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Overweight boy's and girl's experiences with and perception of athletic clothing and its relationship to physical activity participation

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Abstract

The purpose of this study was to explore the relationship between athletic clothing and physical activity in overweight children. The perceptions of athletic clothing among overweight children were also investigated. The researchers asked: (a) what are overweight children's experiences with athletic clothing, (b) does clothing impact overweight children's motivation to participate in physical activity, and (c) are there differences between boys and girls? Focus groups and individual interviews were conducted with 35 children between the ages of 9 and 14 who were considered overweight according to their body mass index. Literature on social physique anxiety and body image provided the conceptual framework for the study. Four key themes emerged from the children's discussions of their experiences with athletic clothes and participation in physical activity: (a) body exposure concerns, (b) clothing size exposure concerns, (c) desire to quit because of athletic clothes, and (d) positive experiences with athletic clothes.

Keywords: Body image, Children, Athletic clothing, Physical activity, Social physique anxiety

Introduction

Physical activity participation, or movement of the body which burns calories, holds health benefits that extend to physical, psychological, and social health for children, adolescents, and youth (American Heart Association, 2015). Reduced blood pressure, development of social skills, decreased depressive symptoms, and decreased risk-taking behaviors are some of the specific health benefits to children and youth (5–18) from participating in physical activity (Janssen and LeBlanc 2010; Taras 2005). Such health benefits would be particularly important to children, adolescents, and youth who have elevated health risks such as being overweight or obese. Whether a child is considered overweight or obese is based on their body mass index (BMI), which divides a person's weight in kilograms, by their square height in meters (Centers for Disease Control and Prevention 2015a). Children of the same sex and age are considered overweight when their BMI is “at or above the 85th percentile and below the 95th percentile” and are considered obese when their BMI is “at or above the 95th percentile” (Centers for Disease Control and Prevention 2015a, para. 1).

In addition to being in poorer physical health as compared to their healthy-weight peers, overweight children are at risk for a number of negative psychological effects (Strauss 2000). The most troubling effects include low quality of life, low self-esteem, and increased suicidal behaviors resulting from body dissatisfaction in young girls (Dave and Rashad 2009; Strauss 2000). With the positive health benefits that can be experienced from participation in physical activity, scholars have analyzed several barriers to this participation in children such as teasing and weight criticism (Faith et al. 2002; Slater and Tiggemann 2010). However, there has been little research into the relationship between physical activity, clothing, and overweight children. The purpose of this study was to explore the relationship between athletic clothing and physical activity in overweight children. The perceptions of athletic clothing among overweight children were also investigated.

Definitions

Definitions of children, adolescents, and youth by age vary among scholars and governmental agencies. The Centers for Disease Control and Prevention (2015b) defined adolescents as those within the age range 12–19, school-aged children between 6 and 11, and young children between 2 and 5. The Association for Childhood Education International (2011) defined early childhood as between the ages of 0–6, and middle childhood as between 6 and 12. For the purpose of this study, the researchers will refer to their participants who range in age from 9 to 14 as children. When referencing literature, the researchers will utilize the language consistent with the authors, and will identify the specified age range.

Literature review

Barriers contributing to reduced physical activity participation

Despite the positive health benefits of physical activity, several researchers found a decline in participation for individuals under 18 years of age. Authors found declines in activity for both boys and girls during all ages in childhood (Trost et al. 2002) and specifically between the ages of 9–14 (Bélanger et al. 2008; Wall et al. 2011). Scholars reported that boys decreased their physical activity more than girls especially after the age of 12 (Telama and Yang 2000) and between the ages of 11–12 and 15–16 (Brodersen et al. 2007). These limited physical activity behavior patterns are important as patterns developed during childhood typically continue into adulthood (Patnode et al. 2011), and it is more likely that adolescents (13–18) will participate in physical activity as adults if they were active throughout their childhood (Kjonnixsen et al. 2008).

Scholars have found several barriers to physical activity. Adolescent girls between the ages of 13 and 15 were concerned others might question their heterosexuality (Slater and Tiggemann 2010). Some overweight children aged 8–10 felt uncomfortable participating in physical activity due to differences in coordination and speed abilities when compared to non-overweight children (Wrontniak et al. 2006). Finally, Basterfield et al. (2015) found children aged 7–12 from a lower socioeconomic status were less likely to participate in sports than those from a higher socioeconomic status.

