Published in final edited form as:

J Asthma. 2019 April ; 56(4): 422–430. doi:10.1080/02770903.2018.1463380.

Asthma management in New York City schools: A physical education teacher perspective

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Abstract

Objective: Physical education (PE) teachers may be the first to assist students with asthma attacks during PE class. This study explores the PE teachers' perspectives on in-school asthma management and barriers to physical activity (PA) in children with asthma attending urban elementary schools.

Methods: We conducted qualitative semi-structured interviews with 16 PE teachers from 10 Bronx, NY elementary schools. Interviews were recorded, transcribed and independently coded. Content analysis was used to identify 10 major themes common across interviews which were then categorized into 3 domains.

Results: Three domains were identified: 1) school procedures and policies for asthma management; 2) role of PE teachers in asthma management; and 3) barriers to PA for students. Most PE teachers were unaware of written procedures for acute asthma management and did not receive asthma-specific training. Many PE teachers expressed confidence regarding asthma management. PE teachers identified students with asthma most commonly through communication with students. The PE teachers utilized various methods to manage asthma but all relied on the nurse to handle acute asthma symptoms. Several barriers to PA were determined, including PE teachers' unawareness of NYS PE requirements, lack of gym facilities, inclement weather, inconsistent PE class time, asthma diagnosis, and having no asthma inhalers at the nurse's office.

Conclusions: PE teachers' perspectives on asthma management may influence the way asthma is handled at school. The results from this study highlight several barriers that can be targeted in future interventions to improve asthma management.

Keywords

physical activity; exercise; asthma; inner-city; qualitative research

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Declaration of Interest

This study was supported by 5K23HD065742 (Reznik: PI) from the National Institutes of Health (NIH) Eunice Kennedy Shriver National Institute of Child Health & Human Development (NICHD).

The study was presented in part at the 2017 Pediatric Academic Societies Annual Meeting on May 8, 2017 in San Francisco, CA.

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

Introduction

Asthma, a common chronic disorder of the airways, affects around 6.2 million children under the age of 18, with children between the ages of 5 and 14 years being the most affected [1, 2]. In 2008, 10.5 million school days were missed due to asthma [3]. In New York State (NYS), residents in the Bronx have the highest age-adjusted rates for asthma-related emergency department visits, hospitalizations and even deaths [4]. Asthma prevalence in children has also been shown to be higher in minority and low-income populations, residing in urban cities such as the Bronx, NY [5, 6].

In addition to physical effects, asthma can cause activity limitations. Exercise is a known trigger of asthma and exercise-induced asthma can occur in up to 90% of people diagnosed with asthma [7]. However, physical training has also shown beneficial effects on disease control and quality of life for children with asthma [8]. Physical education (PE) may pose an additional challenge for in-school asthma management. Therefore, PE teachers may play a crucial role in the management of asthma in schools.

The National Heart, Lung, and Blood Institute (NHLBI) has developed recommendations on the roles and responsibilities for PE teachers in asthma management, including PE teacher's ability to identify and enable full participation in PE by students with asthma [9]. Although there have been several studies that assessed classroom teachers' knowledge about the disease [10–16], very few studies have specifically investigated PE teachers' perspectives on their role in asthma management [17–19]. This study explores PE teachers' perspectives, attitudes, fundamental beliefs, and challenges faced with respect to asthma management in urban elementary schools.

This study is a part of a larger project which aims to design a school-based intervention to address barriers to in-school asthma management and physical activity (PA) participation among urban children with asthma. The goal of this qualitative study was to examine the perspective of PE teachers on in-school asthma management and barriers to PA for children with asthma attending urban elementary schools. Findings from this study may help in developing interventions to improve asthma in schools.

Methods

This qualitative study was conducted using individual interviews with PE teachers in NYC elementary schools. The study was approved by the NYC Department of Education (NYC DOE) and university's Institutional Review Board (IRB) Committees.

