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Perceived Barriers to Physical Activity Among High School Freshman Females

Perceptions de l'activité physique des étudiantes de première année du secondaire

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Although participation in physical activity results in health benefits, the majority of freshman high school females are not sufficiently active. Based on social cognitive theory, barriers may impede participation in physical activity. The purpose of this study was to identify perceived general and population-specific personal and situational barriers to participation in physical activity among insufficiently active high school freshman females. Participants were 24 mostly White high school freshman females aged 12-14 years who participated in one of four 40-minute focus groups. Participants reported numerous general barriers identified in previous research including fatigue and safety. Several population-specific barriers were also reported including increased expectations of high school coaches and high school policies not allowing athletes to enroll in PE. Future research should include the identification of relevant population-specific and general barriers, including the frequency of occurrence and extent of limitation of barriers, among a diverse sample of high school freshman females.

Même si les bienfaits de santé de l'activité physique sont bien connus, la plupart des étudiantes de première année du secondaire ne sont pas assez actives. D'après la théorie cognitive sociale, certains obstacles peuvent décourager la participation à l'activité physique. Cette étude vise à déterminer les obstacles personnels et situationnels généraux et particuliers qui se posent à un groupe de

filles de la première année du secondaire et qui semblent les empêcher d'être plus actives. L'étude porte sur 24 étudiantes de première année du secondaire âgées de 12 à 14 ans et surtout de race blanche. Ces dernières ont participé à l'un des quatre groupes de consultation de 40 minutes et fait état d'un grand nombre d'obstacles mentionnés dans des études antérieures, y compris la fatigue et la sécurité. Plusieurs obstacles propres au groupe ont aussi été mentionnés, dont les attentes de plus en plus fortes qui s'exercent sur les entraîneurs du secondaire et la politique des écoles secondaires qui interdit aux athlètes de s'inscrire aux cours d'éducation physique. Les futures recherches devraient inclure l'identification des obstacles pertinents à un groupe spécifique et les obstacles de nature plus générale, y compris la fréquence des occurrences et l'importance des obstacles chez un échantillon diversifié de jeunes étudiantes de première année du secondaire.

Barriers to Youth Physical Activity

According to the United States Department of Health and Human Services [USDHHS] (2008), regular participation in at least 60 minutes of moderate to vigorous aerobic physical activity (MVPA) per day may result in a number of physical and psychological health benefits among youth. Health benefits include such things as a decreased risk of obesity, Type 2 diabetes, hypertension, colon cancer, depression and osteoporosis as well as reduced symptoms of anxiety and depression and improved self-esteem and self concept (Annesi, 2005; Centers for Disease Control and Prevention [CDC], 2009; Motl, Birnbaum, Kubik, & Dishman, 2004; Pate, Long, & Heath, 1995; USDHHS, 2008). Although regular participation in MVPA may result in numerous health benefits, the majority of youth are not participating in sufficient levels of physical activity to obtain these health benefits.

Based on results from the 2007 Youth Risk Behavior Surveillance System [YRBSS] survey, only 34.7% of youth in the United States participated in recommended levels of physical activity (CDC, 2008). When examined by gender, 43.7% of male youth and a mere 25.6% of female youth were sufficiently active (CDC, 2008). Such low rates of participation in physical activity among youth is alarming, particularly the low rates among females. Specifically, female adolescents' physical activity rates decline four percent from sixth to eighth grade (Pate et al., 2009) and continue to decline from middle school to high school, with the greatest decreases occurring from freshman to senior year in high school (CDC, 2008; Duncan, Duncan, Strycker, & Chaumeton, 2007; Kimm et al., 2005; McMurray, Harrell, Bangdiwala, & Hu, 2003).

To address the low rates of participation in recommended levels of physical activity among high school freshman females, a need exists to examine factors that prevent or limit regular participation in physical activity (i.e., barriers) (Brawley, Martin, & Gyurcsik, 1998). Based on results from previous research examining female youth, barriers have been shown to be negatively correlated with participation in physical activity. As female youth experience a greater number of barriers, participation rates decline (Sherar et al., 2009; Gyurcsik, Bray, & Brittain, 2004; Strauss, Rodzilsky, Burack, & Colin, 2001). Furthermore, as female youth advance in school grade level, there is an increase in barriers to

engaging in physical activity (Gyurcsik, Spink, Bray, Chad, & Kwan, 2006; Sherar et al., 2009).

