BARRIERS TO EXERCISE/PHYSICAL ACTIVITY FOR ADOLESCENTS IN RURAL WEST ALABAMA

by

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ABSTRACT

Regular physical activity (PA) in childhood and adolescence improves strength and endurance, helps build healthy bones and muscles, helps control weight, reduces anxiety and stress, increases self-esteem, and may improve blood pressure and cholesterol levels. The American College of Sports Medicine (ACSM) shows PA trends among adolescents (defined as 13 – 18 yrs.) decrease such that the majority of adolescents are not participating in sufficient activity to meet recommended guidelines. Cardiovascular Disease (CVD) risk factors that are present in adolescence have a tendency to track into adulthood. Youth who are overweight tend to have a higher prevalence of CVD risk factors than their normal weight peers.

Rural adolescents may not be engaging in PA as often as their urban counterparts due to barriers of their rural lifestyle. Many rural communities are characterized by vast distances, low socioeconomic status, transportation challenges, and low public funding levels for facilities, programs, and other public amenities. Rural residency, especially in the southern U.S. has been associated with low levels of PA. The rural population is very unique in that they have specific barriers to PA. These may be social, financial, transportation, personal (i.e. lack of time, resources, caregiver responsibilities) or environmental factors (i.e., transportation, inadequate programs, lack of facilities).

The purpose of this study was to extend previous findings by surveying a large sample of rural Alabama adolescents regarding barriers to PA and surveying parents and school administrators in this regard as well. Also, this study evaluated the effect that age, race/ethnicity, gender, and SES have on barriers to PA. This study did indeed demonstrate several demographic differences concerning barriers to PA. Additionally, it demonstrated several differences between

students, parents, and administrators regarding perceived barriers to PA. Finally, this study provided additional data concerning common barriers to PA reported in the literature. Gender and SES differences were found to be the two covariates that were barriers to exercise and PA in rural West Alabama adolescents.

DEDICATION

This dissertation is dedicated to my husband, Danny, and son, Trey. Without your loving support, completing this doctorate would not have been possible. When I decided to begin this process, I said I didn't want it to come before my family. At times the process has been demanding, but I believe I always kept my priorities in order. I love you!

I would also like to thank my parents and other family members who encouraged me along the way. Thank you for cheering me on!

Dr. Richardson taught the first class I had as a PhD student, after many years away from a classroom. He believed in me, encouraged me, and supported my research idea. Thank you, Dr. Richardson.

I would also like to thank the other members of my committee, Dr. Tucker, Dr. Leeper, Dr. Wingo, and Dr. Fedewa. I've learned so much from being in your classrooms and from the guidance you've provided. I would be remiss if I didn't thank Dr. Wheat for the job opportunity he has provided and his encouragement to further my education. Working in the Department of Community and Rural Medicine has allowed me to meet many wonderful people in our state. Without them, this project would not have come to fruition.

LIST OF ABBREVIATIONS AND SYMBOLS

PA	Physical Activity
ACSM	American College of Sports Medicine
CVD	Cardiovascular Disease
SES	Socioeconomic Status
CDC	Center for Disease Control
LPTA	Leisure Time Physical Activity
BMI	Body Mass Index
SPSS	Statistical Package for the Social Sciences
WHO	World Health Organization

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This research would not have been possible without the support of my family who never stopped encouraging me. Finally, I thank all of the students, parents, and administrators who completed the survey. Your input is very much appreciated.

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CHAPTER 1

INTRODUCTION

The U.S. Department of Health and Human Services (HHS) (2016) recommended that adolescents participate in 60 minutes or more of aerobic physical activity (PA) at least 3 times per week. This aerobic activity should be at a moderate or vigorous level of intensity (HHS, 2016). During this 60 minutes or more, adolescents should include muscle strengthening and bone strengthening PA at least 3 days/week (HHS).

PA and Health in Adolescents

There are many benefits of regular physical activity for adolescents. These include building and maintaining healthy bones and muscles, reducing the risk of developing obesity and chronic diseases such as diabetes and cardiovascular disease, and many cancers [Centers for Disease Control and Prevention, (CDC), 2015]. Regular physical activity also reduces feelings of depression and anxiety and promotes psychological well-being, and may help improve students' academic performance (CDC, 2015).

The CDC has reported that participation in physical activity declines as young people age (CDC, 2015). Likewise, the American College of Sports Medicine (ACSM) showed that PA levels among adolescents (defined as 13-18 yrs.) decrease with age and the majority of adolescents were not participating in sufficient activity to meet recommended guidelines (2009, pp. 187-189). In 2013, only 29% of high school students had participated in at least 60 minutes or more of any kind of physical activity on any day during the 7 days before the survey (CDC, 2015). There are long-term consequences to physical inactivity in adolescents, such as being

overweight and obese (ACSM). This can increase one's risk for diabetes, high blood pressure, high cholesterol, asthma, arthritis, and poor health status (CDC, 2015). The prevalence of physical inactivity among adolescents is especially troubling given that cardiovascular disease (CVD) risk factors associated with inactivity that are present in adolescence have a tendency to track into adulthood (Groft, Hagen, Miller, Cooper, & Brown, 2005).

Rural vs. Urban Adolescents

Within the adolescent population, the majority of research on health and health behaviors has been conducted in urban settings (Findholt, Michael, Davis, & Brogoitti, 2010). Although research conducted in urban or suburban areas may provide insight to the factors that affect children's (6-19 years old) physical activity in rural communities, it cannot be assumed that the factors are the same.

Many rural communities are characterized by vast distances, low socioeconomic status, transportation challenges, and low public funding levels for facilities, programs, and other public amenities. These characteristics may contribute to low levels of PA among children ages 6-19 years old (CDC, 2015).

Since inactivity is related to obesity (Casper, Bocarro, Knaters, & Floyd, 2011), the obesity epidemic is especially prevalent in rural parts of counties, where obesity rates among children and adolescents have been shown to be higher than state or national averages and higher than rates among youth in urban areas (CDC, 2015). A recent national study found that rural children were 25% more likely to be overweight or obese than their urban counterparts (CDC, 2015). There appears to be cause for concern regarding the health status of rural adolescents. It has long been asserted that although rural dwellers in general hold certain views and beliefs that

affect health-related behaviors, the perspectives of rural youth in this regard are not well researched or understood (Findholt et al., 2010).

Unlike cities, rural areas tend to not have sidewalks, easily accessible parks, commercial and public recreational facilities, and various organized recreational leisure opportunities commonly found in urban areas (Moore, Davis, Baxter, Lewis, & Yin, 2008). Compared to their urban counterparts, rural communities have increased structural (physical) barriers to health care and services including poor health infrastructure, lack of access to health education and prevention services, and a low level of socioeconomic well-being.

Recent studies (Moore et al., 2010) noted that despite a large body of literature concerning PA in urban youth, there is a paucity of information concerning barriers and opportunities for PA at the intrapersonal, interpersonal, and community level in rural youth. Furthermore, Moore et al. (2010) noted that other studies suggested that levels of PA are lower while obesity and related comorbidities are higher in rural youth.

Rural adolescents may not be engaging in PA as often as their urban counterparts due to barriers of their rural lifestyle. National surveys indicated that regional differences exist in PA behavior (Martin et al., 2005). Urban-rural differences may exist in occupational activity, household activity, and transportation-related activity, all of which are important components of total PA levels (Martin et al., 2005). The association between PA and degree of urbanization is evident and robust in the southern United States (Martin et al., 2005).

Urban-rural differences in PA may be explained in part by known determinants of PA. For instance, people living in rural areas are more often of lower socioeconomic status (SES) than people living in urban areas, and low SES is associated with lower levels of recommended PA (Hortz, Stevens, Holden, Petosa, & Lingyak, 2009). Additionally, schools in rural areas

generally offer fewer programs and have fewer supports for extracurricular PA than schools located in more urbanized areas (Groft et al., 2005).

The rural population is unique in that they have specific barriers to PA. These may be social, financial, transportation, or other personal (i.e. lack of time, resources, caregiver responsibilities) or environmental factors (i.e. poor weather, inadequate programs, lack of facilities). Essentially, rural people have intricate challenges when accessing PA. It should be appreciated that there has been limited research done in the area of barriers to physical activity in rural adolescents (n=12), and even less research done with rural parents (n=2) and school administrators (n=2). Several studies had small sample sizes. Furthermore, the variety of geographic regions may not characterize all rural youth, and the majority of studies did not include parents and administrators which may provide important information. Finally, many studies did not include important covariates that may influence perceived barriers to PA such as race/ethnicity and SES. Therefore, it remains unknown to what extent various covariates affect PA in rural youth. Determining these covariates is important in order to move the field forward so more specific PA interventions can be developed that account for barriers to PA in rural youth. In research by Casper et al. (2011), only one county was surveyed for these covariates. In the current study, students, parents, and administrators from three rural West Alabama counties were be surveyed. Therefore, a larger sample size was anticipated. Also in the current study, survey responses from parents and students were matched so results could be analyzed from parent to their own child. There was also a wider array of input in this study since results were sought from three sources—students, parents, and administrators. Accordingly, the purpose of this study was to extend previous findings by surveying a large sample of rural Alabama adolescents regarding barriers to PA and surveying parents and school administrators in

this regard as well. Also, this study evaluated the effect that race/ethnicity and SES have on barriers to PA. The hypotheses for this study are

H_1: No differences exist in barriers between the 16-18 year old age group and the 13-15 year old age group.

H_2: No differences exist in barriers between male and female students

H_3: No differences exist in barriers between Black students vs. White students vs. other races.

H_4: No differences exist in barriers between students of low SES and students of high SES.

H_5: No differences exist in barriers between parents of low SES and parents of high SES.

H_6: No differences exist among students', parents', and administrators' opinions regarding student barriers to PA.

H_7: No differences exist in barriers among the three counties (Hale, Fayette, and Pickens).

H_8: No two-way interactions exist regarding student barriers to PA among the five covariates (age, race, gender, SES, county).

The current study will contribute to a better understanding of barriers to PA in rural youth, and help inform interventions designed to increase PA levels in rural adolescents.

CHAPTER 2

LITERATURE REVIEW

A thorough review of literature revealed 19 studies relating to rural adolescent barriers to PA. The heterogeneity of the studies should be appreciated. Refer to Table 1 for a literature matrix.

Table 1: *Literature Matrix*

Author/Title/Source	Study/Participants	Findings/Barriers	Limitations/ Future Research
Swanson, M., Scholenberg, N.E., Erwin, H., & Davis, R. (2012). Perspectives on physical activity and exercise among Appalachian youth. *Journal of Physical Activity and Health*, *9*, 42-47.	N=5 co in KY, SES & health indicators lowest in US. FG's 8-17 yr olds, asked about their perspectives of PA	Inadequate knowledge, lack of resources, poor motivation, anticip. of pain or inj, lack of time, technology (screen time), high costs	TV, Video games & computers discourage App. Youth from PA just as urban youth. Future Research – ensure local persp. Are incorporated into PA promotions.
Moore, J.B., Davis, C.L., Baxter, S.D., Lewis, R.D., Yin, Z. (2008). Physical activity, metabolic syndrome, and overweight in rural youth. *National Rural Health Association*, *24*(2), 136-142.	N=116 students, Wilkes Co., GA, Survey & data collected (skin folds, waist circum.), PA questionnaire given	Access to PA & parental support are sig. predictors of PA in rural children.	PA programs in rural comm should focus on providing access & increasing social support from parents & comm. Limitations – small subject sample, low part rate.

Table 1 (con't)

Author/Title/Source	Study/Participants	Findings/Barriers	Limitations/ Future Research
Walia, S., & Leipert, B. (2012). Percieved facilitators and barriers to physical activity for rural youth: an exploratory study using photovoice. *Rural and Remote Health*, The International Electronic Journal of Rural and Remote Health Research, Education, Practice and Policy, 1842.	N=9, 13-18 yr. olds, used cameras to document their perceived health realities. One-on-one interviews then held with ea. participant to explain photos & relevance to PA	Info. may help facilitate increased participation in PA for rural youth by providing them, their families communities w/enhanced opp. To engage in PA.	Bigger sample size needed, more diverse SES, more research needed to investigate youth PA especially in other rural areas.
Moore, J.B., Jilcott, S.B., Sores, K.A., Evenson, K.R., Brownson, R.C., & Novick, L.F. (2010). A qualitative examination of perceived barriers and facilitators of physical activity for urban and rural youth. *Health Education Research, Oxford Journals, 25*(2), 355-367.	N=41 youth, 50 parents, 13 FG in NC. Socioecologic barriers and facilitators for PA in rural & urban middle school youth & their parents were identified.	Barriers: distance, cost, crime, danger, & TV mentioned by parents. Youth mentioned barriers to be school policies, & crime & danger.	Future research: on geographic setting & rural PA since rural & urban samples perceive & relate to PA differently. Limitations – students were quiet & hard to draw into conversations during FG's. Interview guide may have limited scope of discussion & researchers may not have uncovered all key variables & topics important to parent & students.

Table 1 (con't)

Author/Title/Source	Study/Participants	Findings/Barriers	Limitations/ Future Research
Casper, M., Bocarro, J.N., Kanters, M.A., & Floyd, M.F. (2011). "Just let me play!"- Understanding constraints that limit adolescent sport participation. *Journal of Physical Activity & Health*, *8*, 32-39.	N=2465, 4 middle schools in a SE US city, survey, Some low SES, 7% never played sports, 10% played only in school, 15% part in combo of school & comm., 68% played only in comm., 68% would like to play more often.	Reported constraints – time, availability of partners & accessibility. It's sugg. that comm sport part may minimize barriers for adolescent sport part. Comm sport opp may also contribute to lower perceived constraints than school since many skill levels are accommodated.	Future research – focus on influence of nonsport leisure act. Limitations – didn't assess nonsport act. Can't generalize, only used one co.
Belton, S., O'Brien, W., Meegan, S., Woods, C., & Issartel, J. (2014). Youth-physical activity towards health: Evidence and background to the development of the Y-PATH physical activity intervention for adolescents. *BMC Public Health*, *14*, 122-146.	N=256 youth, self- reported PA & participated in FG's. Irish town tow schools, one all- female and one all male. FG explored what factors influenced involvement in or avoidance of PA.	Barriers – lack of time, distance, PE related factors (Lack of choice in PE class)	Future research – to examine the efficacy of this evidence-based intervention.
Martin, S.L., Kirkner, G.J., Mayo, K., Matthews, C.E., Durstine, J.L., & Hebert, J.R. (2005). Urban, rural and regional variations in physical activity, health behavior. *The Journal of Rural Health*, *21*(3), 239-244.	U.S. divided into 4 regions-NE, Midwest, W, S. Surveyed 126,824 from 29 states & DC. Using RUCCA's their degree of urbanization was defined.	Study clarifies previous studies – there is an assoc. b/w PA and urban-rural locality. The assoc. exists in S but not other regions.	This study makes the case for why Rural & South are different & need to be researched.

Table 1 (con't)

Author/Title/Source	Study/Participants	Findings/Barriers	Limitations/ Future Research
Hortz, B., Stevens, E., Holden, B., Petosa, L.R. (2009). Rates of physical activity among Appalachian adolescents in Ohio. *The Journal of Rural Health*, *24*(2),58-61.	N=1024, 32 high schools, 11 rural co Southern Ohio, 7-day recall of PA. 50% of 12th grade students reported employment responsibilities.	Only 5% of this adolescent pop. Met daily rec for mod. act. 38% reported no days of mod. act. Only 25% reported mod. act. On 5 or more days/wk.	This sample is engaging in less vigorous act when compared w/national & state rates. This puts them at risk for health consequences. Policies supporting youth PA should be considered, including PE requirements.
Edwards, M.B., Kanters, M.A., & Bocarro, J.N. (2011). Opportunities for extracurricular physical activity in North Carolina middle schools. *Journal of Physical Activity and Health*, *8*, 597-605.	N=325, middle schoolers, questionnaire, re: NC adolescents opportunities to be PA.	NC's public middle schools are not providing recommended enough extracurricular PA prog. Most schools are focused on highly comp. interscholastic sports rather than inclusive & diverse intermural sports & non-competitive act. Rural schools may be hindered by transport.	Limitations – ignoring other places students may be active. Didn't study active transport (bike or walk to school), a valid measure of part. Rates or PA levels. Therefore difficult to know accurate student part & PA. On-line self-report may be bias due to possible exaggeration.
Groft, J.N., Hagen, B., Miller, N.K., Cooper, N., & Brown, S., (2005). Adolescent health: A rural community's approach. *Rural and Remote Health*, *5*, 366.	N=288, 9-12th graders in rural Western Canada, surveyed Re: adolescent health. Mean age = 15.5. Part of the survey was adolescents' barriers to making positive change in health.	29.9% wanted more PA during school time. Get 'buy-in' from community. School personnel must continue to recognize what influences adolescents as they dev. prog.	

Table 1 (con't)

Author/Title/Source	Study/Participants	Findings/Barriers	Limitations/ Future Research
Findholt, N.E., Michael, Y.L., Davis, M.M., & Brogoitti, V.W. (2010). Environmental influences on children's physical activity and diets in rural Oregon: Results of a youth photovoice project. *Online Journal of Rural Nursing and Health Care*, *10*(2), 11-20.	N=6, low SES, NE Oregon, 10-12 grade, Photo's taken to reveal barriers to PA.	Rural adol. Are enthusiastic & willing to part. In ID, design, & implementation of appropriate interventions.	Future research – better understand determinants of health of rural adol. & factors which comprise their well-being. Limitations – Can't generalize, only one rural school in sample.
Yousefian, A., Ziller, E., Swartz, J., & Hartley, D. (2009). Active living for rural youth: Addressing physical inactivity in rural communities. *Journal of Public Health Management Practice*, *15*(3), 223-231.	N=84 in FG's, one FG consisted of 10-18 yr. olds and one FG of informants, Maine. FG's discussed PA habits. Informants interviews re: PA levels, barriers & availability of PA	Photo's revealed limited availability of rec facilities & prog as barriers to PA. Existing facilities, inaccessible or inadequate. Only traditional sports/activities offered, no bike lanes, long distance from home or play areas were identified.	Rural comm have unique strengths & barriers that must be considered in the dev. of interventions. Need to increase access to PA opp for rural children outside of traditional org sports. Rural residents must be considered a priority population.
Edwards, M.B., Theriault, D.S., Shores, K.A., & Melton, K.A. (2014). Promoting youth physical activity in rural southern communities: Practitioner perceptions of environmental opportunities and barriers. *Journal of Rural Health*, *30*, 379-387.	N=16 interviews in App. Reg., n=14 interviews in Atlantic Coastal Reg., those interviewed include expert informants such as elected officials, business leaders, school admin., health prof., faith comm., to ID perceived barriers to youth PA.	Trusted comm. Leaders can champion new ideas & "make things happen". There is a close social networking in rural/small towns.	Look at social env. of adol dev. Partnerships w/local leaders to overcome barriers to PA, and go to the area to "grow your own" PA expert. They don't want "outsiders" or "newcomers" telling them what to do.

Table 1 (con't)

Author/Title/Source	Study/Participants	Findings/Barriers	Limitations/ Future Research
President's Council on Physical Fitness and Sports. (2009). *Research Digest*, Series 10, NO. 3.	Quarterly publication by the President's Council on Physical Fitness and Sports	PA is associated w/overall greater youth development. Parents & coaches are good role models.	Best practices for promoting positive youth dev through PA are addressed.
Hardy, L.L., Kelly, B., Chapman, K., King, L., & Farrell, L. (2010). Parental perceptions of barriers to children's participation in organized sport in Australia. *Journal of Paediatrics and Child Health*, *46*(4), 197-203.	N=402 parents of 5-17 yr. olds surveyed re: parents perceptions on how cost, time, travel and variety of organized sporting act. Influence their decisions to allow their child to participate in org. sports & recent expenses on sports related items for their child.	Most common expense: sportswear & entry fees. Availability to a wider range of organized sports was a perceived barrier.	Limitation- low response rate.
Krueger, T.M., Swanson, M., Davis, R.E., Wright, S., Dollarhide, K., & Schoenberg, N.E. (2012). Formative research conducted in rural Appalachia to inform a community physical activity intervention. *American Journal of Health Promotion*, *26*(3), 143-151.	N=114, KY, key informants, FG, low SES	Travel time, family commitments, & inadequate comm resources undermine PA.	Limitations – churches used as recruitment venue, & mostly female part. May not be generalizable to non-church goers or males not in Appalachia.

Table 1 (con't)

Author/Title/Source	Study/Participants	Findings/Barriers	Limitations/ Future Research
Shirinde, K.S., Monyeki., M.A., Pienaar, A.E., & Toriola, A.L. (2012). Perceived barriers and benefits of participating in physical activity and the levels of physical activity of children attending farm schools. *African Journal for Physical, Health, Education, Recreation and Dance*, *18*(2), 228-240.	N=334, 15-16 yr. olds, low SES, rural South Africa, questionnaire re: perceptions of barriers & benefits of participation in PA.	Barriers: Lack of time, work/school work, lack of skills.	Limitations-just farm school children participate. Public health education should be designed to include strategies for time mgt., encouraging PE participation, empowering all stakeholders. PA promotion should target schools.
Elkins, R.L., Nabors, L., King, K., & Vidorek, R. (2015). Factors influencing expectations of physical activity for adolescents residing in Appalachia. *American Journal of Health Education*, *46*(1), 7-12.			
Young, D.R., Spengler, J.O., Frost, N., Evenson, K.R., Vincent, J.M., & Whitsel, L. (2014). Promoting physical activity through the shared use of school recreational spaces: A policy statement from the American Heart Association. *American Journal of Public Health*, *104*(9), 1583-1588.			

For instance, there were differences in (a) sample size (from n=6 to n=2465); (b) participants surveyed (adolescents, parents, athletic directors, community members); (c) age range of students sampled (from 5-19 years old); (d) socioeconomic status of those sampled (e.g., some studies with low SES only, some with all SES represented); (e) race/ethnicity; and (f) the geographic locations of study participants sampled (Kentucky, Ohio, Georgia, North

Carolina, Canada, Oregon, and Ireland). Also, the variety of research methodologies employed is noteworthy. Seven studies used focus groups, nine studies used questionnaires/ surveys, and two used interviews for research purposes. Photovoice along with interviews were used in two studies.

Approximately 22 barriers to rural adolescent exercise and PA were identified from the literature. Refer to Table 2 for identified barriers to adolescent PA and exercise.

