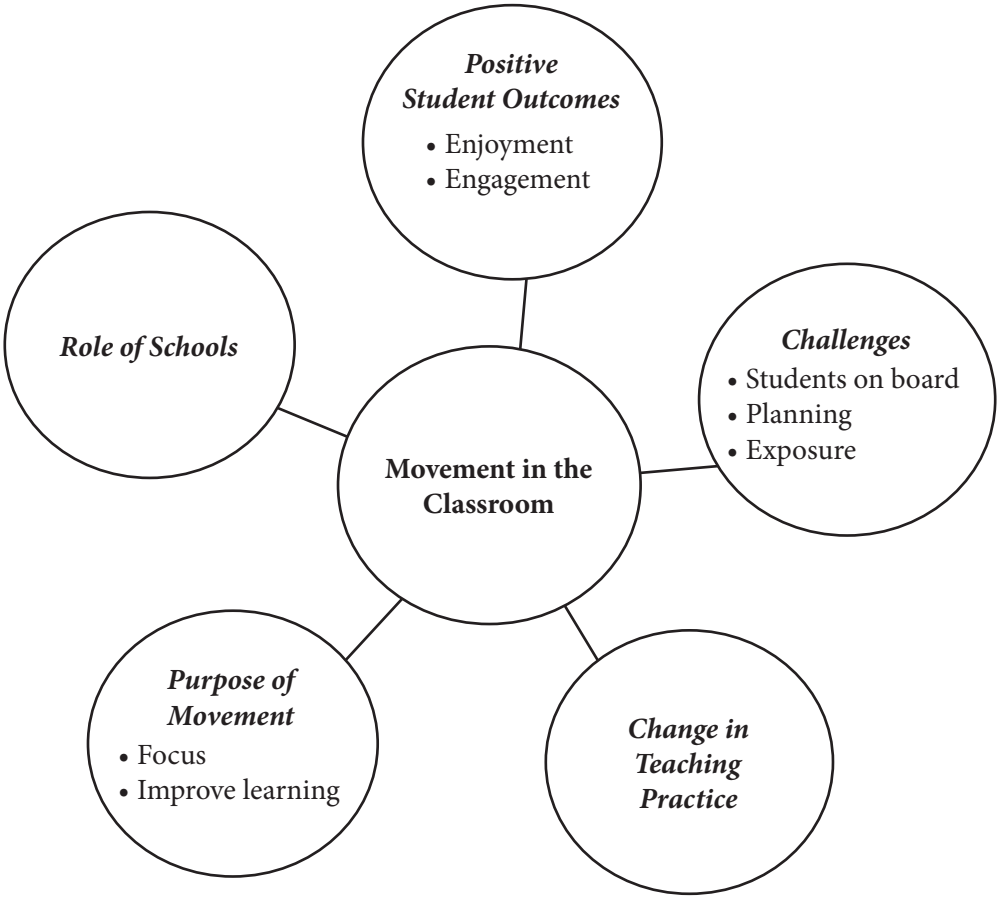

Figure 1. Themes and subthemes.

Positive student outcomes. Many teachers discussed that students enjoy moving in the classroom and that movement increases students' engagement with their academic content. Teachers reported that they use movement to give the students a break before returning to academic content. They also felt that movement helps refocus students. Finally, teachers also felt that the students enjoy using movement in the classroom.

Participants felt that students enjoy the use of movement in the classroom. Tennis Girl explained,

> Movement helps learning for a lot of different reasons, because I think kids are excited to move and they feel good

about moving and because their brains are stimulated and that helps their learning and just that they have positive attitudes towards doing anything besides just sitting in their desks.

Tracy supported this: "I saw the kids getting excited about what they were doing on a different level than it would be before." Many participants discussed that students find movement fun and that it provides a unique element to the class that students and teachers find enjoyable.

Teachers in this study who use movement shared that they believe that physical activity increases student engagement. Kelly explained, "I would say the biggest thing is engagement, because the kids can't just sit there and disengage if their main goal is to move around and to engage with each other and with the content." Tracy expressed a similar view: "I think of kids being engaged in what they are doing . . . And I see them, basically engaged would be the word that comes to my mind."

Purpose of movement. Participants in this study described that they use movement primarily to focus students and to improve learning. Most participants reported that they use movement in their classrooms, but most do not use it on a regular basis. However, all explained that they use movement when they feel students need to refocus or when they need to reinforce or improve learning outcomes.