Peer criticism is another barrier to physical activity, as preadolescent children in the fifth and sixth grades have been shown to fear weight criticism (Jensen and Steele 2009)

and adolescent girls between the ages of 13–15 fear teasing (Slater and Tiggemann 2010). Fear of bullying is an additional barrier as overweight and obese students between the ages of 11–15 are more likely to be bullied than their healthy-weight peers (Brixval et al. 2012). This bullying was especially problematic for obese girls between the ages of 11–15, who were nearly three times as likely to be bullied than their healthy-weight peers (Brixval et al. 2012). Weight-based peer victimization can have deleterious effects on both psychological and physical well-being. Adolescents with an average age of 16.4 who experienced weight-based victimization and responded with negative affect were more likely to skip gym class and increase food consumption; adolescents who experienced weight-based victimization felt worse about themselves and bad about their bodies (Puhl and Luedicke 2012).

Clothing, physical activity, and overweight individuals¹

Due to the negative impact of obesity on the quality of life and the increasing rates of overweight and obese children, it is important to understand all barriers to participation in physical activity. One barrier that has been overlooked is clothing. Clothing can impact the wearer's perception of self and communicates messages about an individual's identity to others (Kaiser 2012). For example, Aaronson (2005) found an increase in confidence among adults participating in competitive sports when they wore garments that were designed for a particular sport, such as running shorts.

The importance of clothing in the child and adolescent experience cannot be understated. In comparison to other age groups, adolescents aged 12–17 place the heaviest importance on fashion and physical appearance (Beaudoin and Lachance 2006). Brand name clothing can be used by adolescents to project their desired self-image, facilitate acceptance by their peers, or for mere appreciation from their social group (Beaudoin and Lachance 2006). In the case of overweight or obese adolescents aged 12–17, the brands that cater to their healthy-weight peers are not likely to offer clothing that fits their bodies (Romeo and Lee 2015). Lack of clothing options prevents adolescents from dressing in the typically accepted way for their age group, which presents a barrier to ordinary social interaction and exercise; this problem may be more pronounced for girls, as they are more likely to be socially excluded by their peers if they are overweight (King and Puhl 2015). Finding garments that fit well was also a frequent problem for adults of different body shapes and sizes (Liechty et al. 2009). Adult consumers often blame their bodies instead of the garment when ready-to-wear garments fit poorly (LaBat and DeLong 1990). LaBat and DeLong (1990) found that adults who perceive their clothing as fitting poorly often generate negative feelings about their bodies. Studies reported that overweight and obese adults often missed the benefits of finding fashionable and well-fitting clothing, because brands routinely stocked limited options for the plus-size market, particularly in brick and mortar stores (Peters 2014). In addition to this marginalization, plus-size women experienced anxiety when trying on athletic clothing and dissatisfaction with their bodies if the exercise clothing did not fit; this pre-exercise anxiety deterred some plus-size women from exercising (Christel 2012).

¹ Research is lacking in the area of clothing, physical activity, and overweight children and adolescents; therefore, the authors utilized research about adults in these areas to support the study.

Conceptual framework: body image and social physique anxiety

Body image and social physique anxiety have also been heavily researched in relation to barriers to physical activity for children and adolescents. Body image, or a person's perceptions, thoughts, feelings, and behaviors about his or her body, has been shown to have a relationship with adolescents' (13–15) reasons for stopping participation of physical activity (Menzel et al. 2011; Slater and Tiggemann 2010). Studies investigating body image in adolescents have found that girls experience more body dissatisfaction than boys, with nearly 81 % of girls and 55 % of boys desiring to alter their body shape (Lawler and Nixon 2011; Mäkinen et al. 2012). Whitehead and Biddle (2008) found girls between the age of 14–16 did not want to participate in physical activity because they felt embarrassed or felt they were putting their bodies on display, and they did not meet society's beauty standards. Smith (2000) found adolescents aged 11–18 did not want to swim due to body image issues related to wearing a swimsuit. When adolescent girls were unhappy with their body shape, they most commonly desired to be thinner while boys desired to be bigger (Ricciardelli and McCabe 2001). This body dissatisfaction can develop much earlier than adolescence, beginning in both boys and girls between the ages of 5–7 (Tremblay and Limbos 2009).

Several barriers to physical activity in children, adolescents, and youth are related to social physique anxiety (SPA), or the degree to which people become anxious when others observe or evaluate their physique (Hart et al. 1989). This anxiety (SPA) has been found to mainly affect male and female adolescents, though females report a greater amount of SPA and more coping mechanisms to deal with this anxiety (Kowalski et al. 2006). Adolescent girls have previously reported social situations such as being in school locker rooms or changing for gym class as a precursor to experiencing SPA (Sabiston et al. 2007). Additionally, adolescent girls between the ages of 15–16 reported not wanting to swim because they felt embarrassed or that others would judge them (James 2000). For young adult men and women between the ages of 17–23, SPA has been found to indirectly influence motivations and behaviors regarding physical activity (Brunet and Sabiston 2009). For example, peer victimization has been found to be positively related to SPA and negatively related to physical activity in children and adolescents aged 8–18 (Storch et al. 2007).