Participants

We conducted this qualitative study using individual interviews with 16 PE teachers from 10 Bronx, New York elementary schools. Each principal agreed for their school to participate in the study and introduced the study team to the PE teachers. One school had four PE teachers on staff, five schools had two PE teachers and four schools had one PE teacher. PE teachers had to be employed at the given school for at least 12 months to be eligible for the study participation. None of the approached PE teachers refused study participation and all signed

informed consent prior to the interview. All eligible PE teachers from each school were interviewed except for one school where two out of four PE teachers were interviewed due to reaching thematic saturation, a point at which new insights are no longer observed during qualitative data collection [20].

Procedure

In-person interviews were conducted on school premises by the physician-investigator trained in qualitative techniques (M.R.) between the period of February 2011 and May 2011. PE teachers did not receive compensation for their voluntary participation in this study. An open-ended interview guide (Table 1) was used that included questions related to general asthma awareness, knowledge of school asthma management policies, NYS PE requirements for schools, PE teacher's experience with asthma and actions taken during an acute and/or hypothetical asthma attack. Several questions in the interview guide were revised based on the first interview conducted with a PE teacher. Individual rather than group interviews were conducted as the number of PE teachers were limited at each individual school and each PE teacher may have significantly different experiences, which may not be elicited during group interviews. Furthermore, answers to certain questions such as knowledge of asthma management may be affected in a group setting.

The interviews with PE teachers were conducted until thematic saturation was reached [20]. Upon completion of the individual interview, PE teachers were asked to complete a questionnaire regarding their position within the school, grades taught, years of teaching experience in the NYC school system and at the specific school, personal history of asthma, asthma family history, whether they had students with asthma in their class and demographics.

Data analysis

All interviews were audio-recorded and professionally transcribed. Two coders independently examined the transcripts and created codes for key reappearing statements within the text. A master codebook of these themes was created after reconciling any discrepancies between transcripts. All 16 interview transcripts were then independently coded by three coders using the master codebook and analyzed using content and thematic analysis [21]. Themes were assigned to specific statements. Content analysis was utilized to determine the number of participants who shared a particular idea or concept. Major themes were identified based on the frequency of occurrence of such ideas or concepts. Emergent themes were discussed and agreed upon by all three coders. Our research was guided by the phenomenological research approach, a qualitative research method, whereby the goal is to accurately describe the phenomenon under study from the perspectives of the individuals involved [22].

Results

Participant characteristics

Our final sample consisted of 16 PE teachers, the majority of whom were male and with an average of 8.53 years of having worked at the school (Table 2). Only one PE teacher reported having an asthma diagnosis himself.

Interview themes

The interviews produced ten themes within the three domains of the thematic framework (Figure 1). The domains include: 1) school procedures and policies for asthma management; 2) role of PE teachers in asthma management; and 3) barriers to PA for students. Associated quotes are included in Tables 3, 4 and 5.

Domain 1: School procedures and policies for asthma management

Theme of lack of awareness of written asthma attack procedures—PE teachers are often the first to respond to exercise-induced asthma attacks during PE class. Most PE teachers were not aware of any written school procedures on how to manage acute asthma symptoms and attacks (Table 3, Quotation 1). When asked about what their procedures are for handling such situations, all PE teachers described relying on the nurse for asthma-related emergencies (Table 3, Quotation 2).

Theme of insufficient asthma management training—Most PE teachers stated that they did not receive specific training regarding asthma management (Table 3, Quotation 3). Nevertheless, a majority of them expressed confidence regarding managing asthma symptoms and attacks (Table 3, Quotation 4). About half of the PE teachers indicated that they received information about asthma management through other sources, such as previous experiences with the disease or undergraduate training (Table 3, Quotation 5).

Domain 2: Role of PE teachers in asthma management

Theme of PE teachers' experience with asthma management—Only about a third of PE teachers reported having a student experiencing an asthma attack in PE class. Over one half of them suspected that some students use asthma as an excuse to avoid PE participation, including both students with documented asthma and those without (Table 4, Quotation 1). PE teachers believed that students may mistake other diseases for asthma (Table 4, Quotation 2), view it as a disability (Table 4, Quotation 3), or think that they will die from PE participation (Table 4, Quotation 4). In addition, older students were described as being more likely to avoid PE participation.