Table 2: *Identified Barriers to PA and Exercise in Rural Adolescents*

Barriers	**# studies**	**Lead Author**
Transportation (must catch the bus home)/distance	8	Walia & Leipert (2012) Belton et al. (2014) Hortz et al. (2009) Findholt et al. (2010) Yousefin et al. (2009) Edwards et al. (2014) Kruger et al. (2012) Groft et al. (2005) (survey question)
Lack of facilities or equipment	7	Swanson et al. (2012) Moore et al. (2010) Casper et al. (2011) Edwards et al. (2011) Findholt et al. (2010) Edwards et al. (2014) Groft et al. (2005) (survey question)
Lack of time	6	Swanson et al. (2012) Casper et al. (2011) Belton et al. (2014) Groft et al. (2005) (survey question) Hardy et al. (2010) Shirinde et al. (2010)
Lack of resources/opportunities	5	Walia & Leipert (2012) Findholt et al. (2010) Edwards et al. (2014) Hardy et al. (2010) Kruger et al. (2012)

Table 2 (con't)

Barriers	# studies	Lead Author
High costs	5	Swanson et al. (2012) Moore et al. (2010) Yousefian et al. (2009) Hardy et al. (2010) Groft et al. (2005) (survey question)
School policies	4	Moore et al. (2010) Groft et al. (2005) (survey question) Belton et al. (2014) Yousefin et al. (2009)
Crime/danger/safety concerns	3	Moore et al. (2010) Findholt et al. (2010) Yousefin et al. (2009)
Technology (screen time) interferes	3	Swanson et al. (2012) Walia & Leipert (2012) Moore et al. (2010)
Feel unsure of myself/unskilled	3	Belton et al. (2014) Shirinde et al. (2012) Groft et al. (2005) (survey question)
Psychological factors (poor motivation, anticipation of pain or injury)	2	Swanson et al. (2012) Groft et al. (2005) (survey question)
Inadequate knowledge	2	Swanson et al. (2012) Casper et al. (2011)
Work/chores	2	Hortz et al. (2009) Shirinde et al. (2012)
No family support or interest from friends/partners	2	Kruger et al. (2012) Groft et al (2005) (survey question)
Homework	2	Walia & Leipert (2012) Belton et al. (2014)
Weather	1	Walia & Leipert (2012)
Lack of culturally appropriate facilities	1	Moore et al. (2010)
Feel it's not important	1	Groft et al. (2005) (survey question)
Don't know how to start	1	Groft et al. (2005) (survey question)
Too much stress	1	Groft et al. (2005) (survey question)
Previous negative PA experience	1	Kruger et al. (2012)

Table 2 (con't)

Barriers	# studies	Lead Author
Fatigue from earlier in the day	1	Kruger et al. (2012)
Other commitments	1	Kruger et al. (2012)

Several common barriers were investigated by numerous studies. The transportation/distance barrier was studied by eight researchers (Belton et al., 2014; Edwards et al., 2014; Findholt et al., 2010; Groft et al., 2005; Hortz et al., 2009; Kruger et al., 2012; Walia & Leipert, 2012; Yousefian et al., 2009). The barrier of facilities/equipment was investigated by seven studies (Casper et al., 2011; Edwards et al., 2011, 2014; Findholt et al., 2010; Groft et al., 2005; Moore et al., 2010; Swanson et al., 2012). Time for exercise and PA was a barrier investigated by six studies (Belton et al., 2014; Casper et al., 2011; Groft et al., 2005; Hardy et al., 2010; Shirinde et al., 2012; Swanson et al., 2012). Lack of resources/opportunity was a barrier investigated by five studies (Edwards et al., 2014; Findholt et al., 2010; Hardy et al., 2010; Kruger et al., 2012; Walia & Leipert, 2012). Cost was a barrier to PA which was evaluated in five studies (Groft et al., 2005; Hardy et al., 2010; Moore et al., 2010; Swanson et al., 2012; Yousefian et al., 2009). Other barriers were studied such as school policies (Belton et al., 2014; Groft et al., 2005; Moore et al., 2010; Yousefian et al., 2009), crime/safety/danger (Findholt et al., 2010; Moore et al., 2010; Yousefian et al., 2009), and technology/screen time (Moore et al., 2010; Swanson et al., 2012; Walia & Leipert, 2012). Feeling unskilled/unsure of self was a barrier evaluated in three studies as well (Belton et al., 2014, Groft et al., 2005, Shirinde et al., 2012). Psychological factors such as poor motivation or anticipation of pain or injury (Groft et al., 2005; Swanson et al., 2012), inadequate knowledge (Casper et al., 2011; Swanson et al., 2012), work/chores (Hortz et al., 2009, Shirinde et al., 2012), no family support (Groft et al., 2005, Kruger et al., 2012), and homework (Belton et al., 2014; Walia & Leipert,

2012) were each investigated by two studies. Other barriers were each evaluated only once. These included the barrier of feeling it is not important (Groft et al., 2005), not knowing how to start (Groft et al., 2005), weather (Walia & Leipert, 2012), stress (Groft et al., 2005), having a previous negative PA experience (Kruger et al., 2012), fatigue from earlier in the day (Kruger et al., 2012), and culturally appropriate activities (Moore et al., 2010). Following is a review of these barriers, starting with the most frequently studied.

Transportation/Distance

The transportation/distance barrier was evaluated by eight studies (Belton et al., 2014; Edwards et al., 2014; Findholt et al., 2010; Groft et al., 2005; Hortz et al., 2009; Kruger et al., 2012; Walia & Leipert, 2012; Yousefian et al., 2009), all of which found transportation to be a barrier to adolescent PA. Yousefian et al. (2009) studied rural adolescents in Maine. Yousefian et al. (2009) had six focus groups, with 5-10 students (10-18 years old) in each group. Lack of transportation to and from community and school-based programs and facilities for PA was mentioned by students as a large barrier to PA (Yousefian et al., 2009). Youth in low- density rural communities with natural barriers such as distance, large hills, and dangerous, curvy roads rely on parents and other adults to transport them to places. Busy, working, or non-supportive parents, total lack of public transportation, and the elimination of late buses after school limit student access to activities involving PA (Yousefian et al., 2009). The primary barrier to school sports mentioned was lack of transportation from school sports practices and games (Yousefian et al., 2009). Students said they had no problem staying after school for sports, but getting home from sport events was problematic given the absence of late school buses and far distances between school and their home.

In a study by Kruger et al. (2012), rural residents completed a questionnaire concerning barriers to PA. Participants included parents of adolescents who reported that the extensive distances required to reach common destinations in their rural communities (schools, or the closest town) consumed a significant portion of their time (Kruger et al., 2012). Lengthy distances required to get to workout facilities often discouraged rural Appalachians from engaging in PA. Several participants who lived far away from one of the few local PA facilities noted, "The Sportsplex would definitely work better if it was closer," and "Nobody wants to drive 45 minutes to the Sportsplex" (Kruger et al., 2012, p. 146). Participants in this study also noted environmental challenges such as poor road conditions that prevented people from traveling to PA facilities and that resources in the region for repairing roads and clearing mountain roads of snow were limited (Kruger et al., 2012).

Research by Hortz et al. (2009) also discussed the transportation barrier to PA. Researchers in this study administered a questionnaire to 1,024 students in 9th and 12th grades in rural Southern Ohio. They noted that fewer Appalachian communities offer environmental supports for PA (Hortz et al., 2009). For example, school districts in Appalachia often cover large geographic regions and providing transportation from school to home is often a concern (Hortz et al., 2009). Teachers and students told researchers that most students went home after school on a bus. If they participated in after school sports or programs, often buses are not provided. School staff indicated that tight budgets and transportation issues limit the number of after school programs that can be offered (Hortz et al., 2009).

Findholt et al. (2010) asked rural students (n=6) who were sophomores, juniors, and seniors in high school in Northwest Oregon to photo-document conditions that influenced children's activity. Photovoice is a participatory action research methodology that entrusts

cameras to people so they can document and discuss community needs and assets. The students were asked to take pictures of barriers to PA in their communities and take part in an interview to explain their pictures (Findholt et al., 2010). Long distances were identified as barriers to walking and bicycling (Findholt et al., 2010).

Walia and Leipert (2012) researched barriers to rural youth PA in Canada using photovoice as well to document their perceived barriers to PA (Walia & Leipert, 2012). Nine students, ages 14-18, mean age of 16, participated in the study (Walia & Leipert, 2012). One-on-one interviews were held with each participant to explain their photographs and their relevance to physical activity. It was noted that accessing facilities in town was difficult for those who did not have access to transportation (Walia & Leipert, 2012).

Edwards et al. (2014) found that transportation can be a barrier for youth PA, as well. In this study, 30 in-depth interviews were conducted with expert informants in two rural counties in North Carolina. Expert informants were elected officials, business leaders, school administrators, health professionals, members of faith communities, parks and recreation providers, and members of community-based organizations. At an individual level, participants shared that many families, particularly high-need populations, needed to be transported to and from activities (Edwards et al., 2014). As stated by one informant "Well, there certainly are, you know, a lot of opportunities if the kids are fortunate enough to have somebody to chaperone them around. You know, unfortunately a lot of children's parents' schedules don't allow for that kind of thing" (Edwards et al., 2014). Given that there is no public transport in either county of this study, some families found themselves without the means to get to activities (Edwards et al., 2014). This barrier was seen as particularly problematic since PA was generally focused in structured sport programs that required attendance at centralized facilities (Edwards et al., 2014).

In research done by Belton et al. (2014) in a rural Irish town, 12-14 year olds (n= 256) were asked to complete a questionnaire regarding PA. One barrier to PA noted was distance to activity (Belton et al., 2014). As one participant stated 'you travel for sometimes an hour, all the way just to play a match, and then you lose, and it's a waste of time pretty much' (Belton et al., 2014).

In research by Groft et al. (2005) parents, teachers, students, school administrators, and public health nurses engaged in a participatory action research project to better understand determinants of health of rural adolescents at a high school in Western Canada (Groft et al., 2005). A survey was administered to students (n=288) at the high school and 17.1% of the students agreed that they do not have transportation for PA.

Facilities

The second most reported barrier was lack of facilities/equipment which was investigated in seven studies (Casper et al., 2011; Edwards et al., 2011, 2014; Findholt et al., 2010; Groft et al., 2005; Moore et al., 2010; Swanson et al., 2012). Studies found facilities in rural areas to be inadequate, insufficient, unavailable, not used often enough, too far away, and in general, not available. The lack of facilities/equipment was discussed by Findholt et al. (2010). The photographs taken by students revealed several barriers to children's physical activity. Limited availability of recreational facilities and programs was identified as a primary barrier to children's physical activity (Findholt et al., 2010). In addition, existing facilities were frequently described as inaccessible or inadequate (Findholt et al., 2010). It was noted that (a) some facilities had not been maintained; (b) few facilities were open after 5 p.m.; (c) some facilities were only available to select groups, such as youth who were involved in sports; (d) some facilities lacked shelter and were too hot to use during summer months; and (e) some parks were

perceived as unsafe places for children to play because of the people who might be loitering there (Findholt et al., 2010). This made it difficult for those who lacked an interest in sports to be active. One exception to the theme of limited resources for PA emerged in photographs of the natural environment (Findholt et al., 2010). Natural areas, such as lakes and rivers, were commonly used by children and their families as places to play and be active (Findholt et al., 2010). Although there were no lifeguards at the rivers and lakes where the families gather, no safety issues were mentioned despite the fact that use of these resources does present some risk (Findholt et al., 2010). This finding (unique to this study) indicated that the natural environment was extensively used and appreciated as a resource for PA. This is an important health promoting characteristic because outdoor play has been consistently linked to PA among children (Findholt et al., 2010). Several students emphasized that there were few sidewalks or bike lanes in their communities and that the main streets had much traffic, including oversized trucks (Findholt et al., 2010). Many of the main streets, were in fact, highways, and the students observed that, even when sidewalks or bike lanes were present, it felt unsafe to walk or bicycle on these roads (Findholt et al., 2010). Finally, long distances between home and school or play areas were identified as a factor that hindered children's physical activity (Findholt et al., 2010). Another unique asset that was identified was the popularity of youth sports. In rural communities, youth sports may be particularly popular because there are few other social activities available to the residents (Findholt et al., 2010). Also, children might be encouraged to participate in sports because, without a high level of participation, there would not be enough players to form a team (Findholt et al., 2010). Although a strong focus on sports does promote PA, it is not ideal since not all children enjoy or are good at traditional sports (Findholt et al., 2010). Female students, in particular, have reported discomfort in trying out for or participating

in sports due to perceived incompetence, perceptions of peer judgments, and the seriousness of participation (Findholt et al., 2010). Also, as one student noted, not all sports require a high level of PA, such as baseball, where children spend much time standing around (Findholt et al., 2010).

The limited availability of facilities and resources mentioned by Findholt et al. (2010) was also reported by others. In a study by Edwards et al. (2011), 437 middle school athletic directors in North Carolina were surveyed concerning opportunities for extracurricular PA in middle schools. Edwards et al. (2011) stated that rural schools had significantly fewer facilities for PA than schools in other communities. Six schools had no indoor facilities, 144 schools reported having only one indoor facility, and 98 schools had two indoor facilities (Edwards et al., 2011). Seventy-seven schools reported having three or more indoor facilities (Edwards et al., 2011). Nearly all schools had at least one gymnasium and more than 10% of the schools had two or more gymnasiums (Edwards et al., 2011). Nearly three-fourths of the schools in this sample had four or more outdoor facilities (Edwards et al., 2011). A majority of schools reported having a softball field, baseball field, a general use field, and a combined football/soccer field on school property (Edwards et al., 2011). Creating or enhancing places and programs for PA can increase the number of people who participate in Leisure Time Physical Activity (Edwards et al., 2011). Since 2000, the CDC and the U.S. Department of Education issued guidelines and strategies to promote physical activity in schools. In relation to physical activity in school settings, and based on the policy goals stated by these groups, several characteristics of supportive environments have been identified. Among these recommendations, schools should offer a broad variety of programs that appeal to a wide range of adolescents, have an adequate number and variety of facilities, and promote school policies that reduce barriers to participation (Edwards et al., 2011). Moore et al. (2010) reported that youth are limited in deciding their daily routines and even more

restricted in gaining access to PA facilities without transportation and guidance from a parent, school, or youth organization (e.g., YMCA, Boys and Girls Club, community recreation center). Therefore, community environments and facilities may be even more important determinants of PA among youth, specifically rural youth, than adults (Moore et al., 2010).

Swanson et al. (2012) used focus groups in rural Kentucky to research youth perspectives toward PA. Four to six participants who were ages 8-17 were in each of the 11 focus groups (n=63). Participants cited structural barriers specific to their communities including insufficient facilities and isolation (Swanson et al., 2012). One boy from the 15-17 year old group explained, "we have nothing around here that will actually get people excited about stuff" (Swanson et al., 2012, p. 45). To overcome the frequently mentioned barriers of inadequate facilities and resources will take creative planning. As Swanson et al. (2012) suggested, school buildings, housing gymnasiums, tracks, and playing fields, are among the only locations for PA in rural areas. Some communities are starting to implement joint-use agreements, which strive to resolve the liability and other concerns of school authorities and allow community-wide use of school facilities. However, the growing interest in this approach has yet to translate into widespread adoption of such arrangements.

In a study by Casper et al. (2011), middle school students were surveyed regarding their perceived constraints to sport participation. One of the highest constraints to sport participation was the quality or crowdedness of available facilities (Casper et al., 2011). PA, especially for children and adolescents, has been positively associated with accessible and convenient facilities (Casper et al., 2011). Therefore, the accessibility, construction, and maintenance of facilities served as important factors to reducing constraints (Casper et al., 2011).

Expert informants in the Edwards et al. (2014) study expressed concern over the lack of structured PA programs to utilize existing facilities and the focus on limiting facilities to specific sports. As one informant stated, "There doesn't seem to be as much use of a baseball field other than for baseball. I mean, a recreation center or even a soccer field can be used for a lot of other activities." (Edwards et al., 2014, p. 383).

Moore et al. (2010), researched barriers to PA for rural youth in eastern North Carolina. Parents and middle school students from rural areas participated in focus groups (41 parents and 50 students, with 5-10 individuals in each focus group). Participants mentioned that a barrier to PA was being far away from potential PA programs or facilities (Moore et al, 2010). As one rural participant said "we are all alone at our house. We're outside. There are no parks or basketball courts…because it's like 8 miles away…they want to play but…" (Moore et al, 2010). However, the parents reported that their children made the best of the resource-poor environment: "There aren't any basketball courts where they can go play…just cornfields. Sometimes they go run around and go hide in the cornfields" (Moore et al., 2010). The greatest demand was for indoor facilities. Strong consensus was evident among all groups in the desire for low-cost swimming pools (Moore et al., 2010). Parents also sought locations for safe supervised family time and identified building reclamation as a potential avenue for multiactivity sites (Moore et al., 2010).

The Groft et al. (2005) research, as mentioned earlier, surveyed students regarding their barriers to PA. It was found that 10.5% of students did not have proper facilities or equipment (Groft et al., 2005).

Time

Six studies investigated time as a barrier to exercise and PA (Belton et al., 2014; Casper et al., 2011; Groft et al., 2005; Hardy et al., 2010; Shirinde et al., 2012; Swanson et al., 2012). As most of these studies found, time is a major barrier to youth exercise and PA. Research by Groft et al. (2005) showed that health problems encountered in adulthood often have their roots in health behaviors initiated during adolescence. In their study, adolescents, 9th-12th grade, were able to identify clearly the status of various factors which contributed to their health, their needs, and the obstacles they faced in achieving health (Groft et al., 2005). The adolescents were also able to engage in a community process to take action on improving their health. Engagement of participants in this kind of participatory action process not only demonstrates respect for the knowledge and abilities of community members, but is essential in order to ensure appropriateness of assessment and intervention activities, and to facilitate their 'buy- in' (Groft et al., 2005). In addition, attention to the unique culture of the rural community context is vital and to demonstrate understanding of and respect for the reality in which the adolescents live and function. For example, awareness of the specific needs of students and their families will facilitate implementation of relevant initiatives, thus enhancing the possibility of achieving positive outcomes (Groft et al., 2005). In this study, it was found that 29% of students surveyed wanted more PA during school time. Students were asked about their barriers to improving their health and PA. The main perceived barriers were identified as "feel it's not important," "not enough time," and "do not feel motivated" (Groft et al., 2005). This study provides an example of how rural adolescents and their families and community members are willing participants in the identification of barriers to PA. It is appropriate to solicit the support of parents and the broader community in doing so. In this way, the chances of succeeding are higher and the sense

of accomplishment greater. Therefore, the kind of community development approach demonstrated in this research is highly recommended as a way to address rural adolescent health issues (Groft et al., 2005).

The lack of time barrier was mentioned in other literature as well (Belton et al., 2014; Casper et al., 2011). Research by Casper et al. 2011 found the time constraint to be the most salient barrier to sport participation. Nonsport participants in this study reported the highest time constraints suggesting that the decision to participate in sport may reflect an inability to negotiate those time constraints (Casper et al., 2011).

Belton et al. (2014) also found that insufficient time to participate was identified as the main barrier to PA. As it relates to time, one student indicated he has "no time do extra sport apart from football training . . . travel home . . . eat dinner . . . do homework" (Belton et al., 2014). The barrier of time for exercise and PA is a reality.

Several key themes emerged about youth perspectives toward PA, in research by Swanson et al. (2012). Some of these were consistent with other research findings and others represented new insights. Youth highlighted barriers typically described by adults and those from more urban environments, including lack of time. A girl from the 15-17 year old group noted, "I've got better things to do, like Internet and stuff. Well, that's not better things to do, but it's a thing you want to do more" (Swanson et al., 2012, p. 45).

Shirinde et al. (2012) investigated the perceptions of barriers of participating in PA in rural South Africa. Students ages 15-16 years old (n=344) completed a 31-item questionnaire indicating the frequency of barriers experienced and their perceived health benefits of participating in PA (Shirinde et al., 2012). The results indicated that "lack of time" was the most dominant barrier for participating in PA (Shirinde et al., 2012).

Resources/Opportunity

Lack of resources/opportunity was a barrier investigated by five studies (Edwards et al., 2014; Findholt et al., 2010; Hardy et al., 2010; Kruger et al., 2012; Walia & Leipert, 2012,). Researchers found various reasons for this barrier to PA. As found in the research by Walia and Leipert (2012), many participants found it beneficial to be exposed to a number of activities at a young age so that they could choose the activity they enjoyed and continue to engage in that activity as they grew older. However, early exposure was difficult for some participants because of the lack of athletic opportunities in the community, and the inability of a rural school to expose students to a wide range of activities (Walia & Leipert, 2012). It was also mentioned that there was a lack of PA opportunities close to home. All participants in this study resided in rural communities outside the larger community where the school was located. The recreational facility, containing outdoor tennis courts, soccer fields, baseball diamonds, and a hockey arena, was located in the larger community (Walia & Leipert, 2012).

Findholt et al. (2010) found that opportunities to be physically active were provided. However, during the group discussions, several students commented that only traditional sports such as football or soccer were offered and that there were no structured opportunities for youth to participate in non-traditional activities (Findholt et al., 2010). Thus, it was difficult for those who lacked an interest in sports to be active (Findholt et al., 2010). One student said,

> I know that, if I'm going to go out and do something, it's on my own time. For example, going out and snowboarding on the weekend . . . I can do that, but it's not supported by the school. It takes a lot of motivation to go out on your own. (Findholt et al., 2010, p. 14)

Research by Edwards et al. (2014) found that informants perceived varying degrees of opportunities for youth PA within their communities. While there were places within the community for youth to be active, opportunities were described as primarily limited to structured

and organized programs (Edwards et al., 2014). Several practitioners suggested the bulk of opportunities were concentrated within structured team sports (e.g., baseball and tennis) provided by specific organizations (e.g., county parks and recreation department and schools) (Edwards et al., 2014). Opportunities for noncompetitive PA were limited to smaller programs in 4-H and at local churches (Edwards et al., 2014). These informants lamented the lack of PA opportunities for youth (Edwards et al., 2014).

Hardy et al. (2010) investigated the resource/opportunity barrier by surveying parents (n=402) of 5-17 year-olds in New South Wales. Hardy et al. found that in the case of rural families, availability to a wider range of organized sports was a perceived barrier. Providing children with a range of different types of PA and sports encourages participation (Hardy et al., 2010).

Kruger et al. (2012) found that participants reported that without a large population, PA programs often are sporadically attended and cannot be self-supporting. This situation causes program directors to forego organized activities, thus decreasing individuals' opportunities to engage in PA (Krueger et al., 2012). A manager at a district health department indicated that she had to cancel the aerobics class there because of poor attendance (Krueger et al., 2012). She described how costly it was to identify, train, and retain a regular instructor; to advertise for the classes; and to run the program (secure a location, find music, purchase equipment, etc.) (Krueger et al., 2012). With very few people attending, the health educator felt that she could not justify the expense of the aerobics program and will not offer another program in the foreseeable future (Krueger et al., 2012).