Based on social cognitive theory (Bandura, 1986; Bandura, 1997), barriers may be categorized as either personal or situational in nature. Personal barriers include factors in the form of cognition, affect and biological events (e.g., lack of time or fear). Situational barriers consist of environmental influences outside of the internal control of the person (i.e., inclement weather or lack of facilities).

As a means to further delineate barriers, researchers have assessed personal and situational barriers in concert with an ecological approach (Sherar et al., 2009). Based on an ecological approach, personal barriers are synonymous with intrapersonal barriers (McLeory, Bibeau, Steckler, and Glanz, 1988; Sallis, Bauman, & Pratt, 1998). Situational barriers can be separated into five categories: (1) interpersonal; (2) institutional; (3) community; (4) public policy; and (5) physical environment barriers. Intrapersonal barriers are characteristics of the individual (e.g., lack of motivation). Interpersonal barriers are related to the social support systems and formal and informal social networks of the individual (e.g., babysitting younger siblings). Institutional barriers are related to the social institutions to which the person belongs (e.g., lack of time due to homework). Community barriers include relationships among organizations, institutions, and informal networks within defined boundaries (e.g., a lack of community facilities). Public policy barriers include local, state and national laws or policies (e.g., no bicycles allowed on sidewalks). Physical environment barriers include aspects of the natural environment (e.g., inclement weather).

Most previous research on barriers facing female youths' engagement in physical activity has utilized closed-ended questionnaires (Neumark-Sztainer, Story, Hannan, Tharp, & Rex, 2003; Powell, Chaloupka, Slater, Johnston, & O'Malley, 2007). One problem with using closed-ended questionnaires (i.e., lists) to assess barriers is that the lists typically fail to capture a wide range of relevant general (i.e., common across populations) and population-specific (i.e., unique to the population of interest) personal and situational barriers (Brawley et al., 1998; Brittain, Baillargeon, McElroy, Aaron, & Gyurcsik, 2006; Gyurcsik, et al., 2004; Gyurcsik, et al., in press). Providing a one-size-fits-all list of personal barriers does not adequately measure the relevant barriers that a female youth may be experiencing and thus does not provide valuable information needed for the design of interventions to increase participation in physical activity (Brawley et al., 1998).

However, although limited, recent research has used focus groups and open-ended questionnaires to identify both general and population-specific barriers among female youth (Alm et al., 2008; Dwyer et al., 2006; Gyurcsik et al., 2006; Hohepa, Schofield, & Kolt, 2006; Sherar et al., 2009; Tergerson & King, 2002; Vu, Murrie, Gonzalez, & Jobe, 2006). In particular, Sherar et al. (2009) used a semi-structured open-ended survey to identify barriers to physical activity in female youth aged 8-16 years. Participants were grouped according to grade level in school (i.e., grades 4-6; grades 7-8; grades 9-10). Several general barriers were identified across all groups including, but not limited to, lack of motivation, lack of friends to exercise with, and lack of transportation. Grade level specific barriers were also identified such as having a job (grades 9-10), lack of transportation (grades 7-8 and 9-10), and too much homework (grades 7-8 and 9-10).

Although recent research examining perceived barriers to female youth engaging in physical activity have identified both general and population-specific personal and situational barriers (Alm et al., 2008; Dwyer et al., 2006; Gyurcsik et al., 2006; Hohepa et al., 2006; Sherar et al., 2009; Tergerson & King, 2002; Vu et al., 2006) these studies did not isolate high school freshman females and thus all results were reported collectively into multiple ages or grade levels. By not isolating the experiences of high school freshman females, in particular those who are not sufficiently active (i.e., engage in less than 60 minutes of MVPA/day), valuable information concerning the impact of the major life transition of leaving middle school and entering high school can be lost or overlooked.

Understanding that physical activity rates of female youth decline with the transition through high school (CDC, 2008), a need exists to identify barriers that hinder insufficiently active freshman females from participating in physical activity. Such valuable information on barriers may then be used to design interventions that target a reduction in the percentage of high school females who are insufficiently active by their senior year in high school. Thus, the purpose of this study was to identify perceived general and population-specific personal and situational barriers to recommended levels of physical activity among insufficiently active high school freshman females.