Research questions

In summary, previous scholars have conducted several studies in order to understand different barriers to participation in physical activity for children and adolescents. In adults, garment fit and its impact on the wearer's self-perception or confidence has been examined. To date, no research has thoroughly analyzed athletic clothing as a possible barrier to participation in physical activity for children or children's perceptions of athletic clothes. Due to the lack of research studies focusing on overweight children and athletic clothes, the researchers chose to use a qualitative approach. Literature on social physique anxiety and body image provided the conceptual framework for the study. Three research questions guided the study: (a) what are overweight children's experiences with athletic clothing, (b) does clothing impact overweight children's motivation to participate in physical activity, and (c) are there differences between boys and girls?

Methods

After obtaining permission from the Institutional Review Board, the first author who collected data recruited participants from a children's camp in the Western region of the United States. The camp coordinator supported and gave written permission to conduct the research. In order to participate in the camp, the children were required to be considered overweight according to their BMI, and their parents were required to be eligible for the Supplemental Nutrition Assistance Program, meaning that their household income did not exceed 130 % of the federal poverty level. Many previous studies on barriers to participation in physical activity for children or adolescents used primarily white, middle-class participants (Brunet and Sabiston 2009; James 2000; Slater and Tiggemann 2010). Therefore, we recruited participants from diverse racial backgrounds and a lower socioeconomic status in order to develop a robust understanding of children's experiences. Each child was measured and weighed by the camp staff to ensure they were eligible to participate in the camp. Recruitment for the study took place at a Parents' Night meeting before the camp began. The study was explained to the parents and children, and they were given a consent form to review and sign. Incentive for participation included a one-in-six chance of winning a sports equipment item. All interested parents and children signed the consent forms that evening and did not require extra review time of the consent form. The first author stayed the duration of the Parents' Night in order to begin building trust with both the parents and the children, and to reduce the perception of the researcher as a stranger by the children (Conroy and Harcourt 2009).

To answer the research questions, the researchers utilized an inductive qualitative approach using both focus groups and individual interviews. Focus groups were chosen because they allow for openness and promote disclosure; additionally, participants often ask questions of each other, which can lead the group into unplanned discussions about new phenomena related to the topic (Wilkinson 1998). Semi-structured interviews were conducted in order to gain a deeper understanding of the findings from the focus groups. Interviews were conducted until theoretical saturation of the data was reached or no new patterns emerged (Miles and Huberman 1994). The first author and one research assistant conducted the focus groups and individual interviews. The research assistant was an undergraduate student, and was trained by the first author; the assistant's role was to help with audio recording and to take notes during the focus groups and individual interviews.

The boys and girls were separated for the focus groups. The sessions were held in a small conference room at an oval table so each child was able to equally see the researcher and research assistant. The first author used some of the following strategies for conducting interviews and focus groups with children as outlined by Gibson (2012). To gain rapport and build trust with the children, the first author first asked them what their favorite activity at camp was. To facilitate understanding of the study and expectations of the children, the researcher explained that there were no wrong answers, just different points of view. The researcher said that all ideas were welcome even if they were different from what others had said in the group, and they did not have to answer if they did not feel comfortable. The children were also asked to take turns when responding, and to respect what everyone had to say. The participants were not required to raise

their hands before speaking, but they all adopted this technique during the focus group, as it seemed this made them comfortable. To encourage detailed answers, participants were told that they could take as much time as they needed to answer, and it was okay to ask for clarification.

Because of the scarcity of research studies focusing on clothing and children's participation in physical activity, the initial questions during the focus groups were open-ended. During the focus groups, the researcher asked the following questions: (a) what are some things you like about clothes? (b) what are some things you don't like about clothes? (c) what are some other things overweight kids your age don't like about clothes? (d) what types of physical activities do you like to do? (e) what clothes do you wear when doing these activities? (f) how do you feel about physical activity clothes? (g) what are some things overweight kids your age don't like about physical activity clothes? and (h) does clothing make you not want to participate in a physical activity or sport?