Carol explained that movement "makes them a little alert, I think, if they have to get up and move around." Veronica said, "If I don't give them a break, then they check out, they get antsy; I notice more behavioral problems." Veronica further explained, "It's mostly for relief from the academics. I use it as rewards, too." In her survey, Carol wrote,

> I teach double period science classes (100 min) to sixth grade students. (I see students for a double period, every other day.) They NEED to move during that time period. Having them sit for this much time is not a good option. . . . especially in the afternoons.

Marcie summarized this theme: "The attention, like I said, is the number one thing." Participants in this study felt that a primary purpose of movement in the classroom is to help students focus and/or to increase attention.

Many participants also discussed a connection between the use of movement and student learning outcomes. Emma and Gabriella discussed using movement to help with retention: "Certain movements can be associated with certain vocabulary words or training, like its reminders, associations" and "The word with a movement to help them remember things, and it's especially good for kinesthetic learners, but it's really, I think, good for everybody." Patricia mentioned a similar example with her elementary school students:

> Last week, the word was sprang, and we tried to talk about what that sprang meant, so acting out what does that mean and having them actually act out to move quickly. I think it just makes them remember it more.

Kate explained that she feels that movement helps student learn because "they can sort of replay it in their mind because they made a more meaningful memory about it versus just kind of studying the flash card." Overall, teachers explained that they believe that using movement can help students retain the information and increase their ability to learn and remember material.

Change in teaching practice. Teachers described that to integrate movement into their classrooms in a meaningful way would require a change in the way they think about teaching or in the way they teach. For example, Tracy mentioned that after using movement in her classroom, "I see that I am losing kids now. I'm much more aware of it than I used to be." Emma discussed a similar thought: "I think it lets me see students in a different light that maybe I hadn't seen before that are successful."

Many participants also discussed that using movement requires a shift in the way teaching and learning is viewed. Elizabeth explained, "I'm always up for some new way of thinking about teaching and learning, so I'm always happy to hear about some new way to think about learning a complicated idea through physical activity." However, she also felt, "It hasn't sort of fully integrated itself into the way I think about my classroom," which again suggests the need for

a change in teaching practice. Tennis Girl discussed a slightly different angle to this idea when she explained why people may not use movement:

> Probably just because it's too much work to think of ways and maybe they're just old school and they don't want to take kids out of the classrooms; they want to be able to control them more easily in their desks.

Kate described a similar thought:

> I'm just going to pour my information into you, you're an empty vessel and I'm pouring the information into you, I think that those people, if they were to walk past my classroom, they might look in and say, "What . . . is going on there? There's nothing but chaos going on in there. You can't possibly tell me that those kids are learning." But they are.

Teachers discussed this theme from different angles (their own teaching, teaching practice, teaching and learning), but all discussed that integrating movement into their classrooms, or into classrooms in general, takes a significant shift in the way teachers think about teaching and learning and/or their own teaching practice.

Challenges. Participants discussed challenges to using movement in the classroom. Three major challenges were discussed: getting students on board with movement in the classroom, planning for movement, and a lack of exposure on how to use movement in the classroom.

Teachers who use movement described that it can be challenging to get students to "buy into" using movement during class. Nicole explained, "As a teacher, you want to build relationships and trust with your students, not having them think your activities are stupid, as if you're a loser." Marcus shared a similar sentiment: "I think for me it would be more of how can I convince my students to take this seriously." Gabriella brought up another point:

> When kids aren't used to it, then they can be reticent, resistant; if they feel uncomfortable about their bodies, maybe they don't want to do it. If they are very particular

> about their clothes or their hair depending on how active the movement, it depends on how much jumping around you are doing, I guess.

Helping students understand the importance of movement and finding ways to integrate movement that can reach all students are two components of getting students on board.

Participants in the study felt that planning for movement is a significant challenge. They felt that teachers have many demands placed on them and that integrating movement is another "thing" that they would have to try and "fit into" their curriculum. They also mentioned the barrier of "logistics," including classroom management and space. In her written survey, Veronica explained that she teaches in a school with an "open-classroom" concept where she cannot "do the physical activity movements with my student because it disturbs other classrooms." In terms of movement as an addition to the curriculum, Marcus explained, "That with my academic discipline, it is hard to think of that in a planned way." Gabriella explained, "It can be hard to think of how to incorporate it curricularly so it's not just a break." Emma also discussed, "There is so much curriculum to cover, and there are so many things I am supposed to be doing with the kids, I need to make sure that I can double up." A number of participants also mentioned that physical space can be a problem: "You have to be able to control the kids and you've got to be able to control just where you were able to do movement . . . or just kind of the logistics of it can be an issue" (Tennis Girl) and "I think the biggest thing is just behavior management and then refocusing them after" (Kelly).