Method

Recruitment and Participants

Upon approval of the study by the University's Institutional Review Board a trained researcher recruited participants from four local church youth groups by posting study fliers at the churches and attending youth group meetings. Prior to participant recruitment, all church youth group ministers provided a letter of support for the study. Interested individuals were screened to determine study eligibility. Inclusion criteria for the study included being a high school freshman female aged 12-14 years who currently resided in an Oklahoma metropolitan area (population approximately 100,000) and who had also completed 8th grade in that same local area, were English speaking, ambulatory, and had no chronic disease diagnosis. In addition participants were to be true freshman (i.e., first year enrolled in 9th grade at any school) and currently insufficiently physically active (i.e., not participating in at least 60 minutes of MVPA each day of the week).

Once study eligibility was determined, the trained researcher obtained signed parental permission and assent forms from the potential participants. Focus group sessions were scheduled once five to 10 potential participants with coinciding schedules were available to participate. An email reminder of the upcoming focus group was sent on the day before the scheduled session.

Procedure

A qualitative, focus group methodology with content analysis was used to identify barriers to physical activity in high school freshman females. Focus group methodology was used to gain an in-depth understanding of the barriers high school freshman females experience when attempting to regularly participate in recommended levels of physical activity. For youth in particular, focus groups enable an increased level of comfort through a social environment involving peers, a decreased self-consciousness that may be present when being

confronted by solely adults, and an opportunity to use their own language in an accepted environment (Kennedy, Kools, & Krueger, 2001). Using closed-ended questionnaires or surveys with borrowed lists to elicit information may not allow researchers to unveil the same information that can be displayed through interviews or focus group discussions.

Similar to previous research (Brittain, et al., 2006; Brown, 1999; Michell & West, 1996), four focus groups consisting of three to nine participants, ($n_1 = 7$; $n_2 = 9$; $n_3 = 3$; $n_4 = 5$) were conducted. Each group session lasted for 40 minutes. As a means of convenience for the participants, each focus group session was conducted at one of the four church youth centers. Furthermore, to provide a comfortable atmosphere, each focus group session was facilitated by a trained moderator who had extensive experience coaching high school freshman females. All focus group sessions were audio-taped and included a trained note taker who recorded key themes and phrases as well as participants' verbal and non-verbal cues. In addition, the focus group facilitator was trained in recognizing non-verbal cues and would elicit additional information from any participant expressing a non-verbal cue.

The trained moderator began each discussion by describing the study purpose and the focus group process, providing a definition of physical activity, and then using a general ice-breaker question to create a level of comfort among the participants (Kitzenger, 1995). Physical activity was defined as any bodily movement that causes small to large increases in your breathing and heart rate (USDHHS, 2008). Similar to previous research (Brittain et al. 2006; Hohepa et al., 2006; Humbert et al., 2008), the moderator then guided the discussion by asking four main questions based on an ecological approach: (1) Intrapersonal question, *What are some things that you think, feel, or have going on in your life that make it difficult or stop you from doing physical activity?*; (2) Interpersonal question, *Are there any people in your life make it difficult or stop you from doing physical activity?*; (3) Institutional question, *Is there anything about your school or other institutions that makes it difficult or stops you from doing physical activity*?; (4) Community question, *Is there anything about your neighborhood or community that makes it difficult or stops you from doing physical activity?*. Each question was followed by an additional set of probes that elicited further information regarding the participants' experiences. Once the participants responded to the final focus group question, the moderator provided a short summary of the discussion and allowed all participants to provide any additional information. Participants then completed a short demographic questionnaire.

Data Analyses

Following the completion of each focus group, a trained researcher transcribed the audio-recording. Thematic coding was employed (Strauss & Corbin, 1990; Tesch, 1990) in which three trained researchers independently identified all barrier themes and then categorized each barrier into one of five ecological categories: intrapersonal, interpersonal, institutional, community, and physical environment (McLeroy et al., 1988; Sallis et al., 1998). In the barrier theme identification process, all researchers identified the same barriers within each transcript resulting in no theme identification discrepancies. Following independent coding of barriers into the ecological categories, the researchers met

to compare and discuss discrepancies in barrier categorization until agreement was reached. Coding of the transcripts into ecological categories by each of the three researchers resulted in an agreement percentage of 0.74, indicating good agreement (Green, Salkind, & Akey, 2000). Focus groups were conducted until analysis of transcripts appeared to provide evidence of saturation within the reported barriers (Strauss & Corbin, 1990). Saturation was evidenced following the analyses of the fourth focus group session.