Cost

Cost was a barrier to PA which was evaluated in five studies (Groft et al., 2005; Hardy et al., 2010; Moore et al., 2010; Swanson et al., 2012; Yousefian et al., 2009). Costs associated with youth PA range from entry fees to gas for parent transportation to youth athletic events. As the research by Swanson et al. (2012) found, many participants perceived the expenses associated with PA to be beyond their household's capacities. A girl from the 11-14 year-old group acknowledged that although her family could afford to purchase athletic equipment, others were not so fortunate (Swanson et al., 2012). "A lot of kids can't do it because of the money. Like my costume for ballet was $60. And if you want to do ballet, you have to buy leotards and stuff like that" (Swanson et al., 2012, p. 45). When exploring possible programs to enhance PA, two girls from the 15-17-year-old group suggested, "You'd have to do it (programming) for free because nobody want to pay for nothing around here," and "Yeah, we could not pay no fees because we're just broke" (Swanson et al., 2012, p. 45).

The cost barrier was investigated by Moore et al. (2010) and was mentioned in all focus groups as a barrier to PA. The expense associated with using various PA venues was mentioned in parent groups and frequently associated with venues such as kids' recreational sports programs, bowling alley, skating rink, commercial gyms, and local recreation club (Moore et al., 2010). The expense of gas to get to venues was mentioned by all parent groups, also (Moore et al., 2010). Even some of the student groups mentioned how the gas expense was becoming unaffordable for their parents (Moore et al., 2010). "We wanted to go to the skating rink in Raleigh with Ms. XXX, but gas prices and we've never could. (Rural Student)" (Moore et al., 2010, p.10). The barriers of rural residence combined with high gas cost were stressed most often by rural Hispanic parents, who frequently discussed the remote nature of their residence in

the rural county as a barrier to youth's PA (Moore et al., 2010). Participants mentioned being far away from potential PA programs or facilities, and given high gas prices, they were not able to drive their children to these opportunities (Moore et al., 2010). One participant said

> . . . they want to play . . . and another thing, gas just keeps going up and we can't take our kids to the park either. It's not so easy to just drive our cars and take our kids to a park (Hispanic Rural Parent). (Moore et al., 2010, p.10)

In the research by Groft et al. (2005) 19.2% of students said they didn't have enough money to participate in PA. This is a barrier to making a positive change it their health.

Yousefian et al. (2009) reported that many of the impediments to active living identified by their interviews and focus groups can be categorized as social barriers. Social barriers such as SES (including costs associated with PA) remain crucial pieces of the puzzle of how to engage more rural youth in PA (Yousefian et al., 2009).

Hardy et al. (2010) found that footwear and uniforms were the main items contributing to children's sports-related expenses. Other frequent expenditures reported included entry fees to sports centers and swimming pools and club membership fees, followed by coaching fees, and purchasing sports equipment (Hardy et al., 2010). Overall, parents of children living in households outside of the Sydney area were 40-50% less likely to have spent money on their children's sports in the 3 months prior to the survey, and parents of children living in lower income families were less likely to have spent money on footwear, uniforms, and coaching lessons (Hardy et al., 2010). Overall, one-third of the parents in this study reported that they were "a lot more likely" to allow their child to participate if the cost of participation was lower and this was perceived as a significant barrier for families with lower incomes who have daughters (Hardy et al., 2010).

School Policies

School policies were discovered to be a barrier to youth PA in four studies (Belton et al., 2014; Groft et al., 2005; Moore et al., 2010; Yousefian et al., 2009). Most of these studies cited physical education class as the primary form of PA for rural youth. School policies were a barrier to youth PA in all student groups investigated by Moore et al. (2010). School schedules were structured so that physical education (PE) was half the semester and health was the other half, but students desired PE classes every day (Moore et al., 2010). Students also reported that the age and school grade requirements for school sports participation was a barrier (Moore et al., 2010). As one student mentioned "They don't allow sixth graders to play" and another student said "They say, for some reason, if you're 15 like August, you can't play . . . I'll be 15 in July, so I can't play any sports" (Moore et al., 2010, p. 12). Students and parents both reported zoning policies that districted students to attend a school not within walking or biking distance when the student actually lived within walking distance to another school (Moore et al., 2010). Students often mentioned teachers making excuses to skip recess: "Sometimes like when—when we don't finish our work, our teachers just don't take us outside" (Moore et al., 2010, p. 12).

Research by Belton et al. (2014) found school policies to be a barrier to PA as well. There was a competitive nature to school PE classes, and a perceived lack of choice in PE class (Belton et al., 2014). One participant stated, "[T]he guys played and they just got really competitive and it was not fair" (Belton et al., 2014). Another student voiced concerns about the choice in PE class: "It's very like, only the team can play, you can't really choose how you want to do it, and you don't get to choose what you do" (Belton et al., 2014, p. 12).

Groft et al. (2005) found that 8% of students surveyed did not receive encouragement from school to participate in PA. Moreover, 29.9% wanted more PE time during school (Groft et al., 2005).

School policies were mentioned in research by Yousefian et al. (2009). Students in this study reported that they got most of their PA at school through gym class, recess, school sports, or other school-sponsored activities. Many students identified organized school activities as their only option for engaging in PA (Yousefian et al., 2009). Finding ways to increase opportunities for PA at schools should be a top priority for school administrators. Policy decisions schools make regarding PE classes and recess time have an effect on the amount of PA that students get during school (Yousefian et al., 2009). Given that school is the primary "occupation" of youth, changes in school policies that help to increase their PA are highly desirable, especially in rural areas where access to other forms of activity may be out of reach for many youth.

Crime/Safety/Danger

Crime/safety/danger was investigated as a barrier to youth PA in three studies (Findholt et al., 2010; Moore et al., 2010; Yousefian et al., 2009). This barrier was perceived in a unique fashion by rural youth as compared to urban youth. Moore et al. (2010), found that rural youth reported the unique barrier of hearing gunshots, people hunting in their area.

Findholt et al. (2010) found that some parks were perceived as unsafe places to play due to the people who might be loitering there. Several students also reported that there were few sidewalks or bike lanes and it felt unsafe to walk or bicycle on the main roads (Findholt et al., 2010). Addressing street safety is essential, particularly on the main roads but also on side streets since the streets serve as primary play areas for children (Findholt et al., 2010).

Yousefian et al. (2009) found that the perception of crime may manifest itself differently in rural communities. The most commonly cited concern was "stranger danger," and children in each of the communities studied indicated that they or their parents saw certain individuals as a threat to their safety (Yousefian et al., 2009). Several children expressed fear of sex offenders (perhaps related to recent policies in many Maine towns to identify sex offenders to their communities), but others reported broader concerns about being "stolen" by strangers or estranged family members (Yousefian et al., 2009). Many participants mentioned groups of kids that walk around town as "gangs" and engage in bad behavior in places that would otherwise be used for recreating such as the skatepark, playing fields, or at the basketball courts (Yousefian et al., 2009). Students reported that they avoided these areas because of criminal behavior and threatening individuals (Yousefian et al., 2009). It is clear that these individuals created significant fear in these small communities and influenced levels of PA among youth (Yousefian et al., 2009).

Technology/Screen Time

Technology/screen time as a barrier to youth PA was investigated in three studies (Moore et al., 2010; Swanson et al., 2012; Walia & Leipert, 2012). Youth spend many hours with this pastime, and while parents are not necessarily supportive, it was reported that they realize it is a part of daily life for this generation. Swanson et al. (2012) found that technology/screen time interfered with youth PA. A girl from the 15-17 year-old group noted, "I've got better things to do, like Internet and stuff. Well, that's not better things to do, but it's a thing you want to do more" (Swanson et al., 2012, p. 45). Another participant acknowledged that his first priority when he is not in school is to play "video games, TV, computer, all that stuff. That's what I usually, do, sitting around the house all the time" (Swanson et al., 2012).

Walia and Leipert (2012) found that television was an important barrier to PA with one participant claiming he watched "probably like 3 hours or 4 hours" of television on a daily basis. In many cases the convenience of television at home superseded the motivation to be active (Walia & Leipert, 2012). For example, one participant's access to video games limited her PA: "Instead of being more active today, I played PS3" (Walia & Leipert, 2012, p. 3). Watching television and playing video games was often the default choice for many participants since there were limited opportunities for them to be PA with others once they reached their home (Walia & Leipert, 2012). Walia and Leipert (2012) also found that using the computer had become a daily routine for many participants in their study. One participant mentioned "many kids and teenagers depend on constant entertainment" (Walia & Leipert, 2012, p. 3). Participants indicated they used the computer for email, on-line gaming, watching videos online on YouTube, downloading and listening to music, and completing homework (Walia & Leipert, 2012). In particular, many individuals spent a considerable amount of time "social networking" (Walia & Leipert, 2012). As with television, the computer was often the easiest and most entertaining activity rural youth in this study could engage in, due to limited facilities opportunities for PA close to home (Walia & Leipert, 2012).

Television was mentioned as a barrier by both parents and students in research by Moore et al. (2010). Parents expressed the preference for children to play outside, especially compared with video gaming and television watching (Moore et al., 2010). One parent said "I think now the way kids are raised, or the way the media is, it's pulling them toward television and more video games, and less is for activities than when I was young" (Moore et al., 2010, p. 11).

Feeling Unskilled/Unsure of Self

Feeling unskilled/unsure of self was a barrier evaluated in three studies as well (Belton et al., 2014; Groft et al., 2005; Shirinde et al., 2012). As these studies indicated, when students feel unsure of their PA ability, they tend to not participate. Belton et al. (2014) discussed research on advice outlined in the Children's Sports Participation and Physical Activity study. This study found that "lack of competence" was the most common reason cited for non-participation in sport and PA by children and youth.

Groft et al. (2005) reported that 17.5% of participants feel unsure of themselves and 20.0% don't know how to start.

Shirinde et al. (2012) found lack of skills to be the most prevalent perceived barrier affecting participation in PA. When analyses were performed for girls and boys separately, the girls had high mean values for lack of skills (Shirinde et al., 2012).

Psychological Factors

Psychological factors such as poor motivation or anticipation of pain or injury are barriers to youth PA as investigated by two studies (Groft et al., 2005; Swanson et al., 2012). Swanson et al. (2012) found these psychological barriers to be barriers to youth PA. For example, a boy from the 11-14 year-old age group noted, "I don't like that sometimes if you work too hard, you get exhausted, you can't breathe, you get a lot of cramps, you puke" (Swanson et al., 2012, p. 45). Another boy from the same group noted, "you ache and pain all over" (Swanson et al., 2012, p.45).

Moreover, Groft et al. (2005) reported that 28.0% of respondents did not feel motivated to participate in PA. It was reported by 21.7% that they did not have enough energy, 11.2% felt too depressed, and 11.2% did not feel like it (Groft et al., 2005).

Inadequate Knowledge

Inadequate knowledge was a barrier to youth PA as investigated in two studies (Casper et al., 2011; Swanson et al., 2012). From these studies, it was determined that rural youth need guidance in finding opportunities to participate in PA and in developing athletic abilities. Swanson et al. reported that inadequate knowledge was a barrier to youth PA (Swanson et al., 2012). Participants mentioned a lack of knowledge and no one to instruct them on programs (Swanson et al., 2012). One boy from the 15-17 year-old group noted, "…for those of us that don't know how to do anything, there's nobody to reach us how to do it." (Swanson et al., 2012, p. 45).

Lack of knowledge was a constraint as reported by Casper et al. (2011). Sports opportunities were widely promoted and available to middle school children (in school, after school, and within the community) (Casper et al., 2011). Lack of knowledge may have been influenced by the nature of the community in which the participating schools were located (Casper et al., 2011). This suggested that adolescents may not have knowledge of the opportunities to participate in PA that are available to them (Casper et al., 2011).

Work/Chores

Work/chores has been found by two studies to be barriers to adolescent PA (Hortz et al., 2009; Shirinde et al., 2012). These studies reported details of students who are in the workforce, thus reducing time for PA. Hortz et al. (2009) reported that students in Appalachia are expected to begin assuming work roles during high school. In this study, 19% of 9th graders and 51% of 12th graders were working (Hortz et al., 2009). Some students also mentioned significant chores around the home which may reduce the discretionary time adolescents have for PA (Hortz et al., 2009).

Shirinde et al. (2012) reported that for boys time spent for work/chores was a prominent barrier to participating in PA.

No Family Support

Another barrier to adolescent PA investigated in two studies is family support (Groft et al., 2005, Kruger et al., 2012). This is an important factor to consider when planning PA programs for adolescents.

Groft et al. (2005) reported that 7.7% of participants did not have parents who were supportive of their PA interests and 10.1% did not receive encouragement from family.

Investigations by Krueger et al. (2012) found family time as a barrier to PA. Many participants noted that "having family time is a big aspect to not leave out" of PA programs in rural communities (Krueger et al., 2012). Some participants advocated for having people of all ages work out together, whereas others felt that hosting family events, but separating people by age, would be more beneficial (Krueger et al., 2012). One participant felt PA programs need to "keep everyone interested and give them all something to do" (Krueger et al., 2012, p.148). Participants suggested that those who participate in PA programs could take the lessons they learned home to other family members, thereby extending limited community resources (Krueger et al., 2012). A registered nurse who works at a school felt that

> you have to start with the parents and then have them take it home for their family. Parents have to be the ones that want to make a change for the better because without them pushing their children, they will not want to do anything other than sit on the couch and play video games. (Krueger et al., 2012, p. 148)

Homework

The homework barrier was investigated by two studies (Belton et al., 2014; Walia & Leipert, 2012). Students from both studies mentioned homework taking a considerable amount of time, which left no free time for PA. As noted by Walia and Leipert (2012) homework was a

barrier to PA faced by all participants. One participant explained how numerous hours of homework can lead to limited PA, "When teachers pile homework on you, you can be sitting in one spot for hours" (Walia & Leipert, 2012, p. 3). Time spent on homework increased significantly for older students, especially those pursuing a university or college education to ensure they received admission at the school of their choice (Walia & Leipert, 2012). Another participant said homework was her primary focus: "Pretty much when I'm not at school I'm doing school work" (Walia & Leipert, 2012, p. 3). For these students, the high demands of homework precluded their participation in PA (Walia & Leipert, 2012).

Belton et al. (2014) found that homework was a barrier to PA. As one study participant indicated,

> we don't really have any time to do extra sport apart from like football training cos you get back from school at like quarter to 5, you get the bus from her to [place name] so you just kind of get time to eat your dinner, get changed for training, go training, and go home and do your homework. (Belton et al., 2014, p. 12)

Other Barriers

Other barriers were each evaluated only once. These included the barrier of weather (Walia & Leipert, 2012), culturally appropriate activities (Moore et al., 2010), feeling it is not important (Groft et al., 2005), not knowing how to start (Groft et al., 2005), stress (Groft et al., 2005), having a previous negative PA experience (Krueger et al., 2005), and fatigue from earlier in the day (Krueger et al., 2005).

Weather was mentioned as a barrier to PA in the research by Walia and Leipert (2012). Several participants mentioned that when they cannot be active outside, particularly in the winter and on rainy days, they viewed much more television (Walia & Leipert, 2012). One participant indicated "[w]e watch a lot of television in the winter" (Walia & Leipert, 2012, p. 4).

Participants likely resorted to television because there were limited indoor recreational facilities close to their home (Walia & Leipert, 2012).

Having culturally appropriate activities is a barrier found in the research by Moore et al. (2010). Participants in one group noted that there were venues for ice-skating and skate boarding in the area, but these were not activities that "ethnic kids" would enjoy (Moore et al.. 2010).

Groft et al. (2005) reported that one of the main perceived barriers was "feel it's not important" (44.5%), another barrier was "don't know how to start," which was reported by 20.0% of participants, and "too much stress" reported by 15.0% of participants.

Previous negative PA experience and fatigue from earlier in the day were mentioned as barriers to PA in a study by Kruger et al. (2012). A previous negative PA experience, fatigue from time spent at work, and time taken by other commitments reduced desire and ability to engage in PA (Krueger et al., 2012).

Covariates

Covariates that have been found by other researchers include age, race, gender, and SES. Not all investigations analyzed results by all these covariates. One or more of these was reported as being an identifier of the research participants; however, not all were studied by more than one researcher (Casper et al., 2011). The literature was examined in relation to four covariates (i.e., age, gender, race/ethnicity, and SES)—which may influence perceived barriers to PA. The age reported in the literature revealed study participants included children, adolescents, and adults; of Caucasian, African-American, Latino, and Other ethnicities; both genders; and varying SES (Low SES of participants = 5, some low & not low = 3, didn't report SES = 12). Only one study analyzed results by age, gender, race, and SES (Casper et al., 2011). Casper et al. (2011) examined grade by grade results and prior sports participation. Only one difference was found in

a grade-by-grade comparison of perceived constraints (Casper et al., 2011). Seventh grade students reported significantly lower facility constraints than sixth grade and eighth grade students (Casper et al., 2011). Girls rated accessibility, knowledge, partners, and psychological constraints higher than boys but there were no differences in gender regarding facilities, interest, and time constraints (Casper et al., 2011). In this same study, Latinos generally had higher perceived constraints than Caucasian or African American participants (Casper et al., 2011). Casper et al. (2011) also found that respondents from more affluent families (no free or reduced lunch) generally reported lower constraints than respondents from low-income households.

Summary

It is known that low rates of physical activity in rural adolescents make this population particularly at risk for long term health consequences. Health problems encountered in adulthood often have their roots in health behaviors initiated during adolescence (Groft et al., 2005).

Rural residents are at greater risk than urban residents for obesity due to higher rates of physical inactivity (Yousefian et al., 2009). One of the most common barriers to PA, which was investigated by eight studies, was the lack of transportation. This could be a contributing factor to the higher rates of obesity in rural areas. The lack of transportation to and from community and school-based programs and facilities for PA was mentioned by students as a large barrier to PA (Yousefian et al., 2009).

Limited availability of recreational facilities was identified as a primary barrier to rural youth PA in seven studies (Casper et al., 2011; Edwards et al., 2011, 2014; Findholt et al., 2010; Groft et al., 2005; Moore et al., 2010; Swanson et al., 2012). This barrier manifested as follows:

inaccessible, inadequate, not maintained, not open after 5:00 p.m., accessible to specific groups, no shelter, unsafe, no facilities available, isolated, overcrowded, and inconvenient.

The barriers of time (Belton et al., 2014; Casper et al., 2011; Groft et al., 2005; Hardy et al., 2010; Shirinde et al., 2012; Swanson et al., 2012), resources/opportunity (Edwards et al., 2014; Findholt et al., 2010; Hardy et al., 2010; Kruger et al., 2012; Walia & Leipert, 2012), and cost (Groft et al., 2005; Hardy et al., 2010; Moore et al., 2010; Swanson et al., 2012; Yousefian et al., 2009) were investigated in many studies. It seems as though students would like more time to participate, and a lack of resources/opportunities and the cost of PA programs are barriers to PA participation.

Less often studied, but still frequently investigated were the barriers of school policies (Belton et al., 2014; Groft et al., 2005; Moore et al., 2010; Yousefian et al., 2009), crime/safety/danger (Findholt et al., 2010; Moore et al., 2010; Yousefian et al., 2009), technology/screen time (Moore et al., 2010; Swanson et al., 2012; Walia & Leipert, 2012), and feeling unskilled/unsure of self (Belton et al., 2014; Groft et al., 2005; Shirinde et al., 2012). For instance, it was found in the Yousefin et al. (2009) study that students got most of their PA at school through gym class and that many students did not feel safe at their local park. Furthermore, many rural adolescents do not feel knowledgeable regarding PA/sports and may opt to have screen time instead of participating in PA.

Psychological factors (Groft et al., 2005; Swanson et al., 2012), work/chores (Hortz et al., 2009; Shirinde et al., 2012), no family support (Groft et al., 2005; Kruger et al., 2012) and homework (Belton et al., 2014; Walia & Leipert, 2012) were less often studied barriers to youth PA, but still important. Many students do not participate in PA due to psychological factors such as the anticipation of pain or injury. Some do not engage in PA because they must take part in

significant chores at home or assume roles in the workforce. Other students do not have family support or have too much homework which keeps them from participating in PA. Other barriers were evaluated only once, including weather (Walia & Leipert, 2012), culturally appropriate activities (Moore et al., 2010), feeling it is not important (Groft et al., 2005), not knowing how to start (Groft et al., 2005), stress (Groft et al., 2005), having a previous negative PA experience (Kruger et al., 2012), and fatigue from earlier in the day (Kruger et al., 2012). These are all important reasons for lack of participation and must be addressed by school policy makers, community members, and PA program coordinators.

Researchers have not uncovered all key variables/restraints related to PA participation and additional focus on geographic setting in PA research is needed since rural and urban residents likely perceive and relate to PA environments differently (Belton et al., 2014; Casper et al., 2011).

It is unclear how generalizable many of these findings are due to limited sample sizes (n=6 in one study) or regions of study (Kentucky, Georgia, North Carolina, Ohio, Oregon, Maine, a Southeastern U.S. city, the Appalachian region, Canada, Australia, South Africa, and a rural Irish town). Moreover, only two studies surveyed administrators and only two studies surveyed parents, so the impact of these individuals on PA levels in rural youth is unclear. Finally, there is limited research concerning the effects of age, gender, race/ethnicity, and SES on adolescents' perceived barriers to PA.

The present study addressed these issues. Therefore, the purpose of this study was to extend previous findings and further explore the barriers rural West Alabama adolescents face when participating in PA programs.

CHAPTER III

METHODS

Study Design

An anonymous, cross-sectional study design, one-time online survey was used to gather information regarding adolescent barriers to PA. Surveys are ideal for gaining an understanding of local perspectives in a non-threatening environment. Adolescents surveyed were ages 13-18 years old and in the 7th-12th grades in three rural West Alabama counties. These counties included eight middle/high schools. Parents of these adolescents were asked to participate in the survey as well. The teachers and administrators who were surveyed included those who are considered the school Athletic Director, Physical Education teacher, or the coach of one of the sports teams, who may also be a teacher at the school. Otherwise, the survey was completed by the teacher, administrator, or principal at the school who had the most knowledge and experience with exercise and physical activity of the students. All protocols were approved by the University of Alabama Institutional Review Board.

Setting

The study was located in three rural counties in West Central Alabama. Unfortunately, there is no one universally accepted definition of "rural." "Rural" can be a subjective state of mind or an objective quantitative measure. The Alabama Rural Health Association (ARHA) classified areas as being "rural" or "urban" at the county level because most data are reported at the county level (2015). Prior to June 2003, ARHA used the White House's Office of Management and Budget classification of counties as being in or not in Metropolitan Statistical

Areas (MSAs) to identify rural or urban status. The counties in MSAs were classified as "urban" and those not in MSAs were classified as "rural." A re-determination of counties included in MSAs was announced by the Office of Management and Budget in June 2003 and several Alabama counties which then were regarded as "rural" were included in MSAs in the re-determination. This made the development of a more acceptable method for classifying counties as "rural" or "urban" necessary. ARHA classified the three counties included in this study as heavily rural counties.