The researcher remained flexible during the focus groups and allowed the participants to guide the sessions; however, if the conversation was too far off topic, the researcher brought the participants back on topic by asking another question. Probes such as "Can you give me an example" were used throughout the focus groups in order to gain a deeper understanding of the answers provided. If one child was dominating the conversation, the researcher asked questions such as, "Does anyone else have any thoughts?" to promote inclusion of all of the children in the session. During the focus groups, a research assistant recorded notes and the level of agreement among participants (Krueger and Casey 2000). At the end of the session, the researcher summarized some of the findings, and asked about the most important ideas discussed during the session and whether any important topics had been missed. All data were audio-recorded and transcribed, and all participants were assigned a pseudonym.

The researchers analyzed the data following techniques described by Miles and Huberman (1994) including data reduction, data display, and drawing and verifying conclusions. The entire process of analysis was cyclical and iterative. During the first round of coding, the researchers assigned descriptive codes to each line or group of lines relating to one idea, and a codebook with code definitions was developed. The researcher developed more refined questions for the in-depth, follow-up interviews for both the boys and girls after analyzing the focus group data.

In the follow-up interviews, the researchers asked 25 questions to the boys and 17 questions to the girls about their experiences with athletic clothing and preferences for certain garments using a semi-structured interview guide (Barbour 2008). Some of the questions asked included "Do you mind if the size is displayed on the outside of the uniform?" and "Would you feel comfortable joining hockey and wearing the uniform?" Again, the researcher remained flexible during the interviews, allowing the participant to guide the session, yet pulled them back in by asking a question if they were too far off topic. A research assistant recorded notes during these interviews. The researcher asked about any unclear or inconsistent ideas at the end.

Data from the individual interviews were audio-recorded and transcribed verbatim. Then codes developed during the focus group data were used to analyze the data. The researchers continually reviewed and refined each code and code definition and the categories were grouped together into themes as the analysis took place. As codes were

analyzed, the researchers recorded notes about potential linkages and thematic possibilities. The data were reviewed until all coding categories were collapsed into four larger themes (Miles and Huberman 1994).

To ensure reliability, the researchers checked the intercoder reliability. One researcher and a research assistant independently coded 10 % of the interviews. Some discrepancies were noted between the coders. The coders redefined the codes and codebook and continued comparing their analysis of the data until a 90 % agreement was reached (Viera and Garrett 2005). This technique was employed while coding both focus group and individual interview data.

Results

Five focus groups were conducted with 35 children (21 girls and 14 boys), and then individual semi-structured interviews were completed with 30 of the 35 children (17 girls and 13 boys). The sessions lasted between 40 and 90 min. The participants were between the ages of 9–14. The researchers recruited this age range because previous studies indicated that physical activity participation began to decline for children between these ages (Bélanger et al. 2008; Wall et al. 2011). Participants included 16 Hispanic children, eight White children, five Black or African–American children, and one Asian Indian child.

Four key themes emerged from the children's discussions of their experiences with athletic clothes and participation in physical activity: (a) body exposure concerns, (b) clothing size exposure concerns, (c) desire to quit because of athletic clothes, and (d) positive experiences with athletic clothes. The results reported in this section are based on data from the individual interviews, unless otherwise noted. Under each theme, the researchers first report findings related to both boys and girls, then findings unique to boys, followed by the findings unique to girls.

Body exposure concerns

Both the boys ($n = 10$) and girls ($n = 10$) expressed concern over exposing parts of their bodies. For these participants, they were concerned that their clothes were too tight, too short, or too revealing based on material or cut of the garments. Much of this concern centered on movement during physical activity. For example, Imani explained, "Whenever I lift my hand up to catch the ball my shirt will go up. Sometimes when I lifted my hand my shirt goes up and all my stuff hangs out. It worries me a lot". Other participants felt that the fit of their clothes exposed their bodies. Amaka stated, "Well, if my clothes are too tight then maybe because they just press against me and it shows like my rolls and stuff like that. I get uncomfortable. I do not like to wear those clothes because it shows".

Not surprisingly, 13 girls and 10 boys were concerned about exposing their bodies specifically in their swimsuits. Michelle explained that she covers up when swimming by wearing shorts and feels "like I'm not going to fit in my bathing suit and I feel like I'm not used to it, and it's too tight. Also, it's not going to be in the right shape for my big size". Another participant said she wore shorts and a T-shirt to swim because "my legs and top are big and stuff". Nancy had similar feelings:

My stomach is showing, so I just get the one piece but my stomach still shows. You can see my rolls in the back and I don't like that so I just try to put stuff over so you don't see.

The 10 boys who were concerned about covering their bodies in their swimsuits explained that they always wore a shirt to the pool and while swimming. The researcher asked Tyler why he wore a shirt and he said, "Because my friends will judge me". Jack felt the same way as Tyler. He explained that he kept his shirt on so that way "kids won't make fun of me".