Results

Participants were 24 insufficiently physically active, true high school freshman females from the two local public high schools (enrollments approximately 2,000 students each), aged 12 to 14 years (M = 13.88 years, SD = 0.338 years) who were mostly White (87.5%). The majority of the participants were not enrolled in a PE class (87.5%), (PE was not a required course at either high school), and half of the participants (n = 12) were members of a school-related sports team at some point during the school year. The participants in the study who were members of a sports team indicated they were not meeting the current physical activity recommendations of 60 minutes of MVPA each day even while participating in sports. In total, the participants reported 31 different barriers (see Table 1 for barriers themed by ecological category). Initial analysis of the transcripts revealed virtually no differences in barriers among the four groups, thus all barriers were combined and reported collectively into one of five ecological categories (there were no public policy related barriers reported). For presentation purposes, the barriers in each ecological category are presented in two groups, general barriers and population-specific barriers.

Table 1

Reported Barriers Themed by Ecological Category

Barriers	Number of participants reporting barriers N = 24
Intrapersonal (Personal)	
General	
Lack of motivation/Laziness	12
Fatigue/Tired	4
Injury	3
Lack of skill to participate in sports	1
Interpersonal (Situational)	
General	
Peer-Influenc	
Rather hang out with friends doing activities that do not include physical activity	10
Friends discouraging exercise, going to sports practice, and enrollment in PE	9
Friends do not participate in physical activity or sport	8
Family-Influence	
Parents not providing transportation to the gym or	8

other places to be active	
Caretaking of a parent or sibling	5
Pressure from parents to focus on school more than sports	3
Chores	2
Family's view of sports and physical activity as competitive versus fun	1
Population-specific	
Meaner high school coaches and teammates compared to middle school	10
Increased expectations from high school coaches compared to middle school	7
High school sports perceived as less fun, harder, required a more demanding skill set, and required more commitment	5
Family-Influence	
Lack of sibling support to participate in sport Programs	1
Institutional (Situational)	
General	
School-Related	
Negative PE class reputation among the student body	4
Population-specific	
School-Related	
Increased homework and commitment to extracurricular activities in high school compared to middle school	20
A perception that the overall school atmosphere in middle school seemed to focus more on being active compared to high school	1
High school policies not allowing athletes to enroll in PE class	3
Only allowed to participate in one high school related sport at a time	3
Conflicting schedules of sports and other elective classes	2
High school policies categorized sports programs as academic classes	5
Lack of an array of sports programs offered by the high schools	1
Community (Situational)	
General	
Safety in neighborhood and community	16
Lack of free or low cost physical activity facilities in community	3
Absence of neighborhood amenities (lighting and sidewalks)	2
Lack of useable physical activity related facilities in community	2

Heavy automobile traffic	2
Physical Environment (Situational)	
General	
Inclement weather	3
Early onset of darkness outside	3

General Barriers

Intrapersonal. A variety of general intrapersonal barriers hindering participation in physical activity were reported within the focus groups, including lack of motivation/laziness, injury, and lack of skill to participate in sports. A few participants also reported fatigue, including a need to relax rather than be physically active when returning home from school.

By the time you finally get home [from school] you just want to relax. Just like hang out and you don't really just want to be ok let's go to the gym.

Interpersonal. Participants reported a few general interpersonal barriers related to friends, including a lack of close friends who participated in physical activity. Many of the participants reported choosing to hang out with friends participating in alternative activities (e.g., social activities, football games) rather than being active.

I think that friends do [make it difficult to do physical activity] because like, sometimes I'll like come home and there'll be like FCA [Fellowship of Christian Athletes] or something and my friends will be there and so I'll want to go.

Peers also hindered many of the participants from engaging in physical activity by discouraging them from exercising, going to sports practice, or from enrolling in a physical education (PE) class at school.

If I'll have a friend over…and I'll need to go like running or something…they'll like talk me out of it sometimes.

My friends that weren't in sports made it hard for me…they were always trying to get me to skip out on practice or dance so that I could hang out with them.

A large number of the interpersonal barriers were related to parental and family issues, including chores, caretaking of a parent or sibling, pressure from parents to focus on school more than sports, and parents not providing transportation to the gym or other places to be physically active.

I guess my parents kind of make things hard for me to stay in sports because like they don't want me to focus all my time on sports. They would rather me not be in them and just focus on school work instead. And without them I can't really get to places because I'm only 14.