West Alabama can be characterized by having mostly flat and fertile land with many lakes and rivers. The average annual temperature is 63.1°F (17.27° C) with 55.12" (140.00 cm) of annual precipitation (Southeast Regional Climate Center, 2015a, 2015b). Information about these counties can be found below:

Table 3: *County Information*

County	Per Capita Income 2009-2013	% People in Poverty	Band Area in Square Miles 2010 (km)	Median Household Income 2013	High School Grad or higher	% African American
US avg.	$28,155	14.5%		$53,046	86.0%	13.2%
Hale	$18,812	27.9%	643.94 (1036.32)	$30,051	77.4%	57.9%
Fayette	$18,494	17.6%	627.66 (1010.12)	$33,838	74.9%	11.8%
Pickens	$17,153	23.4%	881.41 (1418.49)	$28,741	79.7%	40.9%

Hale County was created by the Alabama State Legislature on January 30, 1867. Greensboro was the first county seat and remains so today (Owen, 1921). There is one hospital in the county, which opened its doors in 1963, a 39-bed facility located in Greensboro (Hale County Hospital, 2012). In the 1960s soybeans and grain-fed catfish were the predominant cash crops. The economy was based largely in agriculture until the mid-20th century, but the many acres of the forest along the Black Warrior River were a draw for the timber industry as well. Greensboro is known as Alabama's Catfish Capital for its many catfish ponds. Hale County did

not fully take part in the industrialization boom of the mid-20th century, remaining largely rural and agricultural, accounting for its high rates of poverty today. Moundville Archaeological Park, located in North Hale County, is a 320-acre part that features 26 large prehistoric platform mounds. The park includes a reconstructed Indian village, a museum, nature trails, campgrounds, a temple mound, and picnic sites on the banks of the Black Warrior River (Siebenthaler, 2007a).

Fayette County was created by the Alabama State Legislature on December 20, 1824. The county seat is in the city of Fayette (Morton, 2007). There is one hospital in the county, a 61-bed facility which opened in 1936 (DCH Health System, 2016). Latex gloves, truckbeds, hardwood flooring, and manufactured homes and lumber are major industries in the county. Alabama Power came to Fayette in 1925 and maintains a regional crew headquarters and warehouse on the north end of the city. An oil company, hatchery, and syrup company have made several significant contributions to the Fayette economy (Welcome to Fayette, 2016).

Pickens County was created by the Alabama State Legislature on December 20, 1820. The first county seat was in Pickensville, but moved to its present location, Carrollton, in 1830 (Owen, 2007). There is one hospital in the county, a 56-bed facility located in Carrollton (Pickens County Medical Center, 2016). Poultry and swine are important agricultural activities for the county. Forestry became an important industry for the county in the late 19th century and remains so today. Lumber mills continue to provide steady employment opportunities for the county (Siebenthaler, 2007b).

Participant Recruitment

Participants were recruited through local middle and high school systems. Inclusion criteria included being 13-18 years old and enrolled in 7th-12th grade, the parent/guardian of a 13-18

year-old in 7th-12th grade in one of the three school systems, or an administrator/teacher in one of the three school systems, English speaking, and being willing and able to participate in an online survey. Participants were not required to use personal computers or have internet access in the home. Certain school computers were made accessible to participants. An information letter was distributed to all students asking them to participate and directing them to the survey link and also to school computers with the survey.

Based on 7th-12th grade enrollment information provided by the school systems, the potential pool of student participants was 3,618. Each student had at least one parent/guardian, therefore the potential pool of parent participants was 7,236. Each school has at least one Physical Education teacher and one principal, therefore the potential pool of administrator participants was 16. However, some schools had a teacher who coached a sports team for the school but was not the Physical Education teacher. Therefore, the exact number of administrators/teachers expected to participate was unknown. Three versions of the participation information/letter were created; one for students, one for parents, and one for administrators/teachers. This information/letter also served as the consent/assent and was sent via students to parents. Students were given the information letter at school and asked to take it home to their parents. Schools distributed the information letter to administrators. The informational letters can be found in Appendix A. The students who completed the survey remain anonymous. The parents who completed the survey remain anonymous. The administrators/teachers who complete the survey remain anonymous. The researcher has kept all research records private. Information was compiled from all participants in the study and when published, data are reported in aggregate form. As a result, no individual participants are identifiable from written materials. No one outside the research team had access to the raw data

of subject information. All data were kept under lock and key by the investigators at The University of Alabama. Electronic records were password secured.

Survey

An online survey was developed using the Qualtrics Research Suite software. Qualtrics is a web-based tool for creating and conducting online surveys utilized in over 1,400 universities across nearly 60 countries. Qualtrics provides a way to send and track participation, displays survey results graphically and statistically, and features an export data feature.

The online survey was accessible through a weblink. Participants typed the link into their browser. The survey took about 10 minutes to complete. The same survey was sent to all three groups—students, parents, and administrators. However, there were two questions at the end of the parent survey regarding SES. These questions were "Does your child receive a free or reduced price lunch?" and "Is anyone in your household covered by Medicaid?" The surveys were worded differently to reflect the audience. For example, students were asked "Rate your enjoyment level of exercise," parents were asked "Rate your child's enjoyment level of exercise," and administrators/teachers were asked "Rate your students' enjoyment level of exercise." The complete surveys can be found in Appendix B. The surveys assessed student exercise and physical activity habits, school sports and physical activities, community opportunities for adolescent exercise and physical activity, specific barriers and limitations to exercise and physical activity, and demographic information. Responses to questions included Likert-type Scale, Rating Scale, Yes/No, and "Check all that apply."

Survey Design

The literature review established a basic survey which was further refined and eventually developed into the current survey. All survey or focus group questions asked in previous

literature supporting this research were compiled. Questions were then deleted based on their relevance to this particular study. Remaining questions were then adopted for this survey. Questions were worded to fit the Likert-type Scale, Rating Scale, Yes/No, and "Check all that apply" format. The survey was then divided in sections which assessed enjoyment level of exercise, student exercise and PA habits, school sports and PA, community opportunities for adolescent exercise and PA, specific barriers and limitations to exercise and PA, and demographic information. The specific research aims supported each question written for this survey.

Data Analysis

Data were analyzed using IBM statistics SPSS 23 software. Descriptive statistics were explored and analysis of variance analyzed on students, parents, and administrators (ANOVA for parents vs. teachers/administrators vs. students, by race, and by SES). *T*-tests were used to analyze differences regarding age of students, sex, and SES. Factorial ANOVA was used when analyzing data for two-way interaction among the five covariates (age, race, sex, SES, and county). Chi square analysis was used to examine yes/no questions and was included in the descriptive statistics. Item-by-item questions are reported.

H_1: No differences in barriers between the 16-18 yr. old age group and the 13-15 yr. old age group.

H_2: No differences in barriers between male and female students

H_3: No differences in barriers between black students vs. white students vs. other races

H_4: No differences in barriers between students of low SES and students of high SES

H_5: No differences in barriers between parents of low SES and parents of high SES

H_6: No differences among students, parents & administrators opinions regarding student barriers to PA

H_7: No differences in barriers among the three counties (Hale, Fayette, Pickens)

H_8: No two-way interactions regarding students barriers to PA among the five covariates (age, race, gender, SES, county)

CHAPTER IV

RESULTS

Results are organized as follows: (a) response rate; (b) descriptive data on students, parents, administrators; (c) a description of the formation of several scales; (d) a summary of overall results; (e) specific results for each scale; and (f) descriptive results for individual questions not included in the scales.

Response Rate

Based on 7th-12th grade enrollment information provided by the school systems, the potential pool of student participants was 3,618. There were 264 student responses resulting in a response rate of 7%. There were 37 parent responses. The potential pool of parent participants was difficult to ascertain because it was unknown how many parents each student had. If each student had at least one parent/guardian the potential pool of parent participants was 3,618, resulting in a response rate of 1%. If each student had at least two parents/guardians the potential pool of parent participants was 7,236, which would result in a response rate of .5%. There were 13 administrator responses. Each school had at least one Physical Education teacher and one principal, therefore the potential pool of administrator participants was 16. However, some schools had a teacher who coached a sports team for the school but was not the Physical Education teacher. Therefore, the exact number of administrators/teachers that was expected to participate and the response rate were unknown. Due to sample size limitations, no county by county comparisons nor two-way interactions were made regarding student barriers to PA among the five covariates (age, race, gender, SES, county).

Descriptives

Not all participants answered all questions, therefore the sample size varied from question to question. Descriptive data are reported in Table 4.

Table 4: *Descriptive Data of Students, Parents, and Administrators by Demographic Variables With Number (Percent) of Responses*

	Students (n=264)	**Parents (n=37)**	**Administrators (n=13)**
Race			
African-American	67 (26.7)	14 (42.4)	5 (45.5)
White	155 (61.8)	18 (54.5)	4 (36.4)
Other	29 (11.5)	1 (3.0)	2 (18.1)
Gender			
Males	113 (44.1)	6 (18.2)	5 (45.5)
Females	143 (55.9)	27 (81.8)	6 (54.5)
SES			
Low = 133	133 (52.8)	17 (51.5)	
High = 119	119 (47.2)	16 (48.5)	
Age Groups			
13-15 years old	163 (72.1)		
16-18 years old	63 (27.9)		

Scale Score Formation

Based on commonality of questions in the survey, barrier questions were grouped into scales and scores. These scales and scores (and the items comprising the scales) are described below.

1. The Enjoyment Scale included four items (Rate your level of enjoyment of exercise; I enjoy the social aspect of exercise; Rate your level of enjoyment in PA; I enjoy the social aspect of PA). Responses for each individual item ranged from 1=excellent to 5=poor and were totaled

to create the score for this scale such that scores could range from 4-20. Low scores indicated a general enjoyment of PA. High scores indicated a general lack of enjoyment in PA.

2. The School Score included barriers preventing participation in school sports (Please identify reasons that hold you back from participating in school sports). Students could check up to 16 reasons. Scores were categorized as "no barriers," "one barrier," and "two or more barriers."

3. The Personal Feelings Scale included 10 items [I don't get enough PA because . . ., Play too many computer games, watching TV, there are not enough sports offered that I like, homework, work responsibilities, lack of time, lack of parents' time, money (registration fees, uniforms, etc.), transportation, other reasons]. Each item ranged from 1=strongly disagree to 5=strongly agree. Scores for this scale ranged from 10-50. Low scores indicated participants did not feel that these are personal barriers to exercise. High scores indicated participants agreed that these are personal barriers to exercise.

4. The Community Scale included five items [Adolescents do not get enough physical activity due to the following community challenges: Lack of facilities (no parks, no lights), no opportunities (no organized sports), high costs of entry fees, crime/safety/danger, and a lack of culturally appropriate facilities/opportunities]. Each item ranged from 1=strongly disagree to 5=strongly agree. Scores for this scale ranged from 5-25. Low scores indicated respondents did not feel that these are community barriers to physical activity. High scores indicated respondents agreed that these are community barriers to physical activity.

5. The Alone Scale included two items (I enjoy exercising alone; I enjoy being PA alone). Each item ranged from 1=strongly disagree to 5=strongly agree. Scores for this scale ranged from 2-10. Low scores indicated respondents answered that they did not enjoy

participating in exercise and PA alone. High scores indicated respondents answered that they did enjoy the concept of participating in exercise and PA alone.

Reliability coefficients for the scales utilizing Cronbach's Alpha can be found in Table 5 below.

Table 5: *Chronbach's Alpha Reliability Coefficients of Each Scale*

Scale	**Cronbach's Alpha**
Enjoyment	.77
Personal Feelings	.85
Community	.89
Alone	.65

Significant findings for all scales investigated by age, race, gender, and SES are summarized in Table 6 below. This table also includes a comparison of significant findings among students, parents, and administrators concerning each scale.

For the Student Results, regarding the Enjoyment Scale, there was a significant effect regarding gender. Another significant result was found on the School Scale with regards to SES. Concerning the Personal Feelings Scale, there were two significant results, one with gender and the other with SES. For the Parent Results, there were no significant results when comparing race, gender, or SES. For the Administrator Results, there were no significant results when comparing race or gender.

Table 6: *Significant Findings for Each Scale by Demographic Variables and by Type of Participant*

	Students				**Parents**			**Administrators**		**Combined**		
Scale	Age	Race	Gender	SES	Race	Gender	SES	Race	Gender	Student vs.	Parent vs.	Admin
Enjoyment			x								x*	
School				x								
Personal Feelings			x	x								x[a]
Community											x*	
Alone											x*	

*parent different from both
*administrator different from both
x=significant at $p < 0.05$

For the Combined Results, regarding the Enjoyment Scale, parents responded significantly different than both students and administrators. Regarding the Personal Feelings Scale, administrators responded significantly different than both students and parents. Regarding the Community Scale, parents responded significantly different than students. Regarding the Alone Scale, parents responded significantly differently from students and administrators. More detailed results are reported in the following order: (a) Students, (b) Parents, (c) Administrators, and (d) Combined (Students vs. Parents vs. Administrators).

Student Results

Enjoyment Scale

Results regarding Enjoyment Scale for total sample and by demographic variables are shown in Table 7. There were no age, race, or SES differences regarding Enjoyment of exercise and PA. However, there was a gender effect regarding Enjoyment of exercise and PA. Males reported enjoying exercise and PA more than females.

Table 7: *Enjoyment Scale Scores (Mean ± SD) for Total Sample and by Demographic Variables*

Enjoyment	**Mean ± SD**	**P-Value**	**95% CI**	
			LL	**UL**
Total	9.16 ± 3.26		8.74	9.53
Age				
13-15		.378	8.55	9.53
16-18	9.04 ± 3.21		8.64	10.27
	9.45 ± 3.36			
Race		.159		
African-American	8.71 ± 3.25		7.89	9.53
White	9.15 ± 3.25		8.61	9.69
Other	10.14 ± 3.33		8.85	11.43
Gender		.001		
Male	* 8.28 ± 2.97		7.70	8.86
Female	9.84 ± 3.32		9.27	10.42

Table 7 (con't)

Enjoyment	Mean ± SD	P-Value	95% CI LL	UL
SES		.452		
Low	9.34 ± 3.39		8.72	9.85
High	9.01 ± 3.13		8.43	9.60

*$p \leq .05$ Male vs. Females
Scale score ranges from 4-20
Low scores indicate an overall enjoyment of exercise and PA. High scores indicate an overall lack of enjoyment of exercise and PA.

Results regarding individual questions comprising Enjoyment Scale are shown in Table 8.

Table 8: *Scores (Mean ± SD) for Individual Questions Comprising the Enjoyment Scale for the Total Sample*

	Mean	SD	95% CI LL	UL	% ≥ *D/SD
Rate your enjoyment level of exercise	2.48	1.16	2.34	2.62	19.8
I enjoy the social aspect of exercise	2.34	.99	2.22	2.47	11.3
Rate your level of enjoyment in PA	2.16	1.08	2.03	2.29	10.9
I enjoy the social aspect of PA	2.18	1.05	2.06	2.31	10.3

Responses for each item were as follows:
1=Excellent/Strongly Agree
2=Very Good/Agree
3=Good/Neither Agree nor Disagree
*4=Fair/Disagree
*5=Poor/Strongly Disagree

School Scale

Results regarding School Scale for total sample and by demographic variables are shown in Table 9. The School barriers were divided into three groups: no barriers, one barrier, and two or more barriers. There was only one significant finding which involved SES (p = .001). Students with higher SES felt they have less barriers than students with low SES.

Table 9: *School Scale Percentages by Demographic Variables*

	No Barriers	**One Barrier**	**Two or more Barriers**	**P-Value**
Total	51.2%	37.1%	11.7%	
Age				
13-15	51.6 %	35.9%	12.5%	.727
16-18	50.0%	40.3%	9.7%	
Race				
African-American	53.7%	32.8%	13.4%	.384
White	52.3%	37.4%	10.3%	
Other	34.5%	51.7%	13.8%	
Gender				
Male	54.9%	32.7%	12.4%	.437
Female	48.3%	40.6%	11.2%	
SES				
Low	* 40.6%	42.1%	17.3%	.001
High	62.2%	31.9%	5.9%	

*$p \leq .05$ Low vs. High SES

Results regarding the percentage of students reporting individual barriers that comprised the School Scale are shown in Table 10.

Table 10: *Results for the Barriers Comprising the School Scale*

School Scale Individual Questions	**Frequency**
Other reasons	33.7%
Grades	9.5%
Have to work	3.8%
Transportation	3.4%
Didn’t make the team	3.4%
Too much homework	3.0%

Table 10 (con't).

School Scale Individual Questions	Frequency
Too much money to participate	3.0%
My favorite sport not offered	2.7%
Don't know how to start	2.7%
School rules and regulations	1.9%
Parent's won't let me	1.9%
Can only play on one team	1.1%
Pervious negative experience	1.5%
No family support	1.1%
Other commitments	1.1%
Disciplinary issues	0.0%

Personal Feelings Scale

Results regarding Personal Feelings Scale for total sample and by demographic variables are shown in Table 11. There were two significant findings when analyzing Personal Feelings by demographic variables. One significant difference was found between genders ($p = .014$) with females reporting higher scores. This reflects that females have more personal barriers to exercise and PA. Also of significance ($p = .001$) is SES, with low SES students reporting higher scores. This reflects that low SES students have more personal barriers to exercise and PA.

Table 11: *Personal Feelings Scale Scores (Mean ± SD) for Total Sample and by Demographic Variables*

	Mean ± SD	**P-Value**	**95% CI**	
			LL	**UL**
Total	26.27 ± 8.38		25.20	27.35
Age		.075		
13-15	25.67 ± 8.62		24.36	26.97
16-18	27.82 ± 7.57		25.97	29.66
Race		.372		
African-American	27.15 ± 8.74		24.89	29.40
White	25.72 ± 8.45		24.33	27.11
Other	27.64 ± 7.72		24.64	30.63
Gender		.014		
Male	24.74 ± 9.71		22.83	26.65
Female	*27.42 ± 7.05		26.22	28.62
SES		.001		
Low	*28.05 ± 8.00		26.61	29.49
High	24.37 ± 8.39		22.80	25.93

*$p \leq .05$ Male vs. Female, Low vs. High SES
Scale score ranges from 10-50
Low scores indicate students do not feel that they have numerous personal barriers to exercise and PA. High scores indicate students do feel that they have numerous personal barriers to exercise and PA.

Results regarding individual questions comprising Personal Feelings Scale are shown in Table 12.

Table 12: *Results (Mean ± SD) for Individual Questions Comprising the Personal Feelings Scale*

	Mean	**SD**	**95% CI**		**% ≥ * A/SA**
			LL	**UL**	
Work responsibilities	2.91	1.22	2.76	3.06	35.6
Homework	2.89	1.29	2.73	3.05	39.3
Lack of time	2.89	1.25	2.74	3.05	35.0

Table 12 (con't)

	Mean	SD	95% CI LL	UL	% ≥ * A/SA
Watching TV	2.76	1.25	2.60	2.91	33.1
Other reasons	2.68	1.27	2.53	2.84	27.5
Not enough sports offered that I like	2.56	1.25	2.40	2.71	26.5
Money (registration fees, uniforms, etc.)	2.53	1.27	2.37	2.68	25.2
Transportation	2.52	1.26	2.36	2.68	26.3
Lack of parents time	2.51	1.22	2.36	2.66	24.8
Playing too many computer games	2.07	1.13	1.93	2.21	14.1

Each item was scored using the following responses:
1=Strongly Disagree
2=Disagree
3=Neither agree nor disagree
*4=Agree
*5=Strongly Agree

Community Scale

Results regarding Community Scale for total sample and by demographic variables are shown in Table 13. There were no significant differences in Community Scales responses by demographic variables.

Table 13: *Community Scale Scores (Mean ± SD) for Total Sample and by Demographic Variables*

	Mean ± SD	**P-Value**	**95% CI**	
			LL	**UL**
Total	12.44 ± 4.77		11.83	13.04
Age		.382		
13-15	12.27 ± 4.72		11.56	12.97
16-18	12.87 ± 4.90		11.67	14.05
Race				
African-American	12.82 ± 5.46	.727	11.43	14.21
White	12.26 ± 4.61		11.50	13.01
Other	12.61 ± 4.12		11.00	14.20
Gender				
Male	12.18 ± 5.34	.471	11.14	13.22
Female	12.63 ± 4.30		11.90	13.35
SES				
Low	12.58 ± 4.97	.540	11.68	13.46
High	12.20 ± 4.47		11.37	13.02

Scale score ranges from 5-25
Low scores indicate that students do not feel that they have numerous community barriers to exercise and PA. High scores indicate that students do feel that they have numerous community barriers to exercise and PA.

Results regarding individual questions comprising the Community Scale are shown in Table 14.

Table 14: *Results (Mean ± SD) for Individual Questions Comprising the Community Scale*

	Mean	**SD**	**95% CI**		**% ≥ * A/SA**
			LL	**UL**	
High costs of entry fees	2.79	1.21	2.64	2.94	34.0
No opportunities (no organized sports)	2.42	1.12	2.28	2.56	16.9
Lack of facilities	2.54	1.21	2.39	2.68	23.2

Table 14 (con't)

	Mean	SD	95% CI LL	UL	% ≥ * A/SA
Crime/Safety/Danger	2.42	1.11	2.28	2.56	17.7
Lack of culturally appropriate facilities/opportunities	2.41	1.11	2.28	2.55	16.0

Each item was scored using the following responses:
1=Strongly Disagree
2=Disagree
3=Neither agree nor disagree
*4=Agree
*5=Strongly Agree

Alone Scale

Results regarding Alone Scale for total sample and by demographic variables shown in Table 15. There were no significant findings when analyzing Alone Scale by demographic variables.

Table 15: *Alone Scale Scores (Mean ± SD) for Total Sample and by Demographic Variables*

	Mean ± SD	P-Value	95% CI LL	UL
Total	5.64 ± 2.02		5.38	5.89
Age		.991		
13-15	5.63 ± 1.99		5.33	5.93
16-18	5.63 ± 2.08		5.13	6.13
		.814		
Race	5.47 ± 1.95		4.98	5.96
African-American	5.63 ± 2.03		5.30	5.96
White	5.74 ± 1.97		4.96	6.52
Other				

Table 15 (con't)

	Mean ± SD	P-Value	95% CI LL	UL
Gender		.261		
Male	5.47 ± 2.02		5.08	5.85
Female	5.76 ± 2.00		5.42	6.10
SES		.877		
Low	5.66 ± 1.97		5.31	6.01
High	5.62 ± 2.08		5.23	6.00

Scale score ranges from 2-10
Low scores indicate students do not enjoy exercise and being PA alone. High scores indicate students do enjoy exercise and being PA alone.

Results regarding individual questions comprising the Alone Scale are shown in Table 16.