The boys indicated specific concern over showing their legs and stomachs. When discussing athletic clothes with Nicholas, he said he felt uncomfortable unless his knees were covered. This was true for other boys, too. Gus wanted his shorts to cover his knees and when asked why he stated, "cause it sort of exposes my thighs you know. I don't like that". When talking about his gym shorts, Nicholas stated, "I would want to make sure they cover my knees".

Unique to the boys was the use of other coping techniques to cover parts of their bodies that they were concerned about. They wore sweaters or sweatshirts even in extremely hot weather conditions ($n = 8$), wore high socks to cover their calves ($n = 1$), and wore thicker or darker materials ($n = 11$) because they felt it hid parts of their body. In the geographic location where the participants resided, the average temperature between June and August is around 98 °F. On the particular days when the interviews were occurring there was a heat wave and the temperatures rose to about 110 °F. When asked if he would still wear a sweater, Darren said yes, "because I feel more comfortable, like when I wear a shirt I look fat and I feel more comfortable with my sweater on". Ryan explained while pointing to his stomach that he wore a sweater "to hide because people might see this".

Eleven of the boys also preferred to wear thicker garments or clothing in darker colors to cover parts of their bodies. Noah explained, "I don't like thin fabric that doesn't make me look skinnier. Just a little bit but not too thick cause when it's too thick then it shows my fat". Gus made a similar comment that he prefers thicker material because the thin materials, "they expose everything". Within the same conversations these boys explained that they preferred darker materials because "it won't show that much" (Jack). Benjamin was adamant about wearing darker colors and said, "No, no, no dark colors only so no one can see me. I just want to be ignored". When asked why he wanted to be ignored, in almost a whisper and while pointing to his body, he explained he feels "shy about this".

Seven of the girls were conscious of covering their bodies because their parents made comments to them that it was appropriate to do so. Megan explained:

Sometimes she [her mom] will tell me my stomach sticks out too much and I really don't like it either so she buys me these shirts that hold me in. But, I don't like those sometimes because it is tight and hard to get them on.

Nancy had a similar experience and explained that her mom wants her to wear specific clothes to cover up. Nancy said, "She [her mom] says I have a big butt so she tries to cover stuff up. I have to wear these shirts I don't like".

Clothing size exposure concerns

The participants in the sample were all previously issued a uniform either in an organized sport or for physical education (PE) class at their school. When being issued a uniform the participants explained that the coach or teacher would often say the size of the clothing out loud. Sixteen of the participants (boys $n = 7$; girls $n = 9$) explained they did not want their size to be said out loud. When the children were issued the uniforms it was almost always in front of the other kids, which caused some concern. For example, Sarah explained:

I really didn't want to [say her size out loud] because I was in front of everybody and I had to say it and the coach said if you don't tell me now then you are not going to get your uniform. So I had to tell them my size.

Imani told a similar story: "In PE they told me to say my size and everybody just looked at me. I felt uncomfortable". The participants explained that the lower numbers on the uniforms were often the smaller sizes and higher numbers were the larger sizes. Ruth explained that even if people did not hear her say her size out loud when being issued her uniform they would know because she had a high number. She explained, "Yes I did feel uncomfortable while saying the size, but I felt uncomfortable wearing my uniform because the lower numbers were smaller sizes and the highest numbers were the bigger sizes and my number was 34, so everyone knew".

These experiences of being forced to say their size out loud made four of the participants (boys $n = 3$; girls $n = 1$) want the option of choosing their own size uniform or PE clothes. During the focus groups, some of the participants had mentioned this option, and when those who did not have this option heard this, they expressed significant interest in being able to do so during the individual interview. Peyton said she felt good about being able to get her own uniform from a communal pile of uniforms:

You just went in the day of the game and they say get your jersey and get your shorts. I like this. Yeah 'cause I don't want other people saying "Oh look she's an XL" 'cause that feels kind of uncomfortable.

Nancy, who had to say her size out loud, responded to Peyton's comment in the focus group session that "Yeah, I'd like that, too".

Unique to the boy's experiences obtaining a uniform was that five of them experienced the adult assuming they were a larger size. For example, Noah said, "They assume I'm a really big size and I'm not that size". When asked if they were confident in knowing what size they were, all said yes without hesitation. These boys also explained that this size misconception made them feel uncomfortable or sad. Corey relayed the story someone assuming he was a "way larger size" and that it made him "feel sad". He continued on to say that he would definitely prefer to pick his own size in the future.