In addition, one participant felt her family's view of sports and physical activity as competitive versus fun kept her from being physically active.

My sister and my dad are like, they're really competitive. And I just kind of do it for fun…they get mad at me…when I don't try. I guess, they don't think I try.

Institutional. A frequently reported general institutional barrier to participation in physical activity included an issue related to PE class. Participants reported choosing to enroll in other academic classes rather than PE because of the negative class reputation of PE among the student body (e.g., was a goof off class and students did not learn anything).

I know at my school the PE class has a not so good reputation and I don't have time for it in my schedule because I have to take everything else.

Community. Neighborhood safety was a perceived general community barrier for most of the participants. Most participants discussed being scared for their safety when out at night or alone in their neighborhood or community. In addition, participants who lived in gated communities reported only feeling safe if the gates to the community were closed.

I would [feel safe] as long as I wasn't by myself. I don't like going off [to be physically active] by myself after hearing about the stories on TV.

Participants reported that their communities had an absence or lack of lighting and sidewalks as well as busy neighborhood streets (i.e., heavy automobile traffic) that discouraged participation in physical activity.

By the time I get home its dark and there's lots of trees and stuff so I don't want to go out for like a run in case someone's hiding out there.

My street's just really busy. I was riding my bike then this car turned and hit me.

Other barriers reported by the participants included the lack of physical activity related facilities and the lack of free or inexpensive physical activity related facilities within their neighborhood and community.

Sometimes it's a money issue….because like if you want to run but you want to do it inside you can go to like the YMCA but that's gonna like cost money.

Physical environment. General physical environment barriers to physical activity were not commonly reported within the focus groups. A few participants reported that an early onset of darkness in the evening provided problems with feeling safe while participating in physical activity outdoors. In addition, some participants reported that inclement weather (i.e., wind, heat, cold) was a deterrent to participating in physical activity outdoors.

The weather [is a barrier]. I don't like running whenever it's windy because it hurts my eyes.

I actually have a neighbor who plays basketball with me and like sometimes we'd go out and dribble and we used to have goals out by our house but they got torn down by the wind.

Population-Specific Barriers

Interpersonal. A population-specific interpersonal barrier that emerged from the data was the lack of sibling support to participate in sport programs. Specifically, one participant reported not participating in a sport program because her brother told her she lacked the ability to make the team.

I was going to try out for cheerleading and he [her brother] said I wouldn't be able to make it if I tried out. So, I just never bothered to.

Furthermore, several participants indicated a decline in their sport participation from middle school to high school largely because of issues related to both coaches and teammates. Participants perceived high school coaches compared to middle school coaches as being meaner and more demanding both physically and mentally as well as teammates being meaner (i.e., bullies). Thus, to most of the participants sports in high school were less fun, harder, required a more demanding skill set (which discouraged less talented participants from joining), and required much more commitment (e.g., early morning practice), all

factors that caused a major decline in their sports participation and ultimately participation in physical activity.

Last year volleyball wasn't really that tough because our coach was really easy on us. And then like going up to 9th grade…wow! This is going to be a lot harder than last year.

I think sometimes my team or coach has a lot to do with it. They are always like come on, come on, come on and I just don't want to.

When I have problems with my coach sometimes or you know with my teammates…I can't get motivated to go and try to make myself better for the team.

Institutional. School was the main institution reported as creating population-specific barriers to participation in physical activity among the participants. One participant reported a perception that the overall school atmosphere in middle school seemed to focus more on being active compared to her high school experience. Nearly all participants reported that an overwhelming increase in homework and commitment to extracurricular activities in high school compared to middle school hindered participation in physical activity.

You don't wanna do like too much because then you feel like you're overwhelmed especially since it's like your first year of high school. You don't want to be like so overwhelmed with sports and homework and tests…so we just kind of like stay limited.

In regard to curriculum differences between middle school and high school, both sports programs and PE class were affected. Some participants reported a high school policy that disallowed enrollment in PE class if the student was a member of a school-related sports program.

It's [PE class] for the kids who don't want to play sports and don't have another academic class to fill in.

Furthermore, in one school, a policy categorized sports programs as academic classes. Students were given credit (i.e., satisfactory or unsatisfactory) for being a member of a sport program however, this credit did not count toward a student's overall grade point average (GPA). Although the participants understood the grade for the sports program was credit only, many perceived this policy as intensifying the expectations that one would need a strong set of sport skills to be successful in the class. This perceived pressure of higher expectations discouraged many of the participants from choosing to participate in sports.