Theme of PE teachers' anxiety regarding asthma management—Some teachers reported fear or anxiety towards asthma management (Table 4, Quotation 5) and several others revealed concerns about potential litigation regarding their asthma management. To avoid lawsuits, one PE teacher sends letters to parents reminding them to get asthma medications ("pumps") for their children (Table 4, Quotation 6) while another ensures that the school keeps accurate records of students with asthma (Table 4, Quotation 7). In

addition, some PE teachers expressed concerns about asthma management when the nurse is absent, such as during after-school programs (Table 4, Quotation 8).

Theme of asthma identification—PE teachers utilized many methods of identifying students with asthma that include: communicating with students, nurse, parents or classroom teachers, receiving doctor's notes, observing students carry inhalers, and reviewing health-related student documents and forms on file at the school. The most common method that PE teachers use to identify students with asthma, however, is through informal conversations with students (Table 4, Quotation 9). Some PE teachers receive a list of students who require asthma medications while others express interest in obtaining such a list.

Theme of asthma symptoms management and PA modifications—The PE teachers had no standard method of managing asthma. They utilized a combination of various methods to manage asthma symptoms that include: seeking the school nurse's assistance (Table 4, Quotation 10), monitoring students (Table 4, Quotation 11), allowing students to sit out (Table 4, Quotation 12), modifying students' PA levels (Table 4, Quotation 13), and letting students drink water (Table 4, Quotation 14).

Domain 3: Barriers to PA for students

Theme of PE teachers' lack of knowledge of NYS PE requirements—Only one PE teacher correctly stated that 120 minutes of PE a week, excluding recess time, is required for elementary school students. Two other teachers were also aware of the 120 minutes of PE but did not specify the exclusion or inclusion of recess as part of the requirements. Additionally, some PE teachers either did not provide a specific required amount of PE or provided inaccurate number of minutes (Table 5, Quotation 1).

Theme of inconsistent PE class time and inclement weather—Students often did not receive the required PE time. The majority of PE teachers revealed that PE class time varies between classes and grades. For example, some students may receive no PE class time at all or some students receive more PE class time than others (Table 5, Quotation 2). Half of the PE teachers indicated that inclement weather is often a barrier to PA for students (Table 5, Quotation 3). Under inclement weather conditions, students were not allowed to go outside during recess time nor received any PA while indoors.

Theme of asthma diagnosis and lack of access to medications—Over one half of the PE teachers indicated that asthma is a barrier to PA for some students. Students may choose not to participate in some activities because of asthma or PE teachers may restrict them from participating in certain activities, especially those involving running (Table 5, Quotation 4). Several PE teachers stated that they would not allow students with asthma to participate in running that is part of the NYC fitness assessment if the students did not have their asthma medications ("pumps") with them (Table 5, Quotation 5). One PE teacher indicated that she would not allow these students to participate in PE if the nurse was not present to provide pre-exercise treatment (Table 5, Quotation 6).

Theme of lack of gym facilities—About half of the PE teachers discussed barriers to PA related to gym facilities. These barriers include lack of gymnasium (Table 5, Quotation 7), construction work, under-staffing and PE class scheduling conflicts.

Discussion

This qualitative study identified the PE teachers' perspectives on in-school asthma management in urban elementary schools and the results revealed several barriers to PA participation and effective asthma management. The data obtained from this study can serve as the foundation for the development of future interventions designed to improve the management of asthma in schools.

Our data suggest that many PE teachers are not aware of any school asthma management procedures or policies and lack proper training and education regarding asthma. PE teachers relied on their background knowledge of asthma, which varied amongst them, for the management of asthma symptoms during PE class. Since the PE teacher is usually the first person to assist a student having an exercise-induced asthma attack, the lack of asthma training provided to PE teachers may lead to mishandling of significant, even life-threatening, situations. PE teachers' lack of knowledge about the disease may lead to delayed identification of asthma symptoms, underestimation of the severity of the situation, ineffective treatment, and inadequate exercise levels in students with asthma. These results suggest that the PE teachers are not fulfilling the recommendations set forth by the NHLBI [9]. Our findings are similar to conclusions from studies of classroom teachers which also show the teachers' lack of knowledge of the NHLBI guidelines and lack of general knowledge regarding the disease and its management [15, 16, 23, 24].