Participants in this study described a lack of exposure on how to integrate movement into the classroom. One participant wrote in the survey,

> Little research has been passed around to the "people who matter" for it to become a norm. I believe that if articles from well-respected educational magazines/websites/research were presented to administration, it could be passed down the appropriate chain and become a norm in the classroom.

Samantha stated, "So, I just would love to see them move more, but I don't have a lot of ideas as to what I can do as part of my class to do that." Stacy explained that she does not regularly include movement "probably because I don't have more training and more ideas and more activities in what to do." Marcus explained, "I don't have a good sense of how it would make my class better or what I could do to make it productive." In her written survey, Nicole stated, "I am very excited about learning more about how to add this into my classroom routine and help my students 'engage' in the classroom materials." It seems that many teachers identified not only a need for further information and examples of how to increase the amount of movement in the classroom, but also that they are willing to learn more about how to integrate movement effectively.

Role of movement. Participants felt that schools should have a role in addressing the movement needs of students. Marcus said,

> I think the short answer is yes . . . I don't think we find enough avenues for kids to do things physical in general . . . I think it would be better for them to have more active outlets, and therefore if the school can provide them, that [would] be good.

Gabriella believes that "if you can incorporate physical activity in small ways throughout the day, it's probably helpful because every little bit counts and helps you." Finally, Kelly stated,

> Why not? I mean . . . I think it's that important. Like I said, there [are] the obvious benefits of it in a classroom, and I think that we're teaching these kids in general how to succeed in life. And I think that it's important at least to have small movement things and to have conversations about it, just teaching these kids how to live a healthy life and be successful. Because if we're not doing it in school, there is a chance that these kids aren't hearing it . . . but yeah I think it's really important.

Discussion

We examined classroom teachers' perceptions about integrating movement in the classroom to gain a better understanding of the ex-

tent to which physical activity is being used in classrooms, teachers' understanding and opinions of using movement in the classroom, and potential resources necessary to assist teachers in increasing the use of movement in the classroom. Despite a lack of using movement in the classroom, teachers reported positive associations with movement in the classroom and a desire to learn more about movement as a strategy in the classroom. Significantly, teachers in the study believe that schools should have a role in addressing physical inactivity in youth.

Teachers who were younger had higher knowledge and more positive attitudes toward movement in the classroom. This may be due to younger teachers feeling that physical activity is important for health and educational outcomes in children and perhaps due to preservice program faculty beginning to address physical activity and to increasing awareness (Goh et al., 2013; Webster, 2011; Webster, Monsma, & Erwin, 2010). In addition, teachers who had professional development opportunities showed the trend of higher scores on both scales compared to those who did not have those opportunities. This is supported by recent research in which teachers who received increased facilitator support and a social marketing campaign reported increased exposure and self-efficacy in regard to movement breaks and more frequent regular use of physical activity breaks (Delk, Springer, Kelder, & Grayless, 2014). Support, in the form of professional development or more direct support, increases the likelihood of increasing movement in the classroom. Together, these findings suggest that an increase in preservice training as well as professional development opportunities about using movement in the classroom may help prepare them to be more knowledgeable and confident to implement movement in the classroom.

No difference was found in the knowledge or attitude scales for health and physical education teachers. This finding is surprising because PE and health teachers' coursework and professional training include a focus on physical activity and being physically active (Dyson, 2014). In turn, teachers in these fields seem more likely to use movement in their classrooms; however, our results do not support this idea. Perhaps this provides further support of the paradigm shift that many participants discussed as necessary to use movement in the classroom. Even teachers with more knowledge about physi-

cal activity may find it challenging to transfer that into the classroom and/or may not have the skills or confidence to apply their knowledge from the gym into the classroom in the specific context of movement and learning. This area should be explored further as health and physical educators, because of the training they receive, are poised to be leaders for increasing physical activity in schools.

Participants in this study overwhelmingly reported either experiencing positive benefits from using movement in their classroom or believing that using movement can lead to positive outcomes. Teachers also identified outcomes such as enjoyment in the classroom and engagement, which supports previous research (Ahamed et al., 2007; Fredericks et al., 2006; Lowden et al., 2001). Teachers also reported that movement improves learning through improved retention; however, at this point, researchers have not provided strong evidence to support this specific connection of understandings related to procedural knowledge and implicit learning (Jensen, 2000). Teachers appear to have mainly anecdotal evidence for using movement in the classroom and may not realize or have been exposed to current research in the field.