On some sports uniforms for boys, including football, basketball, and soccer, the uniform size is displayed on the exterior of the garment. Seven of the boys did not want their size on the exterior of the uniform because they were concerned others would see it. Several of these boys felt strongly about this. Jack felt very uncomfortable with the size on the outside because, "they can see what size you are and I don't want it there". Benjamin even said he wanted "to rip it off and put it inside or something". While Tyler

tried to solve this problem by asking the researcher if she knew why they had to put it on the outside of the uniform and if she could tell “them” (referring to the people who design uniforms) to put it on the inside since she was conducting this research.

Desire to quit because of athletic clothes

When 13 of the participants (girls $n = 8$; boys $n = 5$) tried to obtain a uniform for a sport or for their PE class, the school or organization did not have their size uniform. These experiences made all of them uncomfortable and made them feel like outsiders. Six (girls $n = 4$; boys $n = 2$) of the 13 participants explained that they had to have their size custom-ordered, while the other seven wore the poor-fitting athletic clothes. Sarah had to special-order her PE clothes the first week of school, and then had to go to the office to pick up her uniform. She explained this made her feel embarrassed: “Like it’s not really a bad thing but sometimes it is because people ask why are you going to the office and you don’t really want to tell them you have to custom-order”. When asked if she would ever feel comfortable telling anyone that she had to get a different-sized uniform, she quickly responded with a confident “no”. Imani said they did not have her size uniform for volleyball and that she had to special-order it. For this uniform, the kids who needed a larger size had to pay extra, and this was not an option for Imani’s family. She explained that her mom did not have a job at the time and was on unemployment. Darren remembered a time when the baseball organizers did not have his pant size. When asked if it made him feel uncomfortable he explained that he knew other kids were “making a face”. Four children (girl $n = 3$, boy $n = 1$) explained that custom-ordering a uniform was not an option, and that they had to wear the wrong size. One participant explained that he wore a football jersey that covered only half of his stomach. He said, “It was really embarrassing at first, but I got used to it after a while”.

Some participants (girls $n = 4$; boys $n = 3$) also explained that the condition of the uniform made them feel like outsiders. They felt that the coaches or teachers issued the newer uniforms to the skinnier children and the older, more worn uniforms to the overweight children. Michelle said, “It’s not fair because the skinny ones they get new ones and the chubby ones get the old ones”. Darren had a similar experience and explained, “Yeah it made me feel not like everybody else. Since they are better they get the newer, better uniforms”. Presley described a similar situation where her uniform was not older, but different than the other kids: “Yeah there’s about three of us, me and two other people. They did not have our size so we’d have to go and get the green ones”. The process of having to obtain the uniform in a different location made her feel different than the other kids in a negative way.

Sometimes these feelings of difference led to the participants wanting to quit or not play (girls $n = 8$, boys $n = 13$). Four of the eight girls explained that they did not join a particular sport because they knew the coaches would not have their size uniform. Sarah explained that she tried to join basketball and attended the first team meeting where the players were issued uniforms. She said, “I looked in the bin at all the shirts and I couldn’t find my size so I like didn’t end up doing the sport”. When asked if it made her sad she let out a big sigh and said, “Yeah, cause I wanted to play”. Imani wanted to join volleyball, but explained that she knew the largest uniform size available would be a kid’s medium, and she wore adult sizes. This knowledge made her too uncomfortable to play.

In the conversation the researcher asked if custom-ordering a shirt was an option, and she explained, “I just didn’t want to do that”. Ruth also wanted to join basketball, yet explained that “even [if] I were good enough they probably wouldn’t have my size in the uniform”.

All of the participants who did not want to play or decided to quit a sport connected one reason to the uniform style and fit. In most cases (girls $n = 9$; boys $n = 7$) it was because the uniform for that sport was too tight. Rebecca explained that her baseball pants were too tight around the waist and this made her not want to play. She did continue to play, but said she mostly felt uncomfortable.

The researcher asked each participant if there was a sport they would not join due to the uniform. Not surprisingly, the swim team was the most salient; this was true for almost all of the boys. Twelve of the boys who either quit or were not interested in joining the swim team stated this was because they would not wear a Speedo-style bathing suit and that uniform regulations did not allow them to wear a shirt. Gus explained, “I don’t want to wear a Speedo ever in my life”. Jackson also stated, “No [he does not want to join] because it [the Speedo] reveals too much of your body and it’s really tight and it’s not comfortable, like you can’t breathe in it”. When Ethan mentioned that he would never join the swim team he was asked why and quickly responded, “Because you have to wear Speedos and go shirtless”. The researcher asked these same boys if they would be interested in joining the swim team if they were allowed to wear swim trunks and a t-shirt, and 10 of them responded with “yes”. Corey quickly responded with an enthusiastic, “Yeah, I would definitely join”.