The majority of PE teachers in our study expressed confidence in their ability to manage asthma symptoms and attacks. These results are consistent with the evidence from a study conducted among teachers in schools in Spain which demonstrated that a higher percentage of PE teachers reported knowing what to do in the event of an asthma attack compared to the overall teacher sample [13]. We found that a few PE teachers reported fear or anxiety towards asthma management, including concerns about potential litigations. It appears that avoiding lawsuits was a motivating factor for a few PE teachers in ensuring that students with asthma have records and asthma medications at school. PE teachers have also been found to be suspicious of students using asthma as an excuse to avoid exercise. This result is consistent with previous published work in which over half of PE teachers surveyed have the well ingrained idea that asthma is a psychological disorder [17]. In addition, PE teachers suspect that some students lack knowledge about asthma and often express false beliefs about the disease. These findings show the need of provision of asthma education to both PE teachers and students. It has been demonstrated that through participation in education sessions consisting of videos and didactics, teachers can be effectively taught to recognize respiratory distress in children with asthma [25].

Our results indicate that PE teachers lack a reliable method to identify students with asthma. This is supported by results from other studies [11, 26], which indicate that teachers most commonly identify these students through informal conversations rather than a standard

protocol. Specifically, inner city schools including Bronx public schools have been shown to have ineffective implementation of asthma management programs and inadequate means of identifying children with asthma. A study evaluating asthma management policies in Bronx public schools conducted through anonymous surveys of principals, teachers, counselors and nurses showed that 51% of respondents became aware of a student's asthma only through informal conversations with the student or parent and 28% claimed that they were usually not informed of a student's asthma status. As children spend many hours in school, schools must be able to implement effective asthma management programs to identify students with asthma, manage asthma symptoms, and prevent asthma attacks.

Furthermore, PE teachers have varied opinions on the modifications of PA levels for students with asthma, with some allowing students to rest for prolonged periods of time and others encouraging as much PA as possible. Previous data have shown that children with asthma are generally less active than their peers and are mostly sedentary in school [18, 27, 28]. It is, therefore, especially crucial to provide a standard protocol for PE teachers to ensure that students with asthma receive adequate amounts of exercise. In addition to implementing standard protocols for in-school asthma management and school-wide asthma training programs, the PE teachers should be encouraged to explore other resources such as the Winning with Asthma: The Coaches Asthma Clipboard Program offered by the NYS Department of Health [29].

Without proper education and regulations, PE teachers rely heavily on the nurse for the treatment of asthma symptoms and attacks. This dependency on nurses can pose additional problems as nurses are often not present during after-school programs, leaving students with asthma vulnerable to lack of assistance if they were to develop acute asthma attacks.

In addition, several barriers to PA for students were identified. PE teachers' unfamiliarity with the NYS PE requirements, inconsistent levels of PA in schools and lack of proper gym facilities prevent students with and without asthma from obtaining adequate amounts of exercise. These results are supported by the audit report on the Department of Education's compliance with the PE regulations in elementary schools which determined that elementary schools were not in compliance with the requirements for all of its students [30]. Inclement weather also adversely affects the PA levels of students. Furthermore, students with asthma are faced with disease-specific barriers. Their asthma diagnosis and symptoms or fear of eliciting exercise-induced symptoms may cause them to avoid PE participation or result in PE teacher limiting their participation. Since previous research has shown that physical training has beneficial effects on the quality of life for children with asthma and can postpone the threshold at which exercise can trigger asthma [8, 31], it is crucial for schools and policy makers to address the barriers to PA that an asthma diagnosis imposes on students. Finally, our data demonstrate that unavailability of asthma medications prevent some PE teachers from allowing students with asthma to participate in PE class. This issue may be attenuated through the development of appropriate action plans for each student with asthma and the proper provision of resources that students need to fully participate in PE activities.