Table 16: *Results (Mean ± SD) for Individual Questions Comprising the Alone Scale*

	Mean	SD	95% CI LL	UL	% ≥ * D/SD
I enjoy exercising alone	2.73	1.17	2.59	2.88	27.6
I enjoy being PA alone	2.89	1.15	2.75	3.03	33.5

Each item was scored using the following responses:
1=Strongly Disagree
2=Disagree
3=Neither agree nor disagree
*4=Agree
*5=Strongly Agree
Mean score of 3 indicates students neither agree nor disagree.

Parent Results

The race grouping had only one participant identify as "Other" therefore it was entered in the data set as missing data. Results regarding Enjoyment Scale by demographic variables are shown in Table 17. There were no significant differences found when analyzing Enjoyment Scale by demographic variables.

Table 17: *Enjoyment Scale Score Results (Mean ± SD) by Demographic Variables*

	Mean ± SD	**P-Value**	**95% CI**	
			LL	**UL**
Race		.219		
African-American	12.30 ± 1.37		11.47	13.14
White	11.83 ± .70		11.48	12.18
Gender		.065		
Male	11.33 ± .51		10.79	11.87
Female	12.19 ± 1.05		11.76	12.62
SES		.875		
Low	12.05 ± 1.29		11.39	12.72
High	12.00 ± .65		11.63	12.40

Scale score ranges from 4-20
In general, low scores indicate parents think students overall enjoy exercise and PA. High scores indicate parents think students lack an enjoyment of exercise and PA.

No data were analyzed for School Scale due to low parent sample size. Results regarding Personal Feelings Scale are shown in Table 18. All results were non-significant when analyzing Personal Feelings Scale by demographic variables.

Table 18: *Personal Feelings Scale Results (Mean ± SD) by Demographic Variables*

	Mean ± SD	**P-Value**	**95% CI**	
			LL	**UL**
Race		.669		
African-American	25.46 ± 9.12		19.94	30.97
White	28.82 ± 8.11		22.64	30.99
Gender		.767		
Male	25.33 ± 7.96		16.97	33.69
Female	26.48 ± 8.52		22.96	29.99
SES		.912		
Low	26.41 ± 8.42		22.07	30.74
High	26.07 ± 8.46		21.18	30.95

Scale score ranges from 10-50
Low scores indicate parents think students do not have numerous personal barriers to exercise and PA. High scores indicate parents think students do have numerous personal barriers to exercise and PA.

Results regarding Community Scale are shown in Table 19. All results were non-significant when analyzing Community Scale by demographic variables.

Table 19: *Community Scale Scores (Mean ± SD) by Demographic Variables*

	Mean ± SD	**P-Value**	**95% CI**	
			LL	**UL**
Race		.460		
African-American	19.61 ± 8.18		14.67	24.55
White	17.64 ± 6.22		14.46	20.84
Gender		.419		
Male	16.50 ± 7.55		8.57	24.43
Female	19.12 ± 6.90		16.26	21.97
SES		.573		
Low	19.31 ± 7.60		15.26	23.36
High	17.86 ± 6.43		14.30	21.43

Scale score ranges from 5-25
Low scores indicate that parents think students do not have numerous community barriers to exercise and PA. High scores indicate that parents think students do have numerous community barriers to exercise and PA.

Results regarding Alone Scale are shown in Table 20. All results were non-significant when analyzing Alone Scale by demographic variables.

Table 20: *Alone Scale Scores (Mean ± SD) by Demographic Variables*

	Mean ± SD	**P-Value**	**95% CI**	
			LL	**UL**
Race		.672		
African-American	7.46 ± 1.76		6.39	8.52
White	7.16 ± 1.97		6.18	8.15
Gender		.358		
Male	7.83 ± 1.60		6.15	9.51
Female	6.96 ± 2.14		6.09	7.82
SES		.883		
Low	7.17 ± 2.03		6.12	8.22
High	7.06 ± 2.15		5.87	8.25

Scale score ranges from 2-10
Low scores indicate parents think students do not enjoy exercise and being PA alone. High scores indicate parents think students do enjoy exercise and being PA alone.

Administrator Results

The same procedures were followed for analyzing the Administrator data. The race grouping had only two participants identify as "Other," therefore it was entered in the data set as missing data.

Results regarding Enjoyment Scale are shown in Table 21. There were no significant findings when analyzing Enjoyment Scale by demographic variables.

Table 21: *Enjoyment Scale Results (Mean ± SD) by Demographic Variables*

	Mean ± SD	**P-Value**	**95% CI**	
			LL	**UL**
Race		.577		
African-American	9.60 ± 4.03		4.58	14.61
White	11.50 ± 5.74		2.35	20.64
Gender		.170		
Male	8.60 ± 4.87		2.54	14.65
Female	12.16 ± 2.99		9.02	15.30

Scale score ranges from 4-20
In general, low scores indicate administrators think students overall enjoy exercise and PA. High scores indicate administrators think students lack an enjoyment of exercise and PA.

No data were analyzed for School Scale due to low administrator sample size. Results regarding Personal Feelings are shown in Table 22. Results showed no significant differences when analyzing Personal Feelings Scale by demographic variables.

Table 22: *Personal Feelings Scale Results (Mean ± SD) by Demographic Variables*

	Mean ± SD	**P-Value**	**95% CI**	
			LL	**UL**
Race		.609		
African-American	35.20 ± 11.56		20.84	49.55
White	32.00 ± 2.58		27.89	36.10

Table 22 (con't)

	Mean ± SD	P-Value	95% CI LL	UL
Gender		.202		
Male	36.80 ± 8.58		26.14	47.45
Female	30.66 ± 6.21		24.14	37.19

Scale score ranges from 10-50
Low scores indicate administrators think students do not have numerous personal barriers to exercise and PA. High scores indicate administrators think students do have numerous personal barriers to exercise and PA.

Results regarding Community Scale are shown in Table 23. There were no significant findings when analyzing Community Scale by demographic variables.

Table 23: *Community Scale Score Results (Mean ± SD) by Demographic Variables*

	Mean ± SD	P-Value	95% CI LL	UL
Race		.443		
African-American	17.00 ± 5.87		9.70	24.29
White	14.50 ± 1.73		11.74	17.25
Gender		.091		
Male	17.80 ± 4.76		11.88	23.71
Female	12.50 ± 4.50		7.77	17.22

Scale score ranges from 5-25
Low scores indicate that administrators do not feel that students have numerous community barriers to exercise and PA. High scores indicate that administrators think students have numerous community barriers to exercise and PA.

Results regarding Alone Scale are shown in Table 24. There were no significant differences when analyzing Alone Scale by demographic variables.

Table 24: *Alone Scale Scores (Mean ± SD) by Demographic Variables*

	Mean ± SD	P-Value	95% CI LL	UL
Race		.117		
African-American	4.20 ± 1.92		1.81	6.58
White	6.50 ± 1.91		3.45	9.54

Table 24 (con't)

	Mean ± SD	P-Value	95% CI LL	UL
Gender		.532		
Male	5.00 ± 2.44		1.95	8.04
Female	6.00 ± 2.60		3.26	8.73

Scale score ranges from 2-10
Low scores indicate administrators think students do not enjoy exercise and being PA alone. High scores indicate students do enjoy exercise and being PA alone.

Combined Results (Student vs. Parents vs. Administrators)

Results regarding Enjoyment Scale are shown in Table 25. Results indicated that parents think students enjoy exercise and PA less than students and administrators report that students enjoy it.

Table 25: *Enjoyment Scale Combined Results (Mean ± SD)*

	Mean ± SD	95% CI LL	UL
Student	9.17 ± 3.26	8.76	9.58
Parent	* 12.08 ± 1.05	11.72	12.43
Administrator	8.54 ± 2.76	6.87	10.20

*$p \leq .05$ Parents vs. students and administrators
Scale score ranges from 4-20
Low scores indicate students, parents, and administrators think students have an overall enjoyment of exercise and PA. High scores indicate students, parents, and administrators think students have an overall lack of enjoyment of exercise and PA.

Results regarding Personal Feelings Scale are shown in Table 26. Results indicate administrators reported significantly more personal barriers for students to exercise and PA than students and parents reported this same information.

Table 26: *Personal Feelings Scale Combined Results (Mean ± SD)*

	Mean ± SD	**95% CI**	
		LL	**UL**
Student	26.28 ± 8.37	25.21	27.35
Parent	26.26 ± 8.30	23.21	29.30
Administrator	*33.45 ± 7.68	28.29	38.62

*$p \leq .05$ Administrator vs. students and parents
Scale score ranges from 10-50
Low scores indicate students, parents, and administrators think students do not have numerous personal barriers to exercise and PA. High scores indicate students, parents, and administrators think students do have numerous personal barriers to exercise and PA.

Results regarding Community Scale are shown in Table 27. Results indicated parents reported significantly more community barriers to exercise and PA for students than students reported according to post hoc Tukey test.

Table 27: *Community Scale Combined Results (Mean ± SD)*

Community	**Mean ± SD**	**95% CI**	
		LL	**UL**
Student	12.45 ± 4.76	11.85	13.05
Parent	* 18.61 ± 6.98	16.05	21.17
Administrator	14.91 ± 5.18	11.43	18.39

*$p \leq .05$ parent vs. students and administrators
Scale score ranges from 5-25
Low scores indicate that parents, students, and administrators do not feel that students have numerous community barriers to exercise and PA. High scores indicate that students, parents, and administrators think students have numerous community barriers to exercise and PA.

Results regarding Alone Scale are shown in Table 28. Results indicated parents reported that students enjoyed exercising alone to a greater extent than students or administrators reported this information.

Table 28: *Alone Scale Combined Results (Mean ± SD)*

	Mean ± SD	**95% CI**	
		LL	**UL**
Student	5.62 ± 2.01	5.37	5.86
Parent	*7.14 ± 1.95	6.48	7.80
Administrator	5.38 ± 2.36	3.96	6.81

*$p \leq .05$ Parents vs. students and administrators
Scale score ranges from 2-10
Low scores indicate students, parents, and administrators think students do not enjoy exercise and being PA alone.
High scores indicate students, parents, and administrators think students do enjoy exercise and being PA alone.

Individual Analysis of Items Related to PA levels

Some questions did not fit into the barrier group scales. Individual questions with number (percent) of responses for students, parents, and administrators can be found below. Results regarding the question "I think all students who are interested in participating in school sports should have the opportunity" are shown in Table 29.

Table 29: *Results of Responses (n and %) to the Question Regarding School Sports Participation Opportunity*

	Student	**Parent**	**Administrator**
Strongly Disagree	9 (3.5)	1 (2.9)	0 (0)
Disagree	6 (2.3)	0 (0)	0 (0)
Neither Agree nor Disagree	23 (8.9)	1 (2.9)	0 (0)
Agree	103 (39.0)	13 (38.2)	5 (45.5)
Strongly Agree	117 (45.3)	19 (55.9)	6 (54.5)

Results regarding hours per day in front of a screen are shown in Table 30.

Table 30: *Results of Responses (n and %) to the Question Regarding Hours per day Students Spend in Front of a Screen*

	Students	**Parents**	**Administrators**
Less than 1 hour	27 (10.5)	3 (9.1)	2 (18.2)
1 hour	44 (17.2)	6 (18.2)	0 (0)
2 hours	45 (17.6)	5 (15.2)	0 (0)
3 hours	47 (18.4)	8 (24.2)	3 (27.3)
4 hours	32 (12.5)	4 (12.1)	2 (18.2)
More than 5 hours	61 (23.8)	7 (21.2)	4 (36.4)

Results regarding student demographic information concerning screen time are shown in Table 31.

Table 31: *Student Demographic Information (n and %) for Responses to the Question Regarding Hours per day Spent in Front of a Screen*

	Less than 1 hour	1 hour	2 hours	3 hours	4 hours	More than 5 hours
Age Groups						
13-15	22 (12.2)	33 (18.3)	27 (15.0)	36 (20.0)	36 (13.3)	38 (21.1)
16-18	4 (5.6)	10 (13.9)	17 (23.6)	11 (15.3)	8 (11.1)	22 (30.6)
Race						
African-American	6 (9.2)	12 (18.5)	9 (13.8)	11 (16.9)	6 (9.2)	21 (32.3)
White	17 (11.0)	25 (16.2)	28 (18.2)	34 (22.1)	22 (14.3)	28 (18.2)
Other	1 (3.6)	5 (17.9)	7 (25)	2 (7.1)	4 (14.3)	9 (32.1)
Gender	16 (14.5)	19 (17.3)	11 (10.0)	27 (24.5)	14 (12.7)	23 (20.9)
Male	10 (7.0)	24 (16.9)	33 (23.2)	20 (14.1)	18 (12.7)	37 (26.1)
Female						
SES						
Low	16 (12.4)	20 (15.5)	22 (17.1)	20 (15.5)	15 (11.6)	36 (27.9)
High	10 (8.4)	21 (17.6)	22 (18.5)	27 (22.7)	16 (13.4)	23 (19.3)

Results regarding school groups or clubs for physical activity are shown in Table 32.

Table 32: *Results of Student Responses (n and %) to the Question Regarding School-Sponsored Physical Activity Groups or Clubs*

Yes	No
206 (79.2)	54 (20.8)

Results regarding demographic information concerning school groups and clubs for physical activity are shown in Table 33.

Table 33: *Student Responses (n and %) by Demographic Variables in Response to the Question Regarding School-Sponsored Physical Activity Groups or Clubs*

	Yes	No
Age		
13-15	151 (83.0)	31 (17.0)
16-18	50 (69.4)	22 (30.6)
Race		
African-American	49 (73.1)	18 (26.9)
White	126 (82.4)	27 (17.6)
Gender		
Male	90 (80.4)	22 (19.6)
Female	111 (78.2)	31 (21.8)
SES		
Low	107 (81.1)	25 (18.9)
High	91 (77.1)	27 (22.9)

Results regarding number of days students attend PE class are shown in Table 34.

Table 34: *Results of Responses (n and %) to the Question Regarding Number of Days Students Attend PE Classes*

	Students	**Parents**	**Administrators**
5 days	189 (73.8)	12 (35.3)	9 (75.0)
4 days	6 (2.3)	1 (2.9)	0 (0)
3 days	6 (2.3)	2 (5.9)	1 (8.3)
2 days	8 (3.0)	2 (5.9)	1 (8.3)
1 day	47 (18.4)	17 (50.0)	1 (8.3)

Results regarding demographic information concerning number of days students attend PE class are shown in Table 35.

Table 35: *Student Demographic Information (n and %) for Responses to the Question Regarding the Number of Days Students Attend PE Classes*

	5 days	4 days	3 days	2 days	1 day
Age group					
13-15	151 (83.4)	5 (2.8)	2 (1.1)	6 (3.3)	17 (9.4)
16-18	34 (48.6)	1 (1.4)	3 (4.3)	2 (2.0)	30 (42.9)
Race					
African-American	50 (74.6)	2 (3.0)	1 (1.5)	3 (4.5)	11 (16.4)
White	109 (71.7)	4 (2.6)	2 (1.3)	5 (3.3)	32 (21.1)
Other	21 (77.8)	0 (0.0)	2 (7.4)	0 (0.0)	4 (14.8)
Gender					
Male	90 (81.8)	2 (1.8)	1 (0.9)	3 (2.7)	14 (12.7)
Female	95 (67.4)	4 (2.8)	4 (2.8)	5 (3.5)	33 (23.4)
SES					
Low	94 (72.3)	3 (2.3)	4 (3.1)	4 (3.1)	25 (19.2)
High	88 (75.2)	2 (1.7)	1 (0.9)	4 (3.4)	22 (18.8)

Results regarding how often students sweat and breathe hard for 20 minutes in PE class are shown in Table 36.

Table 36: *Results of Responses (n and %) to the Question Regarding how Often Students Sweat and Breathe Hard for 20 Minutes*

	Students	**Parents**	**Administrators**
5 days	95 (37.1)	13 (38.2)	5 (41.7)
4 days	18 (7.0)	1 (2.9)	2 (16.7)
3 days	38 (14.8)	4 (11.8)	1 (8.3)
2 days	19 (7.4)	4 (11.8)	2 (16.7)
1 day	86 (33.6)	12 (35.3)	2 (16.7)

Results regarding demographic information concerning how many days students sweat and breathe hard for 20 minutes in PE class are shown in Table 37.

Table 37: *Student Demographic Information (n and %) for Responses to the Question Regarding how Often They Sweat and Breathe Hard for 20 minutes*

	5 days	4 days	3 days	2 days	1 day
Age group					
13-15	73 (40.6)	16 (8.9)	28 (15.6)	13 (7.2)	50 (27.8)
16-18	20 (28.2)	2 (2.8)	9 (12.7)	5 (7.0)	35 (49.3)
Race					
African-American	22 (33.3)	6 (9.1)	12 (18.2)	7 (10.6)	19 (28.8)
White	52 (34.2)	10 (6.6)	23 (15.1)	10 (6.6)	57 (37.5)
Other	15 (53.6)	2 (7.1)	2 (7.1)	0 (0.0)	9 (32.1)
Gender					
Male	65 (59.1)	13 (11.8)	11 (10.0)	4 (3.6)	17 (15.5)
Female	28 (19.9)	5 (3.5)	26 (18.4)	14 (9.9)	68 (48.2)
SES					
Low	50 (38.8)	9 (7.0)	19 (14.7)	10 (7.8)	41 (35.6)
High	42 (35.6)	8 (6.8)	18 (15.3)	8 (6.8)	42 (35.6)

Results regarding parent support are shown in Table 38.

Table 38: *Results of Responses (n and %) to the Question Regarding Parental Support for Sports and PA*

	Students	**Parents**	**Administrators**
Strongly Supportive	137 (52.9)	24 (70.6)	7 (70.0)
Supportive	91 (34.5)	9 (26.5)	3 (30.0)
Neither Supportive or Unsupportive	25 (9.6)	1 (2.9)	0 (0)
Unsupportive	4 (1.5)	0 (0)	0 (0)
Strongly Unsupportive	3 (1.2)	0 (0)	0 (0)

Results regarding demographic information concerning parenta support are shown in Table 39.

Table 39: *Student Demographic Information (n and %) for Response to the Question Regarding Parental Support for Sports and PA*

	Strongly Supportive	Supportive	Neither supportive or unsupportive	Unsupportive	Strongly Unsupportive
Age group					
13-15	99 (54.4)	61 (33.5)	17 (9.3)	2 (1.1)	3 (1.6)
16-18	37 (51.4)	26 (36.1)	7 (9.7)	2 (2.8)	0 (0.0)
Race					
African-	33 (49.3)	24 (35.8)	6 (9.0)	2 (3.0)	2 (3.0)
American	89 (58.2)	50 (32.7)	12 (7.8)	1 (0.7)	1 (0.7)
White	11 (37.9)	11 (37.9)	6 (20.7)	1 (3.4)	0 (0.0)
Other					
Gender					
Male	63 (56.3)	35 (31.3)	12 (10.7)	1 (0.9)	1 (0.9)
Female	73 (51.4)	52 (36.5)	12 (8.5)	3 (2.1)	2 (1.4)
SES					
Low	62 (47.0)	50 (37.9)	15 (11.4)	4 (3.0)	1 (0.8)
High	73 (61.9)	36 (30.5)	9 (7.6)	0 (0.0)	0 (0.0)

Results regarding school sports team participation are shown in Table 40.

Table 40: *Student Responses (n and %) to the Question Regarding Sports Team Membership*

	Yes	**No**
Are you on a school sports team?	134 / 50.8	130 / 49.2

Results regarding demographic information concerning school sports team participation are shown in Table 41.

Table 41: *Student Demographic Information (%) for Question Regarding Sports Team Membership*

	Yes	**No**
Age		
13-15	51.6	48.4
16-18	50.0	50.0
Race		
African-American	53.7	46.3
White	52.3	47.7
Other	34.5	65.5
Gender		
Male	54.9	45.1
Female	48.3	51.7
SES		
Low	40.6	59.4
High	62.2	37.8

Results regarding whether students who were not currently on a school sports team would like to be on one are shown on Table 42.

Table 42: *Student Reponses (n and %) to the Question Regarding Desire for Sports Team Membership*

	Yes	**No**
Would you like to be on a school sports team?	63 / 23.9	67 / 25.4

Results regarding demographic information concerning whether students would like to be on a sports team are shown in Table 43.

Table 43: *Student Demographic Information (%) for the Question Regarding Desire for Sports Team Membership*

	Yes	**No**
Age		
13-15	48.3	51.7
16-18	44.4	55.6

Table 43 (con't)

	Yes	**No**
Race		
African-American	64.5	35.5
White	44.6	55.4
Other	26.3	73.7
Gender		
Male	45.1	54.9
Female	48.6	51.4
SES		
Low	48.1	51.9
High	46.7	53.3

Results regarding the frequency distribution of how many school sports teams students played on in the past 12 months are shown in Table 44.

Table 44: *Frequency Distribution (n and %) for Student Responses to the Question Regarding Number of Sports Teams Played on in the Last 12 Months*

	Number/percent
1 team	68 / 25.8
2 teams	33 / 12.5
3 teams	16 / 6.1
4 teams	8 / 3.0
5 or more	4 / 1.5

Results regarding demographic information concerning how many sports teams students played on in the past 12 months is shown in Table 45.

Table 45: *Student Demographic Information (%) for Responses to the Question Regarding Number of Sports Teams Played on in the Past 12 Months*

	0	**1**	**2**	**3**	**4**	**5 or more**
Age						
13-15	49.7	24.5	12.3	7.8	4.0	1.7
16-18	50.0	33.3	12.5	1.4	1.4	1.4

Table 45 (con't)

	0	1	2	3	4	5 or more
Race						
African-American	47.0	28.8	13.6	7.6	1.5	1.5
White	49.0	29.8	11.9	5.3	3.3	0.6
Other	65.5	10.3	10.3	7.0	3.4	3.4
Gender						
Male	46.0	25.2	12.6	9.9	4.5	1.8
Female	52.8	28.6	12.1	2.8	2.1	1.4
SES						
Low	60.3	21.3	8.3	5.3	2.2	2.2
High	38.8	32.8	16.3	6.8	4.3	0.8

Results regarding how many days students exercised, played a sport, or participated in PA that made them sweat or breathe hard for at least 20 minutes is shown in Table 46.

Table 46: *Student Responses (M ± SD) to the Question Regarding Number of Times They Sweat or Breathed Hard for at Least 20 Minutes*

	Mean	SD	95% CI	
			LL	UL
During the past week how many days did you exercise, play a sport, or participate in PA that made you sweat and breathe hard for at least 20 min?	5.16	2.20	4.89	5.43

1=1 day
2=2 days
3=3 days
4=4 days
5=5 days
6=6 days
7=7 days

Results regarding the frequency distribution for students concerning how often in the past week students exercised, played a sport, or participated in PA that made them sweat or breathe hard for at least 20 minutes is shown in Table 47.