Eleven of the 13 boys who quit or did not want to play a sport due to the uniform also mentioned that they would not join wrestling. Jackson explained, “Yeah, it just shows too much of your body and it’s tight”. James explained, “Yes, I’d feel uncomfortable wearing the uniform”. The researcher then asked if they would be interested in joining if the uniform was different, and they all responded with a yes. James responded with, “Yeah, I would want to join”. Ryan further explained he would be interested “if it was like loose”.

Positive experiences with athletic clothes

Despite many of the negative feelings about or experiences with physical activity clothing, 24 of the participants (girls $n = 17$; boys $n = 7$) mentioned at least one positive experience with athletic clothes they have worn in the past. However, these conversations were short and often reverted to their dislike or discomfort with athletic clothes. All of these participants related to positive experiences with athletic clothes when their fit preferences were met. For example, Michelle mentioned, “If they’re comfortable and you can move around when I run and they’re loose. Then, yeah I like them”. Sarah mentioned that she likes wearing basketball shorts because they are “loose and feel comfy, nothing is showing my fat”. All seven boys who explained that they had positive experiences with some athletic clothes related those feelings to wearing shorts. These same boys said they significantly preferred shorts over pants because they felt pants were usually too tight and hard to move in.

Discussion

The prevalent themes identified in the relationship between physical activity and the perception of athletic clothing in overweight children were body exposure concerns, clothing size exposure concerns, desire to quit because of athletic clothes, and positive experiences with athletic clothes. In the first three themes, participants offered responses that revealed varying degrees of social physique anxiety and a negative body image. Both the boys and girls experienced issues with garment fit for athletic clothes due to their body size and shape; these experiences led to their body exposure concerns while participating in physical activities. If the athletic clothes were too tight, too short, or too revealing, the participants expressed concern or sometimes adopted coping techniques to cover parts of their bodies. While the girls and boys both expressed body exposure concerns, the boys expressed much more concern over exposing their bodies and explained three coping techniques that they utilized to cover different parts while participating in physical activities including wearing sweaters, high socks, and thicker or darker materials. These results differ from Kowalski et al.'s (2006) study which found that girls utilize more coping mechanisms to deal with social physique anxiety than boys. The body exposure concerns for both the boys and girls in the current research were all related to wearing the clothing in front of others. Participants in this study did not mention that the act of putting on garments in front of others gave them anxiety about their body. This finding does not support Sabiston et al.'s (2007) study that found adolescent girls experienced SPA while changing for gym.

Past studies indicated that finding garments that fit was a frequent problem for overweight adults, (Peters 2014), non-overweight adults (Liechty et al. 2009), and obese adolescents (Romeo and Lee 2015). Overweight adults (Peters 2014) and obese adolescents (Romeo and Lee 2015) had difficulty finding garments that fit because brands frequently had limited options in their size range (Peters 2014). Similar to the findings from Peters (2014) and Romeo and Lee's (2015) studies, the children in this study sometimes had limited size options available for athletic clothing, which led to ill-fitting garments. For these overweight children, poor-fitting clothing, which led to body exposure or the experience of having to custom-order their clothing, sometimes negatively impacted their motivation or desire to participate in physical activity and/or led to a description of their "fat" body parts in a negative fashion. Previous research has looked at adults who perceive their clothing as ill-fitting and found they generate negative feelings about their bodies (LaBat and DeLong 1990). This research supports the importance of garment fit to individuals' psychological health across the lifespan.

Swimming was one specific physical activity that caused the participants significant social physique anxiety due to the athletic wear required for sport. Similar to James' (2000) study, some of the girls in this research expressed concerns related to a fear of judgment by others about wearing a swimsuit. Additionally, the boys expressed similar concerns to the girls. However, they were much more likely than the girls to cover their body by wearing a shirt while going to the pool and swimming. Some of these concerns related to judgment in swimsuits resulted in participants not participating in the activity. These results support the findings from Smith's (2000) study where overweight and obese adolescents (11-18) identified that the revealing dress code and possible bullying related to the swimsuit WERE BARRIERS to physical activity.

Both boys and girls expressed *clothing size exposure concerns*. For example, sometimes they had to say their size out loud when obtaining a uniform, or the uniforms displayed the size on the exterior of the garment. In some instances, the team or school did not have the children's uniform size, and they had to custom-order their uniform. However, for some participants this was not an option, and they wore the wrong size. All of these participants felt like outsiders or were embarrassed and uncomfortable. Since overweight children (9–10 and 13–14) are at risk for low self-esteem and self-perception (Strauss 2000), these negative experiences of exposing their size or being separated by wearing a different uniform can increase their risk of these negative psychological effects. These participants feared criticism from their peers related to clothing size during physical activity; this finding furthers the results from Brixval et al.'s (2012) study where they found youth between the ages of 11–15 feared weight-related bullying.