Based on our study results, several actions may be recommended to improve asthma management and PA participation in urban elementary schools: 1) yearly dissemination of school asthma management protocols among school personnel to ensure consistency in the way students with asthma are identified and asthma emergencies are handled; 2) the establishment of a school asthma management team with clear roles outlined for all school personnel, including PE teachers, as per the NHLBI recommendations [9]. This can help standardize in-school asthma management specifically related to management of asthma attacks during PE class; 3) the development of a consensus among PE teachers on the type and duration of PA modifications for students with asthma either experiencing symptoms during PE or returning to PA after an acute asthma illness. This may help diminish the student's sedentary behavior; 4) the recruitment of parents to be a part of the school asthma management team to spread awareness among other parents about the importance of bringing the asthma medication administration forms and their children's "pumps" to school. This may prevent PE teachers from limiting or stopping student participation in PE due to lack of access to medication; and 5) the provision of ongoing asthma training for PE teachers to alleviate some of the fears or concerns around asthma that teachers have reported to experience.

This study should be viewed in the context of a few limitations. The results may not be generalizable to other schools in different communities as the study was conducted only in elementary schools in the Bronx, NY. The conclusions about barriers to school asthma management and PA participation are based on the points of view of the PE teachers. To minimize the researcher's influence on the data, three researchers independently analyzed the data and discussed all discrepancies. Due to the nature of conducting individual interviews, PE teachers could not remain entirely anonymous. However, the identity of PE teachers were not known to the researchers during the data analysis process.

Conclusions

This study identified several barriers to in-school asthma management and PA participation from PE teachers' perspectives which can be grouped into three main domains: 1) school procedures and policies for asthma management; 2) role of PE teachers in asthma management; and 3) barriers to PA for students. Within each domain, several key themes were determined which reflect problems related to asthma management during PE. These problems include PE teachers' lack of awareness about written school procedures for acute asthma management; insufficient staff asthma training, suboptimal asthma case identification; heavy reliance on school nurse for asthma management; inconsistency in how PA is modified for students with asthma; and insufficient PE teacher knowledge about NYS PE requirements. These areas along with identified barriers to PA should be considered when developing targeted asthma interventions as well as policies on asthma management in urban school settings.

Acknowledgements

We are grateful to all the physical education teachers and schools for their participation in the study. We would also like to thank Kevin McClelland for the review of the manuscript.

List of abbreviations:

PA	physical activity
PE	physical education

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Figure 1.

Themes from data analysis organized by thematic framework domains. PE, Physical Education; PA, physical activity; NYS, New York State.

Table 1.

PE teacher interview guide.

PE Teacher Interview Guide	
1.	What has your experience been with asthma in your students?
2.	If you have concerns about the health of a student with asthma, who do you talk to about it at your school? Is there a procedure in place for teachers to get help with a student's asthma? How often is this procedure actually followed?
3.	Do all classes in all grades have gym throughout the school year? How often does each class has gym?
4.	In your experience, do the students with asthma participate in gym or are they excused?
5.	If they participate, do they reduce the amount of physical activity because of asthma? Who makes this determination to modify or reduce the amount of physical activity for students with asthma? GYM teacher, nurse, student's doctor? Please describe the modification.
6.	Do students with asthma take medication before or after GYM class? Why or why not? Who decides that a student needs to take the pump? Do they actually take the pump?
7.	Have you encountered a student who had an acute asthma attack during/after gym? If yes, what happened and how it was handled?
8.	If NO, please describe what would happen if you a student developed an acute asthma attack during your GYM class? What would you do?
9.	Have you encountered parents raising concerns about their children's asthma?
10.	Have you encountered parents raising concerns about their children participating in gym activities because of asthma? What do parents say?
11.	How do you feel about students with asthma and sports participation?
12.	Some teachers I interviewed expressed anxiety or fear about managing acute asthma. How do other gym teachers feel about managing asthma attack during gym?
13.	How do you feel about managing asthma?
14.	What happens if nurse is out (sick)? Is there a procedure to who to contact if a child has asthma attack and need medications?
Now I am going to ask you about how asthma is handled at your school.	
1.	Please describe how students with asthma are identified at your school?
2.	How do you find out if a student has asthma? What is the most common way you find out that a student has asthma?
3.	If a student has asthma attack and needs medications, what should happen? What actually happens?
4.	How acute asthma episodes should be handled at the school? Is there a policy? How acute asthma episodes are handled?
5.	Please describe what services, if any, are provided for students with asthma at the school?
6.	Please describe the DOE/DOH-recommended asthma management initiative (Managing Asthma in Schools)?
7.	How does your school handle physical activity and gym classes for students with asthma?
8.	How does your school handle recess and students with asthma?
9.	Is there instruction for teachers/staff on how to manage a child with asthma? If yes, who provides this instruction? Have you received this instruction? Any other instruction? From what sources?
10.	Please describe what is the NYC physical education requirement for elementary school students?
11.	The goal of this study is to develop an intervention to improve PA levels in students with asthma. We may introduce exercise in curriculum, how do you suggest we do it? What modifications would you suggest to have for students with asthma?