Table 47: *Frequency Distribution (n and %) for Student Responses to the Question Regarding Number of Times They Sweat or Breathed Heavy for at Least 20 Minutes*

	Number/percent
0 days	21/ 8.1
1 day	17/ 6.6
2 days	22/ 8.5
3 days	38/14.7
4 days	40/15.5
5 days	41/15.8
6 days	23/ 8.9
7 days	57/22.0

Results regarding demographic information concerning how many days in the past week students exercised, played a sport, or participated in PA that made them sweat or breathe hard for at least 20 minutes is shown in Table 48.

Table 48: *Student Demographic Information (M ± SD) for Responses to the Question Regarding the Number of Times They Sweat or Breathed Hard for at Least 20 Minutes*

	Mean ± SD	**P-Value**	**95% CI**	
			LL	**UL**
Age				
13-15	5.39 ± 2.13	.445	5.08	5.71
16-18	4.68 ± 2.26		4.14	5.21
Race		.039		
African-American	4.70 ± 2.23		4.15	5.25
White	*5.45 ± 2.11		5.12	5.79
Other	4.79 ± 2.40		3.85	5.72
Gender		.093		
Male	5.88 ± 1.98		5.51	6.26
Female	4.65 ± 2.20		4.29	5.02
SES		.770		
Low	4.71 ± 2.19		4.32	5.09
High	5.71 ± 2.07		5.33	6.09

*$p \leq .05$ White students vs. African-American students and Other race students

Results regarding which sports were participated in at school in the previous year are shown in Table 49.

Table 49: *Results of Responses (n and %) to the Question Regarding School Sports Participation in the Past Year*

	Student	**Parent**	**Administrator**
Baseball/Softball	56 / (21.2)	8 / (21.6)	6 / (46.2)
Football (tackle)	42 / (15.9)	7 / (18.9)	7 / (53.8)
Basketball	39 / (14.8)	7 / (18.9)	7 / (53.8)
Volleyball	25 / (9.5)	3 / (8.1)	4 / (30.8)
Cheerleading	22 / (8.3)	7 / (18.9)	5 / (38.5)
Tennis	10 / (3.8)	2 / (5.4)	0 / (0)
Handball	9 / (3.4)	0 / (0)	0 / (0)
Other	9 / (3.4)	3 / (8.1)	3 / (23.1)
Dance Line / Flag Corp	7 / (2.7)	3 / (8.1)	3 / (23.1)
Bowling	4 / (1.5)	0 / (0)	1 / (7.7)
Flag Football	4 / (1.5)	0 / (0)	0 / (0)
Track & Field	3 / (1.1)	3 / (8.1)	0 / (0)
Soccer	2 / (.8)	1 / (2.7)	0 / (0)
Whiffleball	2 / (.8)	0 / (0)	0 / (0)
Cross Country	1 / (.4)	0 / (0)	0 / (0)
Frisbee Golf	1 / (.4)	0 / (0)	0 / (0)
Riflery	1 / (.4)	0 / (0)	0 / (0)
Archery	0 / (0)	0 / (0)	2 / (15.4)
Badminton	0 / (0)	0 / (0)	0 / (0)
Golf	0 / (0)	1 / (2.7)	1 / (7.7)
Lacrosse	0 / (0)	1 / (2.7)	0 / (0)
Swim Team	0 / (0)	1 / (2.7)	0 / (0)
Ultimate Frisbee	0 / (0)	0 / (0)	0 / (0)
Wrestling	0 / (0)	0 / (0)	2 / (15.4)

Results regarding which sports were participated in out of school in the previous year are shown in Table 50.

Table 50: *Results of Responses (n and %) to the Question Regarding Which Out-of-School Sports Were Participated During the Past Year*

	Student	**Parent**	**Administrator**
Baseball	80 / (30.3)	8 / (21.6)	1 / (7.7)
Basketball	74 / (28.0)	7 / (18.9)	1 / (7.7)
Football (tackle)	59 / (22.3)	9 / (24.3)	2 / (15.4)
None	44 / (16.7)	3 / (8.1)	5 / (38.5)
Volleyball	43 / (16.3)	4 / (10.8)	2 / (15.4)
Bowling	34 / (12.9)	6 / (16.2)	0 / (0)
Other	33 / (12.5)	4 / (10.8)	0 / (0)
Cheerleading	27 / (10.2)	8 / (21.6)	3 / (23.1)
Flag Football	22 / (8.3)	3 / (8.1)	0 / (0)
Tennis	21 / (8.0)	4 / (10.8)	1 / (7.7)
Riflery	19 / (7.2)	1 / (2.7)	2 / (15.4)
Handball	18 / (6.8)	2 / (5.4)	1 / (7.7)
Archery	17 / (6.4)	2 / (5.4)	2 / (15.4)
Dance Line / Flag Corp	17 / (6.4)	3 / (8.1)	0 / (0)
Soccer	17 / (6.4)	2 / (5.4)	0 / (0)
Whiffleball	14 / (5.3)	2 / (5.4)	1 / (7.7)
Track & Field	12 / (4.5)	3 / (8.1)	1 / (7.7)
Golf	11 / (4.2)	2 / (5.4)	2 / (15.4)
Ultimate Frisbee	11 / (4.2)	3 / (8.1)	0 / (0)
Wrestling	9 / (3.4)	3 / (8.1)	0 / (0)
Swim Team	8 / (3.0)	3 / (8.1)	1 / (7.7)
Badminton	6 / (2.3)	0 / (0)	1 / (7.7)
Cross Country	3 / (1.1)	2 / (5.4)	1 / (7.7)
Frisbee Golf	3 / (1.1)	0 / (0)	0 / (0)
Lacrosse	2 / (.8)	1 / (2.7)	1 / (7.7)

Results regarding what PA students enjoy when they are not in school are shown in Table 51.

Table 51: *Results of Responses (n and %) to the Question Regarding Out-of-School PA Participation*

	Students	**Parents**
Walking	132 / (50.0)	21 / (56.8)
Other	79 / (29.9)	11 / (29.7)
Swimming	75 / (28.4)	11 / (29.7)
Biking	53 / (20.1)	4 / (10.8)
Dancing	48 / (18.2)	9 / (24.3)
Hiking	39 / (14.8)	6 / (16.2)
Skating (ice skating, roller skating, roller blading, skate boarding)	34 / (12.9)	3 / (8.1)
None	30 / (11.4)	4 / (10.8)
Gymnastics	27 / (10.2)	3 / (8.1)
Jump Rope	18 / (6.8)	1 / (2.7)
Zumba	18 / (6.8)	2 / (5.4)
Yoga/Pilates	17 / (6.4)	1 / (2.7)
Martial Arts (Jiu-Jitsu, Judo, Karate, Kick Boxing, Tae Kwon Do, Tai Chi)	15 / (5.7)	0 / (0)
Ballet / Jazz / Tap	8 / (3.0)	1 / (2.7)

Results regarding groups and clubs that students participate in at school are shown in Table 52.

Table 52: *Result of Responses (n and %) to the Question Regarding Group or Club PA Participation*

	Students	**Parents**	**Administrators**
Don’t participate	75 / (28.4)		2 / (15.4)
Other	70 / (26.5)	14 / (37.8)	3 / (23.1)
Dance	26 / (9.8)	5 / (13.5)	5 / (38.5)
Weight Training	22 / (8.3)	8 / (21.6)	4 / (30.8)
Noncompetitive Cheerleading	15 / (5.7)	2 / (5.4)	3 / (23.1)
Running/Jogging	15 / (5.7)	1 / (2.7)	2 / (15.4)
Cardiovascular Fitness	13 / (4.9)	1 / (2.7)	1 / (7.7)

Table 52 (con't)

	Students	Parents	Administrators
Yoga	8 / (3.0)	1 / (2.7)	1 / (7.7)
Aerobics	6 / (2.3)	1 / (2.7)	1 / (7.7)
Jump Rope	6 / (2.3)	1 / (2.7)	3 / (23.1)
Walking Club/Group	4 / (1.5)	1 / (2.7)	2 / (15.4)

Results regarding where students participate in sports or PA are shown in Table 53. Males use the school gym more often than males. High SES use the church gym more often than low SES. Students of Other Races are more likely to not participate than African-American students or White students. Low SES students do not participate as often as high SES students. Low SES students use school playground more often than high SES students.

Table 53: Results of Response (%) to the Question Regarding Where Students Participated in Sports or PA

	School Gym	**P-Value**	**Church Gym**	**P-Value**	**Don't Participate**	**P-Value**	**School Play-ground**	**P-Value**	**Commun-ity Park/ Playground**	**P-Value**
Age		.227		.874		.682		.644		.647
13-15	31.0		21.7		26.1		5.4		41.3	
16-18	38.9		20.8		23.6		6.9		44.4	
Race		.795		.125		.006		.336		.378
African-	34.3		13.4		17.9		7.5		46.3	
American	33.5		25.2		23.9		5.8		42.6	
White	27.6		17.2		*48.3		0.0		31.0	
Other										
Gender		.083		.598		.842		.839		.396
Male	38.9		23.0		24.8		6.2		45.1	
Female	28.7		20.3		25.9		5.6		39.9	
SES		.858		.032		.011		.029		.308
Low	33.8		16.5		*31.6		*9.0		39.8	
High	32.8		*27.7		17.6		2.5		46.2	

*$p \leq .05$ Low vs. High SES, Other races vs. African American and White students,

CHAPTER V

DISCUSSION

The purpose of this study was to extend previous findings by surveying a large sample of rural Alabama adolescents regarding barriers to PA and surveying parents and school administrators in this regard as well. Also, this study evaluated the effect that age, race/ethnicity, gender, and SES have on barriers to PA. This study did indeed demonstrate several demographic differences concerning barriers to PA. Additionally, it demonstrated several differences between students, parents, and administrators regarding perceived barriers to PA. Finally, this study provided additional data concerning common barriers to PA reported in the literature. These findings are discussed below in the aforementioned order.

To aid in the interpretation of scale scores corresponding with the response choices, the number of items and total scale scores as they aligned with the one to five scale of individual items is presented along with mean scores for student demographic differences and differences between students, parents and administrators in Table 54 below. Also included in Table 54 is the percent of students reporting a particular scale to be a barrier (see table note).

Table 54: *Scale Scores Corresponding With Students Reporting a Particular Scale to be a Barrier (%) and Differences Between Student, Parent, and Administrator Scores (M)*

Scale	Scale Scores	Student Mean Score	Student vs. Parent vs. Administrator Mean Scores
Enjoyment Scale	4 items	*9% reported as a barrier	9.17 student mean
1=Excellent/Strongly Agree	4	8.28 (male)	9.50 administrator
2=Very Good/Agree	8	9.84 (female)	12.08 parent mean
3=Good/Neither Agree nor Disagree	12		
4=Fair/Disagree	16		
5=Poor/Strongly Disagree	20		
Personal Feelings Scale	10 items	*16.6% reported as a barrier	26.26 parent mean
1=Strongly Disagree	10	24.74 male	26.28 student mean
2=Disagree	20	27.24 female	33.45 administrator mean
3=Neither Agree nor Disagree	30	28.05 low SES mean	
4=Agree	40	24.37 high SES mean	
5=Strongly Agree	50		
Community Scale	5 items	*17.0% reported as a barrier	5 items
1=Strongly Disagree	5		12.45 student mean
2=Disagree	10		14.91 administrator mean
3=Neither Agree nor Disagree	15		
4=Agree	20		18.61 parent mean
5=Strongly Agree	25		
Alone Scale	2 items	*43.6% reported as a barrier	2 items
1=Strongly Disagree	2		5.62 student mean
2=Disagree	4		5.38 administrator mean
3=Neither Agree nor Disagree	6		
4=Agree	8		7.14 parent mean
5=Strongly Agree	10		

*Defined as an Enjoyment scale score greater than 14; Personal Feeling scale score greater than 35; Community scale score greater than 17.5; Alone scale score less than 2.5.

Student Demographic Differences Regarding Perceived Barriers to Exercise and PA

Four demographic differences regarding perceived barriers to PA were demonstrated with students. Two involved gender differences while two were based on SES. On the Enjoy Scale, males reported enjoying exercise and PA more than females. In general, mean responses indicated females enjoy exercise and PA also, just not to the same degree as males (male mean

value = 8.28, female mean value = 9.84, a lower score indicates greater enjoyment). Although there was a slight gender difference, males did not overwhelmingly enjoy exercise and PA more than females. The slight gender difference could be due to personal barriers females face when accessing opportunities for exercise and PA. For instance, Casper et al. (2011) found that on a Likert Scale from 1-5, (1 = not at all, 2 = not really, 3 = sometimes, 4 = most of the time, 5 = all the time) mean scores for girls related to accessibility (males = 1.56, females = 1.67), partners (males = 1.61, females = 1.73), and psychological constraints (males = 1.54, females = 1.69) were higher than boys. These scores indicated that females reported these factors to be more of a barrier to PA than males. Accessibility included transportation support for either community- or school-based sports. Accessibility also included opportunities and costs, which were more significant factors for females. Casper et al. (2011) also stated that PA knowledge of the study participants may have been influenced by the nature of the community environment in which the participating schools were located. The community from the Casper et al. (2011) study widely promoted sports opportunities to middle school children (in school, after school, and within the community). The community Casper et al. (2011) studied was from a Southeastern state. The second highest constraint in the study by Casper et al. (2011) was the availability of partners. These authors stated that sport is often a social experience involving coparticipants. Peer influence among adolescents is particularly important and can either hinder or promote participation in different leisure activities. Finally, these authors stated that psychological constraints may be due to a lower self-competence resulting from less or poor coaching, poorer quality programming, or fewer opportunities to be involved in programs that explore different sports or develop sport ability. Findholt et al. (2010) found in their research employing photovoice and interviews, which involved taking pictures, voice recordings explaining the

pictures, and interviews with photographers, that female students reported discomfort in trying out for participating in sports due to perceived incompetence, perceptions of peer judgments, and the seriousness of participation. Their research was conducted in an isolated agricultural region in Northeast Oregon. These perceptions would be expected to adversely affect their enjoyment of exercise and PA.

There was also a gender difference on the Personal Feelings Scale. Females reported more personal barriers to exercise and PA than males (male mean value = 24.74, female mean value = 27.42). With scale scores ranging from 10-50, responses for both males and females indicated a mean response between "disagree" and "neither agree nor disagree" concerning personal feelings being barriers to exercise and PA. Mean responses for female students were somewhat closer to "neither agree nor disagree" than for males, indicating that they feel that they have more personal barriers to exercise and PA than male students but not overwhelmingly so. The most frequently reported personal barriers in the current study were work, homework, and lack of time. This is consistent with findings by Shirinde et al. (2012). In their research, which was conducted with adolescents from farm schools in the Alma-Vaalwater area in the Waterberg district in the Limpopo Province of South Africa, a Likert-type Scale was used to measure barriers (1 = don't know, 2 = less important, 3 = not important, 4 = important, 5 = very important). The barriers of "to do work/school work" (males = 3.37, females = 3.45), and "lack of time" (males = 3.03, females = 3.17) were the most frequently reported barriers with a gender difference as well, with females reporting significantly more personal barriers.

One of the SES differences was found on the School Scale. Higher SES students reported fewer school-related barriers than low SES students (e.g., low SES: No Barriers = 40.6%, high SES: No Barriers = 62.2%). This is a substantial difference which shows low SES students have

more school-related barriers to exercise and PA than high SES students. The most frequently reported school barriers in the current study were “Other Reasons,” “Grades,” “Have to Work,” and “Transportation.” It should be appreciated that almost one-half (48.8%) of the students reported at least one school related barrier.

The other SES difference was found on the Personal Feelings Scale. Low SES students had more personal barriers to exercise and PA than high SES students (low SES mean value = 28.05, high SES mean value = 24.37). This difference concerning the Personal Feelings Scale based on SES is very similar to the aforementioned gender difference regarding this scale. With scale scores ranging from 10-50, responses for both low and high SES students indicated a mean response between “disagree” and “neither agree nor disagree” concerning the personal feelings being barriers to exercise and PA. Mean responses for low SES students were somewhat closer to “neither agree nor disagree” than for high SES students, indicating that they felt that they have more personal barriers to exercise and PA than high SES students but not overwhelmingly so. The most frequently reported personal barriers in the current study were work, homework, and lack of time. These findings are consistent with the literature. Moore et al. (2008) found that subjects whose parents provided money for PA lessons were 2.8 times more likely to report high levels of PA than subjects whose parents did not, while subjects whose parents paid for them to participate on a sports team were 5.6 times more likely to report high PA levels than those subjects whose parents did not pay. Casper et al. (2011) studied adolescents from a Southeastern state and found that respondents from more affluent families (students who did not receive a free or reduced school lunch) generally reported lower constraints to PA than respondents from low-income households. While not directly surveying students regarding SES and transportation, Hortz et al. (2009) collected data from rural Southern Ohio high school students and found that

few communities in their research offered environmental supports for PA such as providing transportation from school to home which is a concern with low SES students. School staff from the Hortz et al. (2009) study indicated that tight budgets and transportation issues limit the number of after school programs that can be offered. With most students going home on a bus, this is a barrier for them to participating in after school sports or PA programs since buses are not provided.

Perceived Barriers to Exercise and PA (Students vs Parents vs Administrators)

There were several significant differences regarding perceived barriers to PA between students, parents, and administrators. However, it should be emphasized that an extremely small percentage of parents responded to the survey and results should be interpreted with caution. Parents responded significantly differently from both students and administrators on the Enjoy Scale. Parents feel that students enjoy exercise and PA less than students and administrators report that they do (student mean value = 9.17, parent mean value = 12.08, and administrator mean value = 9.50). A lower mean indicates greater enjoyment. These scores indicate that students lean toward agreeing that they enjoy exercise and PA, while parents neither agree nor disagree that students enjoy exercise and PA, and administrators lean toward agreeing that students enjoy exercise and PA. Moore et al. (2010) interviewed parents from rural Eastern North Carolina in focus groups and the most frequent barriers to exercise and PA mentioned were distance, lack of culturally appropriate facilities and programming, cost, crime/danger, and television. In contrast to the current study, it was not noted by Moore et al. (2010) that parents feel that students enjoy exercise and PA more than students reported enjoying it. Further comparisons to the literature are problematic as there is a paucity of information concerning the

comparison of student, parent, and administrator perceptions regarding student enjoyment of exercise and PA.

With regard to the Community Scale, parents were significantly different from both students and administrators in reporting community barriers to student exercise and PA. Parents feel that students have more community barriers to exercise and PA than students and administrators reported (student mean value = 12.45, parent mean value = 18.61, administrator mean value = 14.91). These scores indicate that students lean toward disagreeing that these are barriers, parents lean toward agreeing that these are barriers, and administrators neither agree nor disagree that these are student barriers to exercise and PA in their communities. In the current study, parents' perceptions of community barriers to exercise and PA are consistent with the findings of Moore et al. (2010) described above where parents mentioned lack of culturally appropriate facilities and programming, crime/danger, and cost as barriers. It should be noted that lack of culturally appropriate facilities, cost, and crime/danger, were individual items on the Community Scale. Further comparisons to the literature are problematic as there is a paucity of information concerning the comparison of student, parent, and administrator perceptions regarding student community barriers to exercise and PA.

With regard to the Alone Scale, parents were again significantly different from both students and administrators in reporting student enjoyment of exercise and PA while alone. Parents felt that students enjoyed exercising and participating in PA alone more than students reported that they did and more than administrators thought students enjoyed exercising and participating in PA alone (student mean value = 5.62, parent mean value = 7.14, administrator mean value = 5.38). These scores indicated students and administrators lean toward neither agreeing nor disagreeing, but parents lean toward agreeing that students enjoy exercising and

participating in PA alone. The current study offers novel insights into how parents perceive student enjoyment of exercise and PA alone (versus student and administrator perceptions) as currently there is no literature in this regard.

Finally, administrators were significantly different from both students and parents in reporting students' personal feelings/barriers to exercise and PA. Administrators felt that students had more personal barriers to exercise and PA than students reported that they did and more than parents thought that students had personal barriers to exercise and PA (student mean value = 26.28, parent mean value = 26.26, administrator mean value = 33.45). These scores indicated that students, parents, and administrators all leaned toward neither agreeing nor disagreeing that these are barriers to student exercise and PA. However, administrators clearly felt more strongly that personal feelings may be a barrier for some students. As currently there is no literature in this regard, the current study offers novel insights into how school administrators perceive student personal barriers to exercise and PA (versus student and parent perceptions).

A Comparison of Current Study Results With the Literature Concerning Individual Barriers to Exercise and PA

Transportation/Distance

The transportation/distance barrier was included on the Personal Feelings Scale and the School Scale. On the School Scale, only 3.4% of students indicated that transportation was a barrier to exercise and PA participation concerning participation in school sports. Similarly, on the Personal Feelings Scale, the mean response was between "disagree" and "neither agree or disagree" that transportation was a barrier to exercise and PA participation. However, for approximately one-fourth of the students (26.3%), transportation was a significant barrier on the Personal Feelings Scale. Groft et al. (2005) found that 17.1% of study participants from rural Western Canada did not have transportation to practice/games. In their study involving

photovoice and interviews, Walia and Leipert (2012) found that access to transportation was a significant factor for all the rural participants from Ontario in their study and acted as a facilitator to PA for some. Participants from that study who could rely on different sources of transportation in order to continue their activity were more likely to engage in activities and consistently participate. From the current study, it seems as though, in general, transportation was not a barrier to exercise and PA participation for the majority of students. However, it should be appreciated that for a sizeable number of students (approximately one-fourth) it is an important barrier.

Lack of Facilities/Equipment

The lack of culturally appropriate facilities/opportunities and lack of facilities items were included on the Community Scale. Although seven studies from the literature review found lack of facilities/equipment to be a barrier, in general, lack of culturally appropriate facilities/opportunities and lack of facilities were not found to be significant barriers in the current study. The mean response for these items was between “disagree” and “neither agree or disagree” that these items were barriers to exercise and PA participation. However, 23.2% of students reported that lack of facilities was a barrier. This indicates that, although in general, students did not feel that lack of facilities was a barrier to their exercise and PA, for a sizable proportion of students this is a significant barrier.

Lack of Time

The lack of time item was included on the Personal Feelings Scale. Six studies from the literature review found this to be a barrier. However, in the current study the mean response was close to “neither agree nor disagree” that lack of time was a barrier to exercise and PA participation. Although this item had one of the highest mean responses of items included in the

Personal Feelings Scale, in general, students did not feel strongly that lack of time was a barrier to their exercise and PA. However, it should be noted that for 35.0% of students, lack of time was a significant barrier.

Lack of Resources/Opportunities

Lack of Resources/Opportunities was included on the Community Scale. While six studies from the literature review found this to be a barrier, the mean response for the item "Lack of culturally appropriate facilities/opportunities"/"No opportunities" was between "disagree" and "neither agree nor disagree." This item was tied with another as the third highest barrier on the Community Scale with 16.0% and 16.9%, respectively, of students reporting it as a barrier. Nevertheless, in general, students did not feel strongly that "Lack of Culturally appropriate facilities/opportunities" and "No Opportunities" were barriers to their exercise and PA.