In 9th grade like with sports it's a class so it's like more is expected of you to be better. Where as in 8th grade it was kind of like just an after school activity for anyone.

In addition, several participants reported enrolling in elective classes other than sports (e.g., band) because both types of classes were scheduled at the same time during the school day.

If you're like in band or something like that, a lot of sports are at the same time so they make you have to choose one.

Other population-specific barriers related to sports included the lack of an array of sports programs offered by the high schools. However, some of the participants were discouraged that students could only participate in one sport at a time.

I like playing as many sports at a time as possible. But the way [the high school] is, they make it so that you can only play one sport at a time. And,

I've just always liked playing as many sports as possible to like keep me on the go.

Discussion

The purpose of the present study was to identify general and population-specific personal and situational barriers to recommended levels of physical activity among insufficiently active high school freshman females. Using focus group methodology, participants identified personal and situational barriers within five of the six ecological categories: intrapersonal, interpersonal, institutional, community, and physical environment (McLeroy et al., 1988; Sallis et al., 1998). Within each of these ecological categories, many general and population-specific (unique to high school freshman females) barriers were identified as contributing to the lack of regular participation in physical activity.

Participants in the study reported numerous general barriers previously identified in research across many populations (Allison, Dwyer, & Makin, 1999; Dwyer et al., 2006; Gyurcsik et al., 2006; Hohepa et al., 2006; Motl, Dishman, Saunders, Dowda, & Pate, 2007; Neumark-Sztainer et al., 2003; Pate et al., 2008; Powell et al., 2007; Sherar et al., 2009; Spink et al., 2006; Tergerson et al., 2002). General intrapersonal and interpersonal barriers included fatigue, laziness or lack of motivation, injury, lack of friends who participate in sport and physical activity, and pressure from friends to not be active. Community, physical environment, and institutional barriers included the lack of available facilities, concerns about safety, inclement weather, and issues related to PE class. Similar to previous research examining PE and high school female students (Flintoff & Scraton, 2001; Gibbons & Humbert, 2008; Gibbons, Wharf Higgins, Gaul, & Van Gyn, 1999), several participants reported not participating in PE class because friends were not enrolled and because there was a disconnect between what schools required in PE and the needs and interests of female students.

Participants in the study also reported a number of population-specific barriers of which the majority were related to the difficulty adjusting to the transition between middle school and high school (i.e., being an 8^{th} grader compared to a 9^{th} grader). In addition, the majority of the participants often referred to sports when discussing physical activity. For example, several participants reported that increased expectations of coaches and commitment to sport programs in high school compared to middle school discouraged them from participating on high school sports teams. A byproduct of this increased level of expectation and commitment is that many of the participants reduced the number of high school sports they participated in to one per school year compared to being on several sport teams in middle school. The ultimate consequence of the participants perceiving they could not participate in more than one sport during a school year was the failure to capitalize on opportunities to regularly engage in recommended levels of physical activity. In addition, Pate and colleagues (2005) indicated that physical activity rates among high school females increased if schools provided sport opportunities that were of interest to female students. Thus, it may be that the sport team opportunities available at the participant's high schools (i.e., soccer, basketball, softball, swimming, cheer, cross country, tennis, track and field, golf, volleyball, and pom) were not of interest to the participants in this study.

While previous research examining barriers to physical activity among female high school students has cited coach related issues as barriers to physical activity (e.g., did not get along with coach) (Gyurcsik et al., 2006) this research did not distinguish barriers based on a single grade level. Understanding and addressing the unique barriers experienced by freshman female students is particularly valuable in the quest to minimize the declining physical activity rates of females as they transition through high school. Specifically, by understanding *why* physical activity rates of female youth decline so drastically during such a significant life transition, researchers can begin to tailor population-specific interventions that aid in the self-management and maintenance of physical activity.

A number of population-specific institutional barriers were also reported by the participants, of which the majority concerned curriculum differences between middle school and high school. Participants indicated that school-related policies not allowing enrollment in PE if the student was a member of a school-related sports program and categorizing sports as an academic credit class hindered participation in physical activity. Although PE has been shown to be a readily available opportunity to easily increase regular participation in physical activity among high school students (Dishman et al., 2005) the majority of the participants in this study either did not have the option of enrolling in PE (due to membership on a school sports team) or chose other academic courses. In addition, PE was not a required course at the two local public high schools which may have impacted the participants' physical activity participation rates. Specifically, Cawley, Meyerhoefer, and Newhouse (2007) assessed the impact of state PE requirements on youth physical activity and found that youth who attended schools with a binding PE requirement had significantly higher rates of physical activity compared to youth who attended schools that did not have a PE requirement.