Table 2.

Sociodemographic characteristics of PE teachers in elementary schools in Bronx, NY (N=16).

Characteristic	N	(%)
Mean age, years (SD)	37.5	(8.19)
Male sex	13	(81.25)
Ethnicity		
Hispanic/Latino	2	(12.50)
Not Hispanic/Latino	14	(87.50)
Race		
African American	5	(31.25)
Caucasian	9	(56.25)
Other	1	(6.25)
Unknown	1	(6.25)
Work experience		
Years worked in NYC School (SD)	9.53	(6.19)
Years worked in the School (SD)	8.53	(5.66)
Exposure to asthma		
Self	1	(6.25)
Family member	6	(37.50)
Student	16	(100.00)

Table 3.**Domain 1: School procedures and policies for asthma management**

Theme	Representative quotations
Lack of awareness of written asthma attack procedures	<p>(1) "I believe it's just what the nurse, you know, her or his—whoever it is—that has their routine. I don't believe that there's actually a written code of routine for the school" (PE Teacher 1)</p> <p>(2) "If there's something, anything happens to a child, you get the nurse right away. The nurse is the physician and the person with the knowledge to deal with that. Um, that that's the procedure..." (PE Teacher 4)</p>
Insufficient asthma management training	<p>(3) "I... I have to tell you, I get very little... we get very little training as far as... we'll get workshops, but you know, we... we have CPR and AED training every year, you know, but we should get more asthma training." (PE Teacher 7)</p> <p>(4) "Oh, I'm very prepared, very. Um, like I said, due to the fact that we have so many kids that complain about it and what not, I've read up on it, I've dealt with...I've spoke with the nurse a lot. I feel that between myself and [the other PE teacher], we can uh, handle it to a point where we know that if the child ever had an attack, we would be more than ready" (PE teacher 2)</p> <p>(5) "...I'm only aware of [how to manage asthma] because, you know, my educational background and who I work with and what I do....But, um, if it wasn't for that, I would probably be a deer in the headlights right now here." (PE Teacher 14)</p>

Table 4.