High Costs

High Costs were included on the School Scale, Personal Feelings Scale, and Community Scale. Five studies from the literature review included High Costs as a barrier. On the School Scale, only 3.0% of students reported "too much money to participate" as a barrier. On the Personal Feelings Scale, the mean score for high costs (money, registration fees, uniforms) was 2.53 indicating a mean score for students between disagree and neither agree nor disagree, that this was a barrier to their exercise and PA. On the Community Scale, High Costs of Entry Fees had the highest mean response of items on this scale (2.79) indicating a mean student response close to neither agree nor disagree that this was a barrier. In general, "High Costs" did not seem to be a barrier in this study. This could be due to the fact that schools provide uniforms for students on school sports team in the three counties surveyed. There are fundraising options and booster clubs that allow students to participate as well, regardless of their ability to pay for team

fees. However, it should be appreciated that for a sizable percentage of students (25% based on the cost item on the School Scale; 34% based on the cost item on the Community Scale) cost is a significant barrier.

School Policies

School Policies were included on the School Scale. Four studies from the literature review included School Policies as a barrier. In the current study, the most commonly reported school barrier, after "other reasons" (33.7%), was "grades" (9.5%). Students also reported "School rules and regulations" (1.9%) as a barrier in the current study. School policies were a barrier in the Moore et al. (2010) study involving focus groups where students mentioned PE was scheduled for half a semester and health was scheduled for the other half. Students in the Moore et al. (2010) study desired PE classes every day. Students in that same study also reported that age requirements for school sports participation was a barrier. It is noteworthy that in the current study, nearly three-fourths of the students (73.8%) reported going to PE class 5 days/week.

Crime/Safety/Danger

Crime/Safety/Danger was included on the Community Scale. The mean response for Crime/Safety/Danger was 2.42 indicating that students leaned slightly toward disagreeing that Crime/Safety/Danger was a barrier to their exercise and PA. Therefore, in general, Crime/Safety/Danger was not found to be a significant barrier in the current study. This is in contrast to the literature review where three studies included Crime/Safety/Danger as a barrier. In the Yousefian et al. (2009) study involving focus groups and interviews with students and key community informants from rural Maine, it was mentioned that while it was expected that road and traffic safety would be the primary safety concern among rural youth, concerns about sexual predators, criminal activity, and "stranger danger" emerged as the largest safety concern across

the three communities they surveyed. Moore et al. (2010) utilized focus groups and found that rural youth mentioned danger and crime as barriers to PA, and the unique barrier of hearing gunshots, and people hunting in their area. It should be appreciated that in the current study, although not a barrier for the majority of students, Crime/Safety/Danger was a concern for 18% of the students.

Technology

Two items related to technology/screen time interference were included on the Personal Feelings Scale. Three studies from the literature review included Technology/screen time interference as a barrier. The mean score for "watching television" (2.76) indicated that students leaned toward neither agreeing nor disagreeing that this was a barrier to exercise and PA. The mean score for "playing too many computer games" (2.07) indicated that students disagreed that this was a barrier to exercise and PA. Of note in the current study, analysis of the individual screen time question indicated that close to one-fifth (23.8%) of the students in the current study spent more than 5 hours in front of a screen when they were not in school. Current study results are somewhat inconsistent with the research of Walia and Leipert (2012) utilizing photovoice and interviews which found that television was an important barrier to PA for the majority of participants in their study. Students in the Walia and Leipert study indicated that television was more entertaining, and the convenience of television at home superseded the motivation to be physically active. As with television, the Walia and Leipert study found that the computer was often easy and entertaining as well due to the limited facilities and opportunities for PA close to their home. In the current study, 33.1% and 14.1% of the students reported that watching TV and playing too many computer games, respectively, were barriers to PA participation.

Feel Unsure of Myself/Unskilled

Items related to Feel Unsure of Myself/Unskilled were included on the School Scale. Three studies from the literature review included Feel Unsure of Myself/Unskilled as a barrier. Of the students surveyed in the current study, 2.7% reported that they did not know how to start and 1.5% reported a previous negative experience concerning participating in school sports. The current study's results are somewhat inconsistent with research by Belton et al. (2014) which was conducted in a rural Irish town. Belton et al. noted that for young people, perceived competence, and perceptions of their ability to perform a PA will affect their participation in an activity. As Belton et al. confirmed, this is also consistent with recent reviews where self-efficacy was found to be a consistent positive determinant of PA in children and adolescents.

Inadequate Knowledge

Inadequate Knowledge was included on the School Scale. Two studies from the literature review included Inadequate Knowledge as a barrier. Swanson et al. (2012) noted one boy from their focus group saying ". . . for those of us that don't know how to do anything, there's nobody to teach us how to do it" (referring to exercise and PA). Casper et al. (2011) found knowledge as a constraint in their study. Students in the Casper et al. study reported they did not know where to participate, they did not have anyone to teach them sports, and they did not know where they could learn sports. As mentioned previously, in the current study, on the School Scale, 2.7% of students responded that they "didn't know how to start." This is a true barrier for some students who want to be involved in exercise and PA. Without proper role models and exposure to exercise and PA, students do not know how to start exercising or participating in PA programs.

Work/Chores

Work/Chores was included on the School Scale and the Personal Feelings Scale. Two studies from the literature review included Work/Chores as a barrier. Hortz et al. (2009) found in their sample that 19% of 9th graders and 51% of 12th graders were working. Some students from the Hortz et al. study mentioned significant chores around the home as PA barriers. Teachers expressed how many students in Appalachia are expected to assume work roles in high school (Hortz et al., 2009). These work-related roles may decrease discretionary time adolescents have for PA. Shirinde et al. (2012) found high mean values for work/homework in all student groups participating in their questionnaire. In the current study, on the School Scale, the third most frequently reported barrier was "have to work," with 3.8% of students reporting this barrier. On the Personal Feelings Scale, "work responsibilities" had the highest mean value (2.91) indicating students neither agreed nor disagreed that this is a barrier. Having to work may be a reality for many rural adolescents. In the current study, over one-third (35.6%) of the students agreed that this was a barrier.

No Family Support

No Family Support was included on the School Scale and on the Personal Feelings Scale. Two studies from the literature review included No Family Support. Krueger et al. (2012) found that family commitments comprise an additional source of time constraints that result in PA barriers. Groft et al. (2005) found that 7.7% of their participants did not have parents that were supportive of their PA, and 10.1% did not receive encouragement from family. In the current study, on the School Scale, 1.9% of students reported "parents won't let me" and 1.1% of students reported "no family support." On the Personal Feelings Scale, "lack of parents' time" mean score was 2.51 indicating a student response between disagree and neither agree nor

disagree that this was a barrier to their exercise and PA. It appeared as though No Family Support was not a huge barrier to students exercise and PA in the current study. However, it should be appreciated that for over one-fourth (24.8%) of the students, No Family Support/Lack of Parents Time was a barrier to exercise and PA.

Homework

Homework was included on the School Scale and Personal Feelings Scale. Two studies from the literature review included Homework as a barrier. Walia and Leipert (2012) quoted one student from their interviews as saying "when teachers pile homework on you, you can be sitting in one spot for hours" (p. 3). Belton et al. (2014) quoted a student from their interview as saying

> [W]e don't really have any time to do extra sport apart from like football training cos you get back from school at like quarter to 5, you get the bus from her to [place name] so you just kind of get time to eat your dinner, get changed for training, go to training, and go home and do your homework. (p. 12)

On the School Scale, "homework" was reported by 3.0% of students as a barrier to their exercise and PA. On the Personal Feelings Scale, the mean score for "homework" (2.89) indicated that students leaned toward neither agreeing nor disagreeing that this was a barrier to their exercise and PA. Although in general, in the current study, homework did not appear to be a barrier to students exercise and PA, it is noteworthy that 39.3% of the students felt this was a barrier.

Lack of Culturally Appropriate Facilities

Lack of Culturally Appropriate Facilities was included on the Community Scale. One study from the literature review included Lack of Culturally Appropriate Facilities as a barrier. Parents in the Moore et al. (2010) focus groups noted a lack of culturally appropriate facilities as a primary barrier related to student PA. In fact, participants in one group noted there were venues for ice-skating and skate boarding in the area, but these were not activities that "ethnic kids" would enjoy. In the current study, lack of culturally appropriate activities/opportunities

mean value (2.41) indicated that students disagreed that this was a barrier to their exercise and PA. Therefore, in general, Lack of Culturally Appropriate Facilities was not found to be a barrier in the current study. However, it should be appreciated that for 16.0% of the students this was perceived as a barrier to their exercise and PA.

Previous Negative PA Experience

Previous Negative PA Experience was included on the School Scale. One study from the literature review included Previous Negative PA Experience as a barrier. Participants interviewed in the Kurger et al. (2012) study expressed "negative experience while engaging in PA" as a barrier. Students reported "previous negative experience" as a barrier (1.5%) on the School Scale in the current study. Therefore, Previous Negative Experience was not found to be a barrier in the current study.

Other Commitments

Other Commitments was included on the School Scale. One study from the literature review included Other Commitments as a barrier. Time taken by other commitments was mentioned as a barrier by interview participants in the Kruger et al. (2012) study. Students reported "other commitments" as a barrier (1.1%) on the School Scale in the current study. Therefore, Other Commitments was not found to be a barrier in the current study.

Limitations

The return rate of surveys for the students and parents is a limitation of the current study. This is especially true for the parents where the return rate was extremely low. Although the sample size of the administrators was low, there were only a few to be expected among the three counties surveyed. Another limitation was not being able to do county by county comparisons as initially planned. In order to enhance return rate study procedures were altered such that these

comparisons were no longer possible. Lastly, convenience sampling, not random sampling was utilized, and self-report bias should be taken into consideration.

Conclusion and Future Directions

In the current study regarding perceived barriers to exercise and PA, two demographic differences were demonstrated for gender involving the Enjoyment and Personal Feelings Scales. Females perceived these to be barriers more frequently than males. However, perceived differences between males and females were small. There were two demographic differences based on SES involving the School and Personal Feelings Scales. Low SES students perceived Personal Feelings to be more of a barrier than high SES students. However, this difference was not large. Low SES students also reported more barriers to participating in school sports than high SES students. It should be appreciated that this difference was fairly substantial. There were no demographic differences based on age or race in scale scores. Regarding perceived student barriers to exercise and PA, parents responded differently from both students and administrators for several scales. Although interesting, these results should be interpreted with caution due to the extremely small survey return rate for parents. Finally, evaluation of the individual barriers indicated that these were not barriers to exercise and PA for the majority of students. However, it should be appreciated that for many barriers, a significant proportion (20-40%) of students did indicate that a particular barrier was a barrier to exercise and PA.

Future research should continue to study potential demographic differences in perceived barriers to exercise and PA in rural youth. Also, potential differences in perceived student barriers among students, parents, and administrators should continue to be explored. In particular, efforts should be taken to obtain representative samples, especially from parents. The

current research and similar future efforts should help health educators implement programs with an enhanced focus in these areas, thus increasing adolescent exercise and PA.

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APPENDIX A

STUDENT LETTER OF INFORMATION AND ASSENT

Dear Student:

I am a graduate student from The University of Alabama. I am doing a research study about physical activity in 7th-12th graders in rural West Alabama. The results of this research study may show us some new physical activities to offer in your community.

Your school system allowed me to ask you to be in the study. Your parents know we are asking you to be in this study. It is OK with them. I am asking all other 7th-12th graders in this county to participate.

If you decide to be in the study, you will fill out an online survey. It mainly asks questions about your exercise and physical activity involvement.

The survey takes about 10 minutes and there are about 30 questions. The survey will not cost you anything. We do not think there are any risks or harm to you in this study. There is possibly no benefit in you taking the survey.

Your name will not be asked for on the survey. You can skip any questions that you do not want to answer. All survey results will be confidential and kept on a password secured computer at The University of Alabama. No one will be able to recognize you from your answers.

We ask you and the other students taking the survey not to talk about how survey questions were answered (to keep the survey confidential). We cannot promise this will happen. We will not tell your parents or teachers how you answered.

You are a volunteer. You are helping us but you do not have to unless you want to. This is your free choice. If you start the study and decide you don't want to continue, you can stop at any time. No one will be mad at you. There will be no effect on your grades, or with your school, or with your relations with The University of Alabama. You will not have to miss any necessary class time to take the survey. You can take it before or after school or whenever your teachers say it is a good time to take it.

If you have any questions about this study, please contact me at (205) 348-1937 or mscox@ua.edu . If you have questions later, you can call Dr. Mark Richardson at The University of Alabama at (205) 348-9180 or mrichard@bamaed.ua.edu . You can also ask your parents questions if you wish. If you have questions or concerns about your rights in a research study, please contact Ms. Tanta Myles, the University of Alabama Research Compliance Officer, at (205) 348-8461.

If you agree to be in this study, please sign your name on this letter below. If you want a copy of this letter to keep, contact Melissa Cox at (205) 348-1937 or mscox@ua.edu . Or you can find a copy of this letter in your school office for you to keep.

Thank you very much for your interest.

Sincerely,

Melissa Cox

_____ _____

Name of Student Participant Date

Please detach the following information and return the signed form to the school office if you agree to participate in the research study.

The survey link will be given to you when you return this form.
You will need the following I.D. Number when you access the survey

I.D. Number _____

Parent Letter of Information & Consent

Dear Parents:

I am a graduate student from The University of Alabama. I am doing a research study about physical activity in 7th-12th graders in rural West Alabama. Results of this research study may show us some new physical activities to offer in your community.

Your school system allowed me to ask you if you and your child would be in the study. I am asking all other 7th-12th graders and their parents in this county to participate.

If you decide to be in the study, you and your child will fill out an online survey. It mainly asks questions about the exercise and physical activity involvement of your child. Students will be able to take the survey at school, on school computers. You will be able to access the survey on any electronic device. You can also use school computers if you need to.

The survey takes about 10 minutes and there are about 30 questions. The survey will not cost you anything. We do not think there are any risks or harm to being in this study. There is possibly no benefit in taking the survey.

The name of you or your child will not be asked for on the survey. You and your child can skip any questions that you do not want to answer. All survey results will be confidential and kept on a password secured computer at The University of Alabama. No one will be able to recognize you or your child from your answers.

We ask everyone taking the survey not to talk about how questions were answered (to keep the survey confidential). We cannot promise this will happen. We will not tell parents or teachers how anyone answered.

You and your child are volunteers. You are helping us but do not have to unless you want to. This is a free choice. If you or your child start the study and decide not to continue, you can stop at any time. No one will be mad at you or them.

Taking part in this study is your free choice. You can decide to not be in it. Your child will not have to miss any necessary class time to take the survey. They can take it before or after school or whenever their teachers say it is a good time for them to take it. There will be no effect on their grades, or at their school, or with their relations with The University of Alabama.

If you have any questions about this study, please contact me at (205) 348-1937 or mscox@ua.edu . If you have questions later, you can call Dr. Mark Richardson at The University of Alabama at (205) 348-9180 or mrichard@bamaed.ua.edu . If you have questions or concerns about your rights in a research study, please contact Ms. Tanta Myles, the University of Alabama Research Compliance Officer, at (205) 348-8461.

If you agree to be in the research study, and if you agree to let your child be in this study, please sign your name on this letter below. If you would like a copy of this letter, please contact

Melissa Cox at (205) 348-1937 or mscox@ua.edu . You can also find a copy of this letter in the school office for you to keep. Please return the signed form to the school office. Keep the survey link and I.D. number for use when taking the survey.

Thank you very much for your interest.

Sincerely,

Melissa Cox

_____ _____

Name of Student Participant Date

_____ _____

(Parent or Legal Guardian) Date

_____ _____

(Parent or Legal Guardian) Date

Administrator Information & Consent

The University of Alabama

Human Research Protection Program

Informed Consent

Study Title: Barriers to Exercise/Physical Activity for Adolescents in Rural West Alabama

Investigator: Melissa Cox, PhD Candidate

You are being asked to take part in a research study.

This study is called Barriers to Exercise/Physical Activity for Adolescents in Rural West Alabama. This research study is being done by Melissa Cox, who is a graduate student at The University of Alabama. Ms. Cox is being supervised by Dr. Richardson who is a Professor of Exercise Science at The University of Alabama.

Is the researcher being paid for this study?

This study is supported by grants from the University of Alabama Graduate School. The grant covers supplies, such as paper, and mileage only. The investigator is not receiving extra pay for this study.

What is the study about? What is the investigator trying to learn?

The study is about Exercise and Physical Activity of 13-18 year-olds in rural West Alabama counties. The results of this study may show us some new physical activities that could be offered in your community.

Why have I been asked to be in this study?

Because you are an administrator or teacher of adolescents who live in a rural West Alabama county.

How many people will be in this study?

Approximately 300

What will I be asked to do in this study?

Complete an on-line survey of approximately 30 questions about the physical activity of the students at the school in which you are an administrator/teacher.

How much time will the survey take?

About 10 minutes.

Will being in this study cost me anything?

The only cost to you is your time.

Will I be compensated for being in this study?

No

Can the investigator take me out of this study?

Yes, if you no longer meet the study requirements.

What are the risks (dangers or harms) to me if I am in this study?

Little to none.

What are the benefits (good things) that may happen if I am in this study?

There are possibly no benefits to participating.

What are the benefits to science or society?

This study may provide useful information to other researchers and program planners who can make choices about more research needs or new programs to start.

How will my privacy be protected?

You will not be asked to put your name on the survey. No one will know who you are based on how you answer the survey questions. You are free to skip any questions that you do not feel comfortable answering.

How will my confidentiality be protected?

All survey results will be confidential and kept on a password secured computer at The University of Alabama. No one will be able to recognize you from your answers. The consent form you sign will be stored in a locked cabinet in the Project Investigator's office (Nott Hall, room 356).

What are the alternatives to being in this study? Do I have other choices?

The alternative to being in this study is not to participate.

What are my rights as a participant in this study?

Taking part in this study is your free choice. You can decide to not be in it. There will be no effect on your job, your school, or with your relations with The University of Alabama.

The University of Alabama Institutional Review Board ("the IRB") is the committee that protects the rights of people in research studies.

Who do I call if I have questions or problems?

If you have questions about the study right now, please contact Melissa Cox, at 205-348-1937 or mscox@ua.ed . If you have questions about your rights as a person in a research study, call Ms. Tanta Myles, the Research Compliance Officer of The University of Alabama, at 205-348-8461 or toll-free at 1-877-820-3066.

You may also ask questions, make suggestions, or file complaints and concerns through the IRB Outreach website at http://osp.ua.edu/site/PRCO_Welcome.html or email the Research Compliance office at participantoutreach@bama.ua.edu .

I have read this consent form and I have had a chance to ask questions. I agree to take part in the research study.

If you would like a copy of this form to keep, contact Melissa Cox at (205) 348-1937 or mscox@ua.edu . You can also find a copy of this form in your school office.

_____ _____

Signature of Research Participant Date

APPENDIX B

SURVEYS

Barriers to Exercise/Physical Activity for Adolescents in Rural West Alabama - **adolescent survey**

Please enter your ID code number

Please answer the following questions regarding Exercise and Physical Activity.

For the following questions, EXERCISE is defined as planned, structured physical activity with the purpose of improving or maintaining physical fitness, physical performance, or health. Example: going to the gym, or participating in a structured exercise class.

	Excellent	Very Good	Good	Fair	Poor
Rate your level of enjoyment of exercise	❍	❍	❍	❍	❍

The following contain a number of statements with which some people agree and others disagree. Please rate how much you personally agree or disagree with these statements-how much they reflect how you feel or think personally.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I exercise on a daily basis	❍	❍	❍	❍	❍
Exercise is important	❍	❍	❍	❍	❍
I enjoy the social aspect of exercise	❍	❍	❍	❍	❍
I enjoy exercising alone	❍	❍	❍	❍	❍

For the following questions, PHYSICAL ACTIVITY is defined as bodily movement during leisure time which, when added to baseline activity, can produce health benefits. Example: pick-up basketball game, or going on a walk with friends.

	Excellent	Very Good	Good	Fair	Poor
Rate your level of enjoyment in physical activity	❍	❍	❍	❍	❍

The following contain a number of statements with which some people agree and others disagree. Please rate how much you personally agree or disagree with these statements-how much they reflect how you feel or think personally.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I participate in physical activity on a daily basis	❍	❍	❍	❍	❍
Physical activity is important	❍	❍	❍	❍	❍
I enjoy the social aspect of physical activity	❍	❍	❍	❍	❍
I enjoy being physically active alone	❍	❍	❍	❍	❍

During the past week how many days did you exercise, play a sport, or participate in Physical Activity for at least 20 minutes that made you sweat and breathe hard?

- ❍ 0 days
- ❍ 1 day
- ❍ 2 days
- ❍ 3 days
- ❍ 4 days
- ❍ 5 days
- ❍ 6 days
- ❍ 7 days

Please answer the next questions are about your school.

Are you on a school sports team?
- ❍ Yes
- ❍ No

If No Is Selected, Then Skip To Would you like to be on a school sports team...

Answer If Are you on a school sports team? Yes Is Selected

During the past 12 months, on how many school sports teams did you play?
- ❍ 1
- ❍ 2
- ❍ 3
- ❍ 4
- ❍ 5 or more

In the past year, which sports did you participate in at school? Check all that apply.
- ❑ Archery
- ❑ Badminton
- ❑ Baseball/softball
- ❑ Basketball
- ❑ Bowling
- ❑ Cheerleading
- ❑ Cross Country
- ❑ Dance Line/Flag Corp
- ❑ Flag Football
- ❑ Football (tackle)
- ❑ Frisbee Golf
- ❑ Golf
- ❑ Handball
- ❑ Lacrosse
- ❑ Riflery
- ❑ Soccer
- ❑ Swim Team
- ❑ Tennis
- ❑ Track & Field
- ❑ Ultimate Frisbee
- ❑ Volleyball
- ❑ Whiffleball
- ❑ Wrestling
- ❑ Other

Answer If Are you on a school sports team? No Is Selected

Would you like to be on a school sports team?

- ❍ Yes
- ❍ No

Answer If Would you like to be on a school sports team? Yes Is Selected

Please identify reasons that hold you back from participating in school sports:

- ❑ School rules & regulations
- ❑ Grades
- ❑ Can only play on one team
- ❑ My favorite sports is not offered
- ❑ Too much money to participate
- ❑ Parents won't let me
- ❑ Disciplinary issues
- ❑ Have to work
- ❑ Transportation
- ❑ Didn't make the team
- ❑ No family support
- ❑ Too much homework
- ❑ Don't know how to start
- ❑ Previous negative experience
- ❑ Other commitments
- ❑ Other reasons

If Please identify reasons tha... Is Equal to 1, Then Skip To In an average week, how many day...

I have to get my own transportation to my games rather than ride on a school bus.