Furthermore, curriculum policies that fail to allow all students, including athletes, to enroll in PE can have a considerable negative impact on the development of a student's physical literacy. Whitehead (1990) defines physical literacy as a life-long proficiency in movement, which encompasses the self-confidence and ability to evaluate all types of environments and anticipate movements needed to respond appropriately. Specifically, PE is an important and appropriate venue to develop physical literacy among female youth by enhancing the motivation needed to adhere to a life-long program of physical activity (Whitehead, 2007).

Limitations of this study must also be acknowledged. First, the findings are not generalizable to all high school freshman females as the results pertained to a select group of individuals who attended local churches. Due to this small number of participants included in the study, not all relevant barriers among insufficiently active high school freshman females may have been unveiled. Furthermore, focus group methodology was used to identify barriers and thus a causal relationship between barriers and physical activity was not established.

Despite these limitations, findings from this study have implications for further research to aid in the understanding of physical activity related general and population-specific personal and situational barriers in high school freshman females. Data from this study may be used to develop a specifically tailored barrier assessment tool to quantitatively assess multiple types of barriers among a

large diverse sample (e.g., various races, income levels, geographic locations, physical activity levels) of high school freshman females. A quantitative assessment of barriers should also include an examination of the frequency of occurrence and the extent of limitation of each barrier. The assessment of barrier limitation indicates the strength of each barrier in preventing activity and thus, expectations are that the more limiting the barrier, the lower the participation in physical activity (Bandura, 1986). For example, although a barrier such as too much homework may frequently occur in the life of a high school freshman female, this barrier may not be limiting her participation in physical activity because she has adopted a strategy to cope with this barrier (e.g., schedules homework time in her evenings). However, another high school freshman female who frequently also has too much homework may perceive this barrier as being extremely limiting because she has not adopted a coping strategy to overcome this barrier and thus fails to engage in physical activity. By understanding how often an individual experiences a barrier and how limiting the barrier is to engaging in a regular program of physical activity, researchers can utilize this information in determining salient relevant barriers (Brittain et al., 2008).

Furthermore, future research should examine successful strategies used by sufficiently active high school freshman females to overcome perceived barriers and the corresponding self-regulatory efficacy needed to cope. The identification of successful coping strategies and self-regulatory efficacy will aid in understanding how some individuals are able to cope with barriers while others are less successful. Individuals who are highly efficacious in their skills and abilities to overcome barriers are expected to persist and expend considerable effort to maintain a regular program of physical activity (Bandura, 1997). Efficacious individuals remain task-diagnostic and adopt strategies and courses of action designed to maintain activity. However, individuals who are not as efficacious might be easily deterred and therefore not engage in physical activity.

Future research to address school-related barriers should use a comprehensive approach that does not focus solely on PE. While programs targeting PE have been shown to be effective in increasing physical activity during class time (Stone, McKenzie, Welk, & Booth, 1998), a more comprehensive approach has shown to be effective in reducing the significant declines in physical activity that typically occur among females in all grades of high school (Pate et al., 2005). This social ecological model and social cognitive theory-driven program called Lifestyle Education for Activity Program (LEAP) targets gender-specific changes in: (a) PE; (b) health education; (c) school environment; (d) school health services; (e) faculty/staff health promotion; (f) family and community involvement; and (g) individual behavioral beliefs to engage in physical activity (i.e., self-efficacy). The importance of the comprehensive approach of LEAP was that this program was able to increase the overall daily physical activity participation rates among high school females, not just PE related physical activity.

Overall, this present study provided valuable information in terms of general and population-specific personal and situational barriers that deter participation in physical activity among high school freshman females. Once salient barriers are identified through a quantitative approach, this information can aid in the development of theoretically-driven interventions needed to increase adherence to a regular program of physical activity among high school freshman females. In

addition, information from this study can be utilized in conjunction with programs such as LEAP to continue to address the specific needs of freshman females as they struggle to maintain or increase participation in recommended levels of physical activity.

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