Previous studies showed a variety of barriers to participation in physical activity. Teasing was one of these major barriers (Slater and Tiggemann 2010). Other barriers included concern over the question of their heterosexuality for girls (Slater and Tiggemann 2010), fear of weight criticism (Jensen and Steele 2009), body image concerns (Slater and Tiggemann 2010), and differences in physical abilities (Wrontniak et al. 2006). In the current study, participants had a desire to quit because of athletic clothes. The likelihood of not being able to either go through the same ordering process as others or a uniform being too revealing led to the desire to not play the physical activity in question. Results from this study indicate that clothing concerns including fit, uniform size and availability, and specific physical activity uniforms may be barriers to physical activity participation for overweight children between the ages of 9–14. This finding is unique in the degree to which clothing problems were found to be barriers to physical activity in these children. All of these findings related to clothing as a barrier to physical activity participation are significant because reduced physical activity behavior patterns that develop during childhood often continue into adulthood (Kjonnixsen et al. 2008; Patnode et al. 2011).

All *positive experiences with athletic clothes* that the participants described related to well-fitting clothing. Participants explained that they enjoyed playing the sport or activity when they were comfortable in their clothing. They expressed more positive attitudes toward themselves and described that they could perform better. This finding supports Aaronson's (2005) research that garments designed for a particular sport improve the wearer's confidence. The results from the current study indicate that accommodating overweight children's clothing fit needs may encourage them to participate in physical activity.

Implications

The results from this study can be used to decrease overweight children's barriers to physical activity in a number of ways. For example, when adults assumed a larger uniform size or the children had to wear a uniform that displayed the size on the outside, these instances generated negative feelings of discomfort and sadness. Such instances may contribute to negative perceptions of self, the wearer's ability to socialize, and lead participants to a decision to not participate in physical activity. Participants also revealed that they felt like outsiders when they had to go through a different uniform ordering

process than the other students. While these instances cannot always be avoided (e.g., sometimes only so many uniform sizes can be ordered due to restrictions in school budgets), coaches and teachers can be aware that these experiences create negative feelings and can work toward lessening the attention on the issue or working with the parent to order the correct size in advance. As garment fit was a heightened concern for many participants, parents, teachers, and coaches can be aware that obtaining well-fitting garments for their overweight children may increase physical activity or participation in sports. Specifically, boys revealed that, in two particular sports—swimming and wrestling—a change in the uniform style may motivate them to participate. Allowing other uniform options for some sports, including swimming and wrestling, may be a way to increase physical activity for overweight children.

These findings have implications for the distribution of athletic clothing as well. In order to promote participation in sports or physical activity as a positive experience, coaches and teachers should have a closed system for clothing distribution by either allowing kids to write down their size or having them pick their own uniform. Additionally, for boys' uniforms, removing the size on the exterior of the garment may increase positive experiences with athletic clothes and may increase participation in basketball, football, and soccer. Lastly, for uniform manufacturers, it would be of benefit to overweight children to ensure that both larger and smaller sizes had an equal mix of higher and lower numbers on the back of shirts.

Limitations

There were several limitations to the current study. One limitation is the small sample size. Although common in qualitative research to ensure depth of information, the limited number of participants may have impacted the specific themes observed in this study. Additionally, the children interviewed were participants in one camp in a specific geographic location. This also may have impacted the specific themes observed. Another limitation was the difficulty experienced in building rapport with the quieter children. Some children were hesitant to answer questions in an unfamiliar place with unfamiliar adults, despite the use of probes and follow-up interviews.

Suggestions for future research

The unique insights into overweight children's relationship with athletic clothing gained from this study warrant further investigation on a larger scale. Considering the uniform-specific barriers to physical activity discussed by the boys, it would be of significance to investigate boys' experiences with different types of uniforms for a larger population of boys by utilizing images of these uniforms to bring forth memories of how they feel about them. It would also be important to discover whether physical activity participation would increase if the clothing-specific barriers were removed for overweight children. It may also be of interest to survey parents of overweight children. The parents in this study were highly interested in talking with the researcher about some experiences they witnessed their children having with athletic clothing. Researchers could also explore these same topics for non-overweight children and compare the results.

Authors' contributions

KLRB carried out data collection and analysis. Both JH and KLRB conducted the literature review and wrote the manuscript. Both authors read and approved the final manuscript.

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Competing interests

The authors declare that they have no competing interests.

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