Implementing movement in the classroom is a behavior change for many teachers. Social cognitive theory (Bandura, 2004) suggests that knowledge is one determinant of behavior change, along with variables such as self-efficacy, outcome expectations, and facilitators and impediments. The data imply that the current level of awareness of benefits of movement is not enough to change behaviors. Teachers do not have knowledge of current research related to outcomes such as improvements in reading and math, cognitive behaviors, academic achievement, and meeting the needs of multiple learners, and they do not appear to be able to articulate the neurological connections between movement and learning (CDC, 2010; Donnelly & Lambourne, 2011; Fredericks et al., 2006; IOM, 2013; Lowden et al., 2001; Robert Wood Johnson Foundation, 2009). This is similar to previous research conducted by Cothran, Kulinna, and Garn (2010), who found that teachers were "rarely able to articulate a direct connection between physical activity and learning and rarely spoke about the specifics of academic integration" (p. 1385). To support global recommendations for movement in schools, teachers, especially those who are not using movement, should receive infor-

mation related to movement and learning as one way of facilitating behavior change.

A few participants in the study use movement and have received information about physical activity in schools. Teachers who use movement reported using it mainly for focus and to improve learning. Many participants discussed the use of movement to provide students a break during class and/or before returning to academic content. This is in agreement with research showing improved on-task behavior/concentration during academic instruction through incorporating movement in the classroom (Barros, Silver, & Stein, 2009; Fredericks et al., 2006; Lowden et al., 2001; Mahar, 2011; Mahar et al., 2006). However, this is a limited view of the outcomes and benefits to movement in the classroom. Teachers who use and teachers who do not use movement do not appear to have an in-depth understanding of the potential of movement when it is meaningfully integrated into the school day and only use movement on a limited basis for limited outcomes.

Even teachers who use movement are not taking advantage of the potential benefits. Some participants discussed that they are dealing with pressures related to curriculum and planning as barriers to movement. These findings support Cothran et al. (2010), who found that scheduling and feeling that movement is an "extra," along with the pressures of standardized testing, were "negative presses" for implementing movement. This may, in part, be due to many teachers implementing movement on their own; it was not part of a schoolwide initiative as suggested in recent reports (IOM, 2013; Lagarde et al., 2008; White House Task Force on Childhood Obesity, 2010). Lack of administrative support and lack of an environment conducive to physical activity could serve as barriers to using movement in the classroom. As suggested in the WHO *School Policy Framework*, schools should work toward sustainable strategies and policy development that engage stakeholders and support implementation through training, support from administration, and motivational strategies (Lagarde et al., 2008).

Not only did teachers in the study express an interest in learning more about movement in the classroom, every participant also felt that schools should have a role in increasing students' physical activity levels. Similarly, Cox, Schofield, and Kolt (2010) found that

adults (teachers and parents) believe that schools have a responsibility to act as a "backstop" or "fallback" if parents fail to take responsibility for children's physical activity (p. 50). Cox et al.'s study is different from this study because the findings suggest that teachers view schools as a primary party responsible for addressing physical activity levels of students. Therefore, the finding in this study is unique and potentially significant; teachers are essential stakeholders who can influence what happens in schools and in classrooms. If the belief is that schools should have a role in addressing physical inactivity, it could lead to advocacy efforts among stakeholders who are able to make direct changes in the levels of physical activity for their students. However, until research, materials, and professional development are available, meaningful change will not likely occur.

This study has several limitations. Although participants represented teachers from a diverse range of grade levels, almost half of the participants were high school teachers, which may have influenced their experience with movement in the classroom. Also, the teachers who participated in the study were not representative of all subject areas that are taught in school. Furthermore, participants only represented school districts in Massachusetts and New Hampshire. The generalizability of the study is limited to the teachers in the states and content areas represented. This study was also not gender balanced (15 women, two men), which may have altered results. Convenience, purposeful sampling was implemented to recruit classroom teachers currently practicing in the field. Because many of the participants were directly known to the researchers, this may have affected the results as compared to a random sampling of teachers. Nevertheless, this study is a first step in gaining an in-depth analysis of physical activity and movement in the classroom among teachers.

In summary, we found that work still needs to be done to make movement a regular practice in schools. Teachers in this study understand that movement can be helpful in the classroom, but cannot explain in detail the connections between movement and learning. Most explain that to use movement effectively, they would need training and support and recognize that it would involve a change in their teaching practice. Finally, teachers in this study believe that schools should have a role in addressing physical inactivity in youth.

Stakeholders, including current school staff including physical educators, should begin the process of providing the training and support necessary to make movement a meaningful part of the educational system.

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