Domain 2: Role of PE teachers in asthma management

Theme	Representative quotations
PE teachers' experience with asthma management	<p>(1) "Well, sometimes they're like, you know, "I have asthma. Can I sit out for a little bit?" and then they'll tend to sit out for a long period of time than usual" (PE teacher 12)</p> <p>(2) "You know, it could be bronchitis, it could be allergies, it could be anything that's causing the breathing, but a lot of children mistaken of what they have, and sometimes they use that as an excuse. Sometimes." (PE teacher 11)</p> <p>(3) "the younger ones aren't educated enough for the asthma they don't –they think that it's a disability and they can't do anything about it" (PE teacher 3)</p> <p>(4) "They told me, yeah, I have had students tell me that they think, "Oh, I can't play in the game. I have asthma. I'll die or I'll get really sick." They really think that if they play – I don't know who gave them that information – but they think that if they participate with asthma, they're gonna get really sick or need to go to the hospital and they will just... they will refuse to even get up to walk." (PE teacher 5)</p> <p>(5) "Would be very...a very stressful situation for me. I hope I never have to do it, um, but I would definitely want to get the child to the nurse, you know, someone who's a little bit better, um, trained than I am to handle these situations." (PE teacher 13)</p> <p>(6) "You know, if something happened, I could say, "Listen, I've sent home multiple letters that your child needs to have a pump on file downstairs at the nurse"" (PE teacher 10)</p> <p>(7) "if it's not in their files and you find out later if the child does have asthma, we make sure that they...we have it on file just as...to save ourself if something happens, but, uh, that's the only way possible I would know." (PE teacher 14)</p> <p>(8) "But, God forbid something like that happened, I honestly, at the moment, I don't know what I would do. You know, that's my honest answer, but if it ever happens, I just hope I do the right thing." (PE teacher 14)</p> <p>(9) "We don't know everybody to begin with who has asthma but we find out...we will ask, ...is there anyone here that has asthma?" (PE teacher 8)</p> <p>(10) "I took her directly to the nurse and, uh, she took it from there. She gave her her treatment, the inhaler, and... you know, it got better" (PE teacher 9)</p> <p>(11) "if I know the kid has it, I try to keep an extra eye on them or make sure they're not participating any extra, extra exercise activity where they're pushing themselves too hard so the chances that an attack could occur could be a lot lower." (PE teacher 5)</p> <p>(12) "the children that were severely asthmatic, I told them to stop after lap eight as opposed to pushing them to go the whole, the whole limit. Um, the other way I modify it is I let them, you know, sit, catch their breath, take a minute and then they can go back into the, uh, activity." (PE teacher 10)</p> <p>(13) "if we need to, we modify the activity for that student, you know go a little slower, walk you know go at a pace that's comfortable for them" (PE teacher 6)</p> <p>(14) "after trying to calm them down with water, I walked them over and they were still labored in their breathing." (PE teacher 2)</p>
Asthma identification	
Asthma symptoms management and PA modifications	

Table 5.

Domain 3: Barriers to PA for students

Theme	Representative quotations
PE teachers' lack of knowledge of NYS PE requirements	(1) "Yes, uh, and what is it? See, this number is flashing before my head. Uh, what is it? Off the top of my head, I can't remember the exact numbers. What we do to try to meet that for all of the classes, whether they have Phys. Ed. at the time or not, is we're doing the Move-to-Improve and we're just taking, taking short breaks, whether it's ten minutes here, then ten minutes later, ten minutes, uh, just to get them moving, to..." (PE teacher 16)
Inconsistent PE class time and inclement weather	(2) "We have five fifth grade classes. Two of them currently don't have scheduled gym, but I still make time for them. [laughs] They have... Technically, they don't have a gym class, but I will bring them in recess situations. I still make sure that they get their activity time in because, unfortunately, we just don't have the time in the schedule to fit all the classes, so it's a rotation thing, and because they have to do their tests certain time of the year" (PE teacher 15) (3) "I have kids that don't have gym at all and then on top of the fact it's wintertime, they're not getting any recess either" (PE teacher 2)
Asthma diagnosis and lack of access to medications	(4) "one or two games that they do a lot of running in those games, so what usually when that's the case, we have them sit, you know, while we're doing those particular games" (PE teacher 8) (5) "...if they have asthma and they're, you know, the doctor prescribes a pump for them, um, I'm not going to make them run if they don't have it, because if they have an attack, then there's no way to, you know, help them out to open their airways if they're supposed to use, uh, Albuterol, I think it is." (PE teacher 13)
Lack of gym facilities	(6) "Because my first period is gym, so I'll say, "Did the nurse come in yet?" because if those kids that I have that are pretreatment, uh, they can't play." (PE teacher 11) (7) "If it's...if it's rained prior where all the puddles are out there, we obviously can't use it but it's not raining anymore, then we still walk them over to the other gymnasium so they can get some sort of running around time because unfortunately if we don't do that, then we're either stuck in a hallway, a classroom or the cafeteria, but only when lunch isn't going on." (PE teacher 1)