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Social Support and Physical Activity among American Indians in Oklahoma: Results from a Community-based Participatory Research Study

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Abstract

Purpose: Little is known about the contribution of social support to physical activity (PA) behavior among American Indians (AIs). This community-based participatory research study examined the prevalence of and associations between different types of PA social support and PA among AIs in rural Oklahoma.

Methods: Our tribal-academic partnership surveyed AI adults (N=513) living within the tribal jurisdictional areas of 2 tribal nations. We used the Physical Activity Social Support (PASS) scale to assess 3 types of PA social support and Poisson regression to investigate associations between PASS types and self-reported PA behavior.

Findings: Over a third of participants perceived high levels of PA social support from friends (37%), family (35%), and overall (34%), yet only 29% reported regular PA (ie, 150 minutes or more weekly). Participants who exercised with pets/other were significantly more likely to achieve regular PA than those who exercised alone (PR 2.0, 95% CI: 1.4–2.9). Although not significant, compared with those reporting no/low support, participants with high friend PASS (PR 1.2, 95%:

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CI 0.9–1.6), medium family PASS (PR 1.2, 95% CI: 0.9–1.7), and overall PASS (PR 1.1, 95% CI: 0.8–1.6) were more likely to report regular PA.

Conclusions: The majority of participants did not meet current recommendations for PA behavior, which underscores the ongoing need for PA effective interventions among AIs living in rural areas. Results suggest that exercising with pets/other could be an important factor for future intervention. Further research is needed to elucidate determinants of PA and test interventions to increase PA among AIs.

Keywords

American Indian; Native American; physical activity; rural; social support

American Indians (AIs) experience disproportionate burdens of obesity (42.3%),¹ diabetes (17.5%),² hypertension (34.5%),² and cardiovascular disease (8.1%).³ In Oklahoma, the state with the second largest proportion of AIs, AIs are more likely than non-Hispanic whites to be obese (47.3% vs. 32.9%), and to have diabetes (17.7% vs. 11.5%), hypertension (40.1% vs. 37.0%), and cardiovascular disease (12.0% vs. 8.8%).⁴ Regular physical activity (PA) is a well-recognized strategy for preventing and reducing these and other health conditions. Research conducted with AIs has demonstrated that increasing PA lowers body mass index and reduces risk for diabetes, cardiovascular disease, and other chronic conditions.^{5–9} Rates of PA among AIs, however, remain low. A recent systematic review of PA in AIs conducted by Foulds and colleagues, which examined studies conducted over the past 50 years, concluded that the PA levels for the majority of AI adults and children/youth were well below national and international recommendations.¹⁰ Current national data indicate that AI adults are less likely than Non-Hispanic white adults to engage in regular leisure-time PA and meet federal PA guidelines (18.9% vs. 23.4%, respectively).

There is a need for evidence-based strategies that will effectively increase PA and reduce health disparities among AIs. Advancing understanding of the social determinants of PA within AI communities, including social support, a factor of the social environment found to indirectly influence physical activity via intrinsic and extrinsic motivation within other populations, is a critical step toward this end.¹¹ Studies of social support and PA among AI adults have been limited, most research has been qualitative and conducted with AI women,^{12–14} and reviews indicate that the evidence is mixed.¹⁵ Of the quantitative studies of social support and PA among AIs identified and reviewed by Coble and Rhodes,¹⁵ 2 had meaningful and significant associations^{16,17} and 2 found no associations.^{18,19}

The purpose of this study, conducted by our tribal-academic partnership, was to investigate social support and self-reported PA among AI adults (N=513) living within the jurisdictional areas of the Chickasaw Nation and the Choctaw Nation of Oklahoma. We examined the prevalence of PA and physical activity-related social support (PASS) and investigated the relationship between PASS and self-reported PA behavior.

Methods

Study Orientation and Partnership

A community-based participatory research (CBPR) orientation guided this study.^{20,21} Our ongoing tribal-university partnership, initiated in 2012, is steered by a committee comprising university researchers experienced in conducting CBPR and key multi-sector stakeholders from the Chickasaw Nation and the Choctaw Nation of Oklahoma, including representatives from tribal health promotion, nutritional and clinical services, tribal Institutional Review Boards (IRBs), and research divisions.^{22,23} The development of partnership processes and study methods were informed by partners' previous CBPR with AIs in Oklahoma and elsewhere.^{24–27} A unique aspect of this partnership was the participation of tribal commerce and marketing divisions, which provide economic and business expertise in creating environmental and policy interventions to promote health.