- ❍ Never
- ❍ Rarely
- ❍ Sometimes
- ❍ Often
- ❍ All of the Time

Does your school provide transportation (late bus) to school or home for you when participate in school sports?

- ❍ Yes
- ❍ No

In an average week, how many days do you go to PE class?

- ❍ 1 day
- ❍ 2 days
- ❍ 3 days
- ❍ 4 days
- ❍ 5 days

How many days do you sweat and breathe hard for 20 minutes in PE class?

- ❍ 1 day
- ❍ 2 days
- ❍ 3 days
- ❍ 4 days
- ❍ 5 days

Please answer the next questions about organized school sports.

I think all students who are interested in participating in school sports should have the opportunity.

- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

How supportive are your parents of your sports/physical activity interests?

- ❍ Strongly Unsupportive
- ❍ Unsupportive
- ❍ Neither supportive or unsupportive
- ❍ Supportive
- ❍ Strongly Supportive

In the past year, which sports do you participate in out of school? Check all that apply.

- ❑ Archery
- ❑ Badminton
- ❑ Baseball/Softball
- ❑ Basketball
- ❑ Bowling
- ❑ Cheerleading
- ❑ Cross Country
- ❑ Dance Line / Flag Corp
- ❑ Flag Football
- ❑ Football (tackle)
- ❑ Frisbee Golf
- ❑ Golf
- ❑ Handball
- ❑ Lacrosse
- ❑ Riflery
- ❑ Soccer
- ❑ Swim Team
- ❑ Tennis
- ❑ Track & Field
- ❑ Ultimate Frisbee
- ❑ Volleyball
- ❑ Whiffleball
- ❑ Wrestling
- ❑ Other
- ❑ None

Does your school offer any groups or clubs for physical activities?
- ❍ Yes
- ❍ No

Answer If Does your school offer any groups or clubs for physical activities? Yes Is Selected
Please select all groups or clubs for physical activities in which you participate.
- ❑ Aerobics Class
- ❑ Cardiovascular Fitness
- ❑ Dance
- ❑ Jump Rope
- ❑ Noncompetitive Cheerleading
- ❑ Running/Jogging Club
- ❑ Walking Club/Group
- ❑ Weight Training
- ❑ Yoga
- ❑ Other Physical Activities
- ❑ I don't participate in any Physical Activities offered at school

Please answer the following questions about out of school activities.

When you are not in school, how many hours per day do you spend in front of a screen (such as watching TV, playing video games, I-pad, I-phone, etc.)?
- ❍ less than 1 hour
- ❍ 1 hour
- ❍ 2 hours
- ❍ 3 hours
- ❍ 4 hours
- ❍ more than 5 hours

When you are not in school, where do you go to participate in sports or physical activity? Check all that apply.
- ❑ School Gym
- ❑ School Playground
- ❑ Community Playground/Park
- ❑ Church Gym
- ❑ Don't participate in Physical Activities

When you are not in school, what physical activities do you enjoy and participate in on a regular basis? Check all that apply.

- ❑ Ballet / Jazz / Tap
- ❑ Biking
- ❑ Dancing
- ❑ Gymnastics
- ❑ Hiking
- ❑ Jump Rope
- ❑ Martial Arts (Jiu-Jitsu, Judo, Karate, Kick Boxing, Tae Kwon Do, Tai Chi)
- ❑ Skating (ice skating, roller skating, roller blading, skate boarding)
- ❑ Swimming
- ❑ Walking
- ❑ Yoga / Pilates
- ❑ Zumba
- ❑ Other
- ❑ None

Please answer the following question about your physical activity.

I don't get enough Physical Activity because...

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Play too many computer games	❍	❍	❍	❍	❍
Watching TV	❍	❍	❍	❍	❍
There are not enough sports offered that I like	❍	❍	❍	❍	❍
Homework	❍	❍	❍	❍	❍
Work responsibilities	❍	❍	❍	❍	❍
Lack of time	❍	❍	❍	❍	❍
Lack of parents' time	❍	❍	❍	❍	❍
Money (registration fees, uniforms, etc.)	❍	❍	❍	❍	❍
Transportation	❍	❍	❍	❍	❍
Other reasons	❍	❍	❍	❍	❍
I think I get enough physical activity and participate in sports often enough.	❍	❍	❍	❍	❍

Adolescent's do not get enough physical activity due to the following community challenges:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Lack of facilities (no parks, no lights)	❍	❍	❍	❍	❍
No opportunities (no organized sports)	❍	❍	❍	❍	❍
High costs of entry fees	❍	❍	❍	❍	❍
Crime/safety/danger	❍	❍	❍	❍	❍
Lack of culturally appropriate facilities/opportunities	❍	❍	❍	❍	❍
Our community does have adequate opportunities for adolescent physical activity	❍	❍	❍	❍	❍

Please answer the following questions about yourself.

Gender:
- ❍ Male
- ❍ Female

Race:
- ❍ African-American
- ❍ White
- ❍ Other

Do you receive a Free or Reduced Price lunch at school?
- ❍ Yes
- ❍ No

Please add any additional information or thoughts on physical activity and exercise.

Barriers to Exercise/Physical Activity for Adolescents in Rural West Alabama - **parent survey**

Please enter your ID number

Please answer the following questions regarding the Exercise and Physical Activity of your child.

For the following questions, EXERCISE is defined as planned, structured physical activity with the purpose of improving or maintaining physical fitness, physical performance, or health. Example: going to the gym or a structured exercise class.

	Excellent	Very Good	Good	Fair	Poor
Rate your child's level of enjoyment of exercise	❍	❍	❍	❍	❍

The following contain a number of statements with which some people agree and others disagree. Please rate how much you personally agree or disagree with these statements-how much they reflect how you feel or think personally.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
My child exercises on a daily basis	❍	❍	❍	❍	❍
Exercise is important for my child	❍	❍	❍	❍	❍
My child enjoys the social aspect of exercise	❍	❍	❍	❍	❍
My child enjoys exercising alone	❍	❍	❍	❍	❍

For the following questions, PHYSICAL ACTIVITY is defined as bodily movement during leisure time which, when added to baseline activity, can produce health benefits. Example: pick-up basketball game, or going on a walk with friends.

	Excellent	Very Good	Good	Fair	Poor
Rate your child's level of enjoyment in physical activity	❍	❍	❍	❍	❍

The following contain a number of statements with which some people agree and others disagree. Please rate how much you personally agree or disagree with these statements-how much they reflect how you feel or think personally.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
My child participates in physical activity on a daily basis	❍	❍	❍	❍	❍
Physical activity is important for my child	❍	❍	❍	❍	❍
My child enjoys the social aspect of physical activity	❍	❍	❍	❍	❍
My child enjoys being physically active alone	❍	❍	❍	❍	❍

During the past week how many days did your child exercise, play a sport, or participate in Physical Activity for at least 20 minutes that made the child sweat and breathe hard?

- ❍ 0 days
- ❍ 1 day
- ❍ 2 days
- ❍ 3 days
- ❍ 4 days
- ❍ 5 days
- ❍ 6 days
- ❍ 7 days

Please answer the next questions about the school your child attends.

Does your child participate on a school sports team?
- ❍ Yes
- ❍ No

If Yes Is Selected, Then Skip To During the past 12 months, on how man...

Answer If Does your child participate on a school sports team? No Is Selected

Would your child like to be on a school sports team?
- ❍ Yes
- ❍ No

Answer If Would your child like to be on a school sports team? Yes Is Selected

Please identify reasons that are holding your child back from participating in school sports. Check all that apply:
- ❍ School rules & regulations
- ❍ Grades
- ❍ Can only play on one team
- ❍ Favorite sport not offered
- ❍ Too much money to play
- ❍ I won't let them
- ❍ Disciplinary issues
- ❍ Student must work
- ❍ Transportations
- ❍ Didn't make team
- ❍ No family support
- ❍ Too much homework
- ❍ Don't know how to start
- ❍ Previous negative experience
- ❍ Other commitments
- ❍ Other

If School rules & regulations Is Displayed, Then Skip To In an average week, what is the numbe...

During the past 12 months, on how many school sports teams did your child play?
- ❍ 1
- ❍ 2
- ❍ 3
- ❍ 4
- ❍ 5 or more

In the past 12 months, which sports did your child participate in at school? Check all that apply.

- ❑ Archery
- ❑ Badminton
- ❑ Baseball/softball
- ❑ Basketball
- ❑ Bowling
- ❑ Cheerleading
- ❑ Cross Country
- ❑ Dance Line/Flag Corp
- ❑ Flag Football
- ❑ Football (tackle)
- ❑ Frisbee Golf
- ❑ Golf Handball
- ❑ Lacrosse
- ❑ Riflery
- ❑ Soccer
- ❑ Swim Team
- ❑ Tennis
- ❑ Track & Field
- ❑ Ultimate Frisbee
- ❑ Volleyball
- ❑ Whiffleball
- ❑ Wrestling
- ❑ Other
- ❑ None of the above

Students at school have to get their own transportation to school sponsored sporting events rather than ride on a school bus.

- ❍ Never
- ❍ Rarely
- ❍ Sometimes
- ❍ Often
- ❍ All of the Time

Does your school provide transportation (late bus) to school or home for students who participate in school extracurricular activities?

- ❍ Yes
- ❍ No

In an average week, what is the number of times your child went to PE class?

- ❍ 1 day
- ❍ 2 days
- ❍ 3 days
- ❍ 4 days
- ❍ 5 days

How many days do you think your child sweats & breathes hard for 20 minutes in PE class?

- ❍ 1 day
- ❍ 2 days
- ❍ 3 days
- ❍ 4 days
- ❍ 5 days

Please answer the next questions about organized school sports.

I think all students who are interested should have the opportunity to participate in school sports.

- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

How supportive are you of your child's sports/physical activity interests?

- ❍ Strongly Unsupportive
- ❍ Unsupportive
- ❍ Neither supportive or unsupportive
- ❍ Supportive
- ❍ Strongly Supportive

In the past year, which sports has your child participated in outside of school? Check all that apply.

- ❑ Archery
- ❑ Badminton
- ❑ Baseball/Softball
- ❑ Basketball
- ❑ Bowling
- ❑ Cheerleading
- ❑ Cross Country
- ❑ Dance Line / Flag Corp
- ❑ Flag Football
- ❑ Football (tackle)
- ❑ Frisbee Golf
- ❑ Golf
- ❑ Handball
- ❑ Lacrosse
- ❑ Riflery
- ❑ Soccer
- ❑ Swim Team
- ❑ Tennis
- ❑ Track & Field
- ❑ Ultimate Frisbee
- ❑ Volleyball
- ❑ Whiffleball
- ❑ Wrestling
- ❑ Other
- ❑ None

Does your child's school offer any groups/activities for physical activity?

- ❍ Yes
- ❍ No

Please check all groups/activities for physical activity that your child participates in at school.

- ❑ Aerobics Class
- ❑ Cardiovascular Fitness
- ❑ Dance
- ❑ Jump Rope
- ❑ Noncompetitive Cheerleading
- ❑ Running/Jogging Club
- ❑ Walking Club/Group
- ❑ Weight Training
- ❑ Yoga
- ❑ Other Physical Activities

Please answer the following questions about outside of school activities.

When not in school, how many hours per day does your child spend in front of a screen (such as watching TV, playing video games, I-pad, I-phone, etc.)?

- ❍ less than 1 hour
- ❍ 1 hour
- ❍ 2 hours
- ❍ 3 hours
- ❍ 4 hours
- ❍ More than 5 hours

When not in school, where does your child go to participate in sports or physical activity? Check all that apply.

- ❑ School Gym
- ❑ School Playground
- ❑ Community Playground/Park
- ❑ Church Gym
- ❑ Other
- ❑ Does not participate in physical activity

When you are not in school, what physical activities does your child enjoy and participate in on a regular basis? Check all that apply.

- ❑ Ballet / Jazz / Tap
- ❑ Biking
- ❑ Dancing
- ❑ Gymnastics
- ❑ Hiking
- ❑ Jump Rope
- ❑ Martial Arts (Jiu-Jitsu, Judo, Karate, Kick Boxing, Tae Kwon Do, Tai Chi)
- ❑ Skating (ice skating, roller skating, roller blading, skate boarding)
- ❑ Swimming
- ❑ Walking
- ❑ Yoga / Pilates
- ❑ Zumba
- ❑ Other
- ❑ None

Please answer the following question about the physical activity of your child. My child does not get enough physical activity due to ...

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Playing too many computer games	❍	❍	❍	❍	❍
Watching TV	❍	❍	❍	❍	❍
There are not enough sports offered that my child likes	❍	❍	❍	❍	❍
Homework	❍	❍	❍	❍	❍
Work responsibilities	❍	❍	❍	❍	❍
Lack of time	❍	❍	❍	❍	❍
Lack of parents time	❍	❍	❍	❍	❍
Money (registration fees, uniforms, etc.)	❍	❍	❍	❍	❍
Transportation	❍	❍	❍	❍	❍
Other reasons	❍	❍	❍	❍	❍
I think my child gets enough physical activity and participates in sports often enough.	❍	❍	❍	❍	❍

Adolescents do not get enough physical activity due to the following community challenges:

	Strongly Disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Lack of facilities (no parks, no lights)	❍	❍	❍	❍	❍	❍	❍
No opportunities (no organized sports)	❍	❍	❍	❍	❍	❍	❍
High costs of entry fee's	❍	❍	❍	❍	❍	❍	❍
Crime/safety/ danger	❍	❍	❍	❍	❍	❍	❍
Lack of culturally appropriate facilities/ activities	❍	❍	❍	❍	❍	❍	❍
Adequate opportunities are available in our community	❍	❍	❍	❍	❍	❍	❍

When you think of community opportunities for sports and physical activity in your community, what comes to mind?

Please answer the following questions about yourself.

Gender:
- ❍ Male
- ❍ Female

Race:
- ❍ African-American
- ❍ White
- ❍ Other

Does your child receive a Free or Reduced Price school lunch?
- ❍ Yes
- ❍ No

Is anyone in your household covered by Medicaid?
- ❍ Yes
- ❍ No

Please add any additional information or thoughts on physical activity and exercise.

Barriers to Exercise/Physical Activity for Adolescents in Rural West Alabama - **administrator survey**

Please answer the following questions regarding Exercise and Physical Activity.

For the following questions, EXERCISE is defined as planned, structured physical activity with the purpose of improving or maintaining physical fitness, physical performance, or health. Example: going to the gym or a structured exercise class.

	Excellent	Very Good	Good	Fair	Poor
Rate students level of enjoyment of exercise	❍	❍	❍	❍	❍

The following contain a number of statements with which some people agree and others disagree. Please rate how much you personally agree or disagree with these statements-how much they reflect how you feel or think personally.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Students exercise on a daily basis	❍	❍	❍	❍	❍
Exercise is important to students	❍	❍	❍	❍	❍
Students enjoy the social aspect of exercise	❍	❍	❍	❍	❍
Students enjoy exercising alone	❍	❍	❍	❍	❍

For the following questions, PHYSICAL ACTIVITY is defined as bodily movement during leisure time which, when added to baseline activity, can produce health benefits. Example: pick-up basketball game or going on a walk with friends.

	Excellent	Very Good	Good	Fair	Poor
Rate students level of enjoyment in physical activity	❍	❍	❍	❍	❍

The following contain a number of statements with which some people agree and others disagree. Please rate how much you personally agree or disagree with these statements-how much they reflect how you feel or think personally.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Students participate in physical activity on a daily basis	❍	❍	❍	❍	❍
Physical activity is important to students	❍	❍	❍	❍	❍
Students enjoy the social aspect of physical activity	❍	❍	❍	❍	❍
Students enjoy being physically active alone	❍	❍	❍	❍	❍

During the past week how many days did your students exercise, play a sport, or participate in Physical Activity for at least 20 minutes that made them sweat and breathe hard?

- ❍ 0 days
- ❍ 1 day
- ❍ 2 days
- ❍ 3 days
- ❍ 4 days
- ❍ 5 days
- ❍ 6 days
- ❍ 7 days

Please answer the next questions about your school.

Students at school have to get their own transportation to school sponsored sporting events rather than ride on a school bus.

- ❍ Never
- ❍ Rarely
- ❍ Sometimes
- ❍ Often
- ❍ All of the Time

Does your school provide transportation (late bus) to school or home for students who participate in school extracurricular activities?

- ❍ Yes
- ❍ No

In an average week, what is the number of times students go to PE class?

- ❍ 1 day
- ❍ 2 days
- ❍ 3 days
- ❍ 4 days
- ❍ 5 days

How many days do students sweat and breathe hard for at least 20 minutes in PE class?

- ❍ 1 day
- ❍ 2 days
- ❍ 3 days
- ❍ 4 days
- ❍ 5 days

Please answer the next questions about organized school sports.

I think all students who are interested in school sports should have the opportunity.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

During the past 12 months, how many sports teams did your school offer?
- ❍ 1
- ❍ 2
- ❍ 3
- ❍ 4
- ❍ 5 or more

How supportive of sports/physical activity interests are you?
- ❍ Strongly Unsupportive
- ❍ Unsupportive
- ❍ Neither supportive or unsupportive
- ❍ Supportive
- ❍ Strongly Supportive

Please identify reasons that you believe students don't participate in school sports more often.
- ❍ School rules & regulations
- ❍ Grades
- ❍ Can only play on one team
- ❍ Their favorite sport is not offered
- ❍ Too much money to play
- ❍ Parent's won't let them
- ❍ Disciplinary issues
- ❍ Students must work
- ❍ Transportation
- ❍ Didn't make the team
- ❍ No family support
- ❍ Too much homework
- ❍ Don't know how to start
- ❍ Previous negative experience
- ❍ Other commitments
- ❍ Other

In which sports do you coach, volunteer, lead practice or participate in some other way through your school for this academic year? Check all that apply.

- ❑ Archery
- ❑ Badminton
- ❑ Baseball/softball
- ❑ Basketball
- ❑ Bowling
- ❑ Cheerleading
- ❑ Cross Country
- ❑ Dance Line/Flag Corp
- ❑ Flag Football
- ❑ Football (tackle)
- ❑ Frisbee Golf
- ❑ Golf
- ❑ Handball
- ❑ Lacrosse
- ❑ Riflery
- ❑ Soccer
- ❑ Swim Team
- ❑ Tennis
- ❑ Track & Field
- ❑ Ultimate Frisbee
- ❑ Volleyball
- ❑ Whiffleball
- ❑ Wrestling
- ❑ Other

Which sports do you coach, volunteer, lead practice or participate in some other way out of school this academic year? Check all that apply.

- ❑ Archery
- ❑ Badminton
- ❑ Baseball/Softball
- ❑ Basketball
- ❑ Bowling
- ❑ Cheerleading
- ❑ Cross Country
- ❑ Dance Line / Flag Corp
- ❑ Flag Football
- ❑ Football (tackle)
- ❑ Frisbee Golf
- ❑ Golf
- ❑ Handball
- ❑ Lacrosse
- ❑ Riflery
- ❑ Soccer
- ❑ Swim Team
- ❑ Tennis
- ❑ Track & Field
- ❑ Ultimate Frisbee
- ❑ Volleyball
- ❑ Whiffleball
- ❑ Wrestling
- ❑ Other
- ❑ None

Does your school offer any groups or clubs for physical activities that you coach, volunteer, lead practice or participate in some other way? Check all that apply.

- ❑ Aerobics Class
- ❑ Cardiovascular Fitness
- ❑ Dance
- ❑ Jump Rope
- ❑ Noncompetitive Cheerleading
- ❑ Running/Jogging Club
- ❑ Walking Club/Group
- ❑ Weight Training
- ❑ Yoga
- ❑ Other Physical Activities
- ❑ None

Please answer the following questions about outside of school activities.

When not in school, how many hours per day do you think students spend in front of a screen (such as watching TV, playing video games, I-pad, I-phone, etc.)?

- ❍ less than 1 hour
- ❍ 1 hour
- ❍ 2 hours
- ❍ 3 hours
- ❍ 4 hours
- ❍ more than 5 hours

When not in school, where do students go to participate in sports or physical activity? Check all that apply.

- ❑ School Gym
- ❑ School Playground
- ❑ Community Playground/Park
- ❑ Church Gym
- ❑ Other
- ❑ I think they don't participate out of school

Please answer the following question about student physical activity. Students do not get enough physical activity because...

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Playing too many computer games	❍	❍	❍	❍	❍
Watching TV	❍	❍	❍	❍	❍
There are not enough sports offered that students like	❍	❍	❍	❍	❍
Homework	❍	❍	❍	❍	❍
Work responsibilities	❍	❍	❍	❍	❍
Lack of time	❍	❍	❍	❍	❍
Lack of parents time	❍	❍	❍	❍	❍
Money (registration fees, uniforms, etc.)	❍	❍	❍	❍	❍
Transportation	❍	❍	❍	❍	❍
Other reasons	❍	❍	❍	❍	❍
Students get enough physical activity and participate in sports often enough	❍	❍	❍	❍	❍

Please answer the following questions about your community. Adolescents do not get enough physical activity due to the following challenges:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Lack of facilities (no parks, no lights)	❍	❍	❍	❍	❍
No opportunities	❍	❍	❍	❍	❍
High costs of entry fees	❍	❍	❍	❍	❍
Crime/safety/danger	❍	❍	❍	❍	❍
Lack of culturally appropriate facilities/opportunities	❍	❍	❍	❍	❍
Our community has adequate opportunities for adolescent physical activity	❍	❍	❍	❍	❍

When you think of community opportunities for sports and physical activity in your community, what comes to mind?

Please answer the following questions about yourself.

Gender:
- ❍ Male
- ❍ Female

Race:
- ❍ African-American
- ❍ White
- ❍ Other

Please add any additional information or thoughts on physical activity and exercise.

APPENDIX C

IRB APPROVAL LETTER

ALABAMA® | Institutional Review Board for the Protection of Human Subjects

March 22, 2016

Melissa Cox
Community & Rural Medicine
CCHS
Box 870327

Re: IRB#: 16-OR-118 "Barriers to Exercise/Physical Activity for Adolescents in Rural West Alabama"

Dear Ms. Cox:

The University of Alabama Institutional Review Board has granted approval for your proposed research.

Your application has been given expedited approval according to 45 CFR part 46. Approval has been given under expedited review category 7 as outlined below:

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies

Your application will expire on March 21, 2017. If your research will continue beyond this date, complete the relevant portions of the IRB Renewal Application. If you wish to modify the application, complete the Modification of an Approved Protocol Form. Changes in this study cannot be initiated without IRB approval, except when necessary to eliminate apparent immediate hazards to participants. When the study closes, complete the appropriate portions of the IRB Request for Study Closure Form.

Please use reproductions of the IRB approved stamped consent forms to obtain consent from your participants.

Should you need to submit any further correspondence regarding this proposal, please include the above application number.

Good luck with your research.

Sincerely,

Carpantato T. Myles, MSM, CIM, CIP
Director & Research Compliance Officer