The research presented in this paper was conducted as part of a larger 5-year CBPR study, The Tribal Health and Resilience in Vulnerable Environments or “THRIVE” study, to implement healthy retail interventions in tribally owned and operated convenience stores. As a first stage in this study, our partnership developed and conducted a survey of AI adults living within the tribal jurisdictional areas of the 2 tribal nations to investigate eating and PA behaviors and related determinants among AIs adults living in both nations. From the onset of this research project, members of the steering committee met monthly and more frequently, as needed, at tribal facilities to collaboratively plan study activities, develop instruments and protocols, and analyze and interpret study findings. Consistent with CBPR principles, the THRIVE study focused on issues of relevance to the tribal nations and used an ecologic approach to examine and address determinants of multiple behaviors and health outcomes. Tribal and university partners participated in all aspects of the research process and shared in decision-making, responsibilities, and research funding. Similarly, all partners have been engaged in disseminating research findings and translating findings into new grants and projects to address research findings and other issues of concern to the tribal nations.

The study was reviewed and approved by the University of Oklahoma Health Sciences Center IRB, the Chickasaw Nation IRB, and the Choctaw Nation of Oklahoma IRB. In accordance with tribal partners' preferences, all results except those presented in Table 1 have been aggregated. When presented at the tribal level, results have been de-identified.

Study Setting

Both the Chickasaw Nation and the Choctaw Nation of Oklahoma are classified as Tribal Jurisdictional Areas by the US government and are similar in geographic size, population, and rurality.²⁸ The Chickasaw Nation occupies a 13-county region in southcentral Oklahoma that is approximately 10% of the state's area (ie, 7,270 square miles). Of the roughly 355,000 residents living within the Chickasaw Nation's jurisdictional area, approximately 11.2% are AI, some of whom are members of the Chickasaw Nation. The Choctaw Nation of Oklahoma occupies a 10.5-county region in southeastern Oklahoma that is approximately 15% of the state's area (ie, 10,602 square miles). Of the roughly 255,000 residents living

within the Choctaw Nation of Oklahoma's jurisdictional area, approximately 15.8% are AI, many of whom are members of the Choctaw Nation of Oklahoma. Specific data for tribal members are not available and the nature of the jurisdictional boundaries, which include both partial and full counties, make it difficult to calculate precise statistics for AIs living in these areas. However, estimates calculated using county-level census data suggest that high school graduation rates among all residents living in these jurisdictional areas (85% for the 13 counties of the Chickasaw Nation's and 84% for the 11 counties of the Choctaw Nation of Oklahoma's jurisdictional areas, respectively) are just below rates for Oklahoma (87%). Similarly, the percentage of the adults aged 25–44 years who have completed some college in the Chickasaw Nation's and the Choctaw Nation of Oklahoma's jurisdictional areas (50% and 49%, respectively) are also below rates for Oklahoma as a whole (59%). Estimated rates of physical inactivity among all adults living within these counties (34% for the Chickasaw Nation's and 36% for the Choctaw Nation of Oklahoma's jurisdictional areas) are higher than estimates for Oklahoma (30%).

Questionnaire Development and Data Collection

The questionnaire used in this study was jointly developed by our tribal-university partnership to investigate healthy eating and active living and related determinants among AIs living in both nations. Partnership members jointly identified key areas to be investigated. Research partners gathered existing validated measures used in national health surveys and other studies conducted with AIs and other rural populations for the partnership to review. The final questions selected were slightly adapted and localized, if necessary, and pilot tested with AIs from both nations (n=25). Survey recruitment and data collection protocols were co-developed by partnership members. Participants were recruited and screened for eligibility by trained tribal staff in community locations selected by tribal research partners (eg, tribal community centers, clinics, health fairs, cultural fairs, and festivals). To be eligible, participants had to be at least 18 years old, live within 1 of the 2 Tribal Jurisdictional Areas, and self-identify as AI. All 513 participants provided informed consent prior to beginning either a paper or electronic version of the survey and were mailed a \$30 gift card afterward. Surveys were completed from April through May 2015 with a response rate of 91.4%.

Measures

Sociodemographic Characteristics—We adapted measures from the Behavioral Risk Factor Surveillance System (BRFSS) questionnaire (2013) to assess participants' age, sex, educational attainment, marital status, employment, and household income.²⁹

Perceived Physical Activity Social Support—We used the Physical Activity Social Support (PASS) scale to measure perceived social support for PA.³⁰ This scale, which was derived from earlier physical activity social support measures,^{31,32} had been used previously with AI women.³⁰ The PASS scale is composed of 5 questions that assess 3 domains: friend PASS, family PASS, and overall PASS. The original PASS scale uses a 4-point Likert scale (from “Strongly Agree” to “Strongly Disagree”). Based on feedback from tribal partners, we added a “Neutral” response choice (ie, 5-point Likert scale). Statements used for all 3 PASS types were unchanged. Friend PASS was assessed by 2 items: “My friends encourage me to

exercise” and “I have at least one friend who would commit to exercise with me.” Family PASS was assessed by 2 items: “My relatives encourage me to exercise” and “I have at least one relative who would commit to exercise with me.” Overall PASS was calculated using the aforementioned 4 friend and family PASS items and an additional item, “If I had someone like a friend or family member to exercise with, chances are I would exercise more.” Consistent with earlier studies,³⁰ we created scale scores for each domain by dichotomizing responses for each item (0 = Strongly Disagree, Disagree, Neutral or 1 = Strongly Agree, Agree). Resulting friend PASS and family PASS scores ranged from 0 to 2 and overall PASS scores ranged from 0 to 5. Similar to earlier studies,³⁰ scale scores were grouped into 3 categories (ie, no/low support, medium support, and high support) for each PASS domain. Friend PASS scores of 0 were coded as no/low support, scores of 1 coded as medium support, and scores of 2 coded as high support. Family PASS scores were coded in the same way. Overall PASS scores of 0–1 were coded as no/low support, scores from 2–3 coded as medium support, and scores from 4–5 were coded as high support.

Physical Activity Behavior—We assessed PA behavior with a single item: “How many days a week do you usually do at least 30 minutes of physical activity or walking that increases your heart rate or makes you breathe harder than normal (eg, mowing the lawn, carrying light loads, bicycling at a regular pace, jogging, etc.)?” Participants indicated the number of days, from 0 to 7, that they did at least 30 minutes of PA weekly. Regular PA was defined as at least 5 days per week of at least 30 minutes of activity.

We assessed perceived community PA with a single item: “A lot of people in my town are physically active” with a 5-point Likert scale response (from “Strongly Agree” to “Strongly Disagree”). We also assessed PA activities with others by asking, “When you engage in physical activity, are you most likely to exercise with...?” Participants selected one of the following response options: “I don’t engage in physical activity,” “alone,” “spouse/partner,” “your children,” “other family,” “neighbors,” “other friends,” “a club or class,” “pets,” and “other.”

Statistical Analysis

Our statistical analyses included 484 participants (94%) with complete data for physical activity (n=2 missing), age (n=25 missing), sex (n=0 missing), and education (n=4 missing). Cronbach’s alpha values were calculated to measure internal consistency of each of the PASS scales. Values were calculated for each PASS scale using the 5-point Likert data and also using the dichotomized PASS variables. In our descriptive analyses we examined PA as days of PA and for inferential analyses, we examined PA as a binary indicator of regular physical activity (ie, reporting 5 or more days per week of at least 30 minutes of PA). We used Poisson regression with robust standard errors to test for trend in the prevalence of regular PA, high friend PASS, high family PASS, and high overall PASS across sociodemographic characteristics. We also used Poisson regression with robust standard errors to examine associations between PA and the 3 types of PASS after adjusting for age, sex, education, and Native Nation. We examined this association overall and stratified by sex. Inferential results are presented as prevalence ratios with 95% confidence intervals. Analyses were performed in 2018 using Stata 14.2 (StataCorp LLC, College Station, TX).

Results

Sociodemographic Characteristics

The majority of participants were female (75%), had completed at least some college or technical school (64%), were married or living as married (60%), and employed at least part time (76%) (Table 1). Participants' mean age was 44 years (SD=15 years). Over half (58%) reported a household income of less than \$40,000 in the previous 12 months.

Sociodemographic characteristics were similar across the 2 tribal nations.

Self-reported PA

The majority of participants (71%) reported that they were not physically active 5 days per week for at least 30 minutes (Table 1). Eleven percent reported no physical activity (ie, 0 days of at least 30 minutes of PA weekly). On average, participants reported that they did at least 30 minutes of physical activity 3.2 days each week (SD=2.1).

PA Social Support

Participants were most likely to exercise alone (41%) or with family (33%) (Table 2). Over a third (41%) agreed that a lot of people in their town were physically active; however, the majority (60%) disagreed or were neutral (23% and 37%, respectively). About half of participants said their friends encouraged them to exercise (48%) and they had at least one friend who would commit to exercising with them (53%). Similarly, about half reported their relatives encourage them to exercise (45%) and they had at least one relative who would exercise with him/her (50%). Nonetheless, 36% had no friend PA social support, 40% had no family PA social support, and 31% had no/low overall PASS. Cronbach's alpha calculated using the 5-point PASS variables was 0.75 for friend PASS and 0.78 for both family and overall PASS. Cronbach's alpha calculated using the dichotomized PASS variables was 0.64 for friend PASS, 0.66 for family PASS and 0.69 for overall PASS.

PA, and PA Social Support by Sociodemographic Characteristics

Regular physical activity was least prevalent among participants aged 35–44 (20%) and most prevalent among those aged 55–64 (37%) (Table 3). The prevalence of regular PA among men (45%) was higher than among women (23%) ($P < .001$). Participants with less than a high school education and those with a 4-year college education or more had the highest prevalence of regular PA (41% and 37%, respectively). The prevalence of regular PA was higher in Nation B (36%) than Nation A (22%) ($P = .001$). As age increased, both family PASS (40% high support for age 18–24 and 33% for age ≥ 65 years) and overall PASS decreased (47% high support for age 18–24 and 24% for age ≥ 65 years); the test for trend was significant for the latter ($P = .002$). Compared to men, more women reported high friend PASS (38% vs. 34%), family PASS (36% vs. 30%), and overall PASS (36% vs. 30%). Friend, family, and overall PASS were similar according to education and nation.

Adjusted Associations between PA Social Support and PA Behavior

Compared with participants who said that they were most likely to exercise alone, the prevalence of regular PA was significantly higher among participants who reported

exercising with pets (PR 2.0, 95% CI: 1.4–2.9). Compared with participants who said that they were most likely to exercise alone, the prevalence of regular PA was higher among those exercising with friends or a group class (PR 1.2, 95% CI: 0.8–1.7) and lower among those most likely to exercise with family (PR 0.7, 95% CI: 0.5–1.0), albeit not significantly (Table 4). Regular PA did not differ by perception of high community PA. Although not statistically significant, those with high levels of perceived friend PASS were more likely to be active compared with those who perceived no support from friends (PR 1.2, 95% CI: 0.9–1.6). Similarly, participants with moderate perceived social support from family were more likely to be active compared with those who perceived no support from family (PR 1.2, 95% CI: 0.9–1.7), also not significant. Interestingly, participants with high-perceived support from family had similar activity levels to those who reported no or low family support. Additionally, participants with high overall PASS were not significantly more likely to report regular PA than those with no/low or medium support (PR 1.1, 95% CI: 0.8–1.6).

In sex-stratified models (Supplementary Tables 1 and 2, available online only), exercising with pets/other was significantly associated with regular PA behavior for both women (PR 2.1, 95% CI: 1.0–4.3) and men (PR 2.0, 95% CI: 1.4–3.0). Although not significant, the associations between the prevalence of regular PA was higher among women reporting high levels of PA social support, as compared with those reporting no/low support, and they were slightly stronger in the sex stratified model than for the entire sample: PASS (PR 1.4, 95% CI: 0.9–2.1), family PASS (PR 1.3, 95% CI: 0.8–2.0), and overall PASS (PR 1.4, 95% CI: 0.8–2.2) (Supplementary Table 1). In men only, the associations between the prevalence of regular PA was lower among men reporting high levels of PA social support, as compared to those with no/low support, for all 3 domains: friend PASS (PR 0.9, 95% CI: 0.6–1.5), family PASS (PR 0.7, 95% CI: 0.4–1.3), and overall PASS (PR 0.8, 95% CI: 0.5–1.4) (Supplementary Table 2); these findings were not significant.

Discussion

Results underscore the need for interventions that will effectively promote, support, and maintain PA behaviors among AIs. Almost three-quarters of study participants (71%) did not participate in regular PA and 11% of study participants were sedentary. These results are particularly concerning in light of previously published findings by our partnership, using the same sample, that reveal higher prevalence of diabetes and obesity among participants not meeting recommended PA levels.²³ AI men in the current study were almost twice as likely to report regular PA (45%) than women participants (23%), which is consistent with the previous research.¹⁵ Percentages of men and women meeting recommended PA levels in our study were lower than previous studies of AI adults such as the Educational and Research Towards Health (EARTH) study, which found that 56% of men and 41% of women met recommended PA.³¹

We found that participants who reported exercising with pets/other were significantly twice as likely to achieve regular PA (PR 2.0, 95% CI: 1.4–2.9) as compared with those who reported exercising alone. While further research is needed, particularly with rural AI communities with whom, to our knowledge, no research has been conducted, this finding may be useful in identifying strategies for promoting physical activity.

While not significant, the finding that participants who reported that they were most likely to exercise with friends or in a group class were more likely to achieve regular PA than those who exercised alone. These findings are consistent with previous research among AI adults which found that knowing people who exercise is significantly associated with meeting recommended PA behavior.¹⁷ Study participants who reported high social support from friends, medium social support from family, and high overall PASS were all more likely to report regular PA than those with low levels of PASS. None of these findings, however, were significant.

Only one previous study, the US Women's Determinants Study (n=696 AI women), used PASS with AI adults.³⁰ Unfortunately, this study included only women. As compared with this national study, our participants indicated higher rates of "no/low support" and lower rates of "high support" across all 3 PASS domains.³⁰ Almost twice as many women in our study reported low overall PASS scores (29% vs. 15%) and fewer women reported high overall PASS (34% vs. 54%).³⁰ Similarly, fewer women in our study reported high friend PASS (38% vs. 46%) and more reported low/no friend PASS (35% vs. 23%). Fewer reported high family PASS (36% vs. 52%) and more reported low family PASS (39% vs. 22%).³⁰ AI women in the US Women's Determinants Study with medium overall PASS or high overall PASS were more likely to report regular PA, although only the former had a significant association with regular PA behavior.³⁰ Results for our study were similar to this earlier study using the same measure, although none of the associations between PASS and PA behavior were significant in our study.

Additionally, although also not significant, results from our sex-stratified models suggest that the relationship between PASS and PA may differ by sex. When examined in women only, the associations between high levels of all 3 PASS domains and PA behavior were slightly stronger than for the entire sample (Supplementary Table 1), although not significant. When examined in men only, high levels of all 3 PASS domains were associated, albeit not significantly, with lower prevalence of PA behavior as compared with those with no/low support in each domain (Supplementary Table 2). The significant association between exercising with pets/other and PA behavior, however, remained in the sex-stratified models.

Limitations

There are several limitations to note. First, due to the cross-sectional nature of this study and the convenience sampling, we are unable to make any causal inferences or to generalize findings beyond our study sample. It is possible that recruiting participants at tribal events may have overestimated PA rates, as adults who frequent such events may be more active in the community and at least lightly or moderately physically active. Second, although we used a self-report measure of PA used in other studies,^{30,32,33} this measure of PA did not permit us to calculate actual minutes of PA, assess PA intensity, or to differentiate between leisure time PA and other types of PA. The use of self-reported PA may have led to an overestimation or incorrect reporting of PA behavior.¹⁰ Finally, due to missing data, we were unable to control for income in our adjusted analyses, although we did adjust for education.

Strengths

Despite these limitations, this study has several strengths and contributes to the much-needed literature examining PA behavior and potential determinants among rural AIs. This study is among few quantitative investigations of social support and PA behaviors among AI adults and among few conducted with AIs living in rural tribal jurisdictional areas in Oklahoma. As such, this work broadens the literature on social support and PA among AIs, to date, which has been largely qualitative in nature and largely focused on older adults or children/youth. Among the strengths of this study is its CBPR orientation and the sincere engagement of tribal partners from both Native Nations in all phases of this research, including development of research questions and study instruments, collection of data, and data analyses and interpretation. This partnered approach, among other positive outcomes, resulted in an excellent community response to the survey (91.4% response rate) and the use of research findings to inform subsequent intervention development. Both of the nations who partnered in this research have prioritized environmental approaches to improving food and physical activity environments as a means to improve the health of their citizens. The THRIVE Study, of which this study was part, supported the co-development and evaluation of food environment changes in the convenience stores owned by The Chickasaw Nation and The Choctaw Nation of Oklahoma. As part of another study with our tribal-university research partnership, The Chickasaw Nation is developing and piloting a culturally appropriate app called “AYA” to promote walking using Chickasaw language and culturally centered incentives. The Choctaw Nation of Oklahoma, among other initiatives, has participated in a study to test and evaluate the feasibility and impacts of environmental approaches to PA promotion, including Play Streets, in rural tribal jurisdictional areas. Findings from this study, along with other CBPR initiatives, will continue be used to inform the development of additional ecologic and multilevel approaches for improving PA and related health among AIs and tribal citizens living within these tribal nations.

Conclusions

This CBPR study provided insight into the role of PA-related social support and PA behavior among AI adults living within the jurisdictional areas of 2 large tribal nations in Oklahoma. Additional research, however, is needed to further elucidate social, environmental, and policy determinants of PA and identify important contextual factors that interact to shape PA behavior among AIs. Intervention research, developed by and/or with Native Nations, is urgently needed to equip Native health planners, government leaders, and researchers with the necessary data to inform policies and programs that will facilitate and support regular PA among AIs. As indicated by the socio-ecologic model, interventions that address determinants of behavior and health at multiple levels, and strengthen physical and social environmental supports, including social support, will be more efficacious and successful in eliminating AI health disparities.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1.

Sociodemographic Characteristics and Physical Activity for all Participants and by Tribal Nation

Characteristic	Total (n=484) n (%)	Tribal Nation A (n=254) n (%)	Tribal Nation B (n=230) n (%)
Sociodemographic			
Age, years			
18 – 24	45 (9)	22 (9)	23 (10)
25 – 34	112 (23)	61 (24)	51 (22)
35 – 44	112 (23)	60 (24)	52 (23)
45 – 54	94 (19)	48 (19)	46 (20)
55 – 64	73 (15)	35 (14)	38 (17)
65	48 (10)	28 (11)	20 (9)
Sex			
Female	362 (75)	192 (76)	170 (74)
Male	122 (25)	62 (24)	60 (26)
Education			
< High school graduate	27 (6)	13 (5)	14 (6)
High school graduate/GED	145 (30)	86 (34)	59 (26)
Some college or some technical school	147 (30)	69 (27)	78 (34)
Associate's degree or technical school degree	102 (21)	60 (24)	42 (18)
4-year college degree or higher	63 (13)	26 (10)	37 (16)
Marital status ^a			
Not currently married	194 (40)	93 (37)	101 (44)
Married or living with partner	287 (60)	159 (63)	128 (56)
Employment status ^b			
Employed full- or part-time	369 (76)	186 (74)	183 (80)
Other	114 (24)	67 (26)	47 (20)
Household income during past 12 months ^c			
< \$20,000	117 (27)	63 (27)	54 (26)
\$20,000 – 39,999	135 (31)	73 (32)	62 (30)
\$40,000 – 79,999	120 (27)	56 (24)	64 (30)
\$80,000	69 (16)	39 (17)	30 (14)
Physical activity (PA)			
Number days/week usually do 30 min of PA			
0	52 (11)	32 (13)	20 (9)
1	70 (14)	43 (17)	27 (12)
2	80 (17)	52 (20)	28 (12)
3	92 (19)	45 (18)	47 (20)
4	52 (11)	27 (11)	25 (11)
5	58 (12)	22 (9)	36 (16)
6	22 (5)	10 (4)	12 (5)

Characteristic	Total (n=484) n (%)	Tribal Nation A (n=254) n (%)	Tribal Nation B (n=230) n (%)
7	58 (12)	23 (9)	35 (15)
Mean days/week usually do 30 min of PA	3.2 (2.1)	2.8 (2.1)	3.6 (2.2)
5 days/week of PA	138 (29)	55 (22)	83 (36)

^a
n=3 missing

^b
n=1 missing

^c
n=43 missing

Table 2.**Perceived Community Physical Activity (PA) and Physical Activity Social Support (PASS)**

	n (%)	Disagree^a n (%)	Neutral n (%)	Agree^b n (%)
Person most likely to exercise with				
Does not exercise	36 (7)			
Alone	198 (41)			
Family	160 (33)			
Friends or a group class	71 (15)			
Pets/Other	18 (4)			
Perceived community PA				
A lot of people in my town are physically active		109 (23)	175 (37)	194 (41)
Friend PASS				
My friends encourage me to exercise		113 (24)	135 (28)	232 (48)
I have at least one friend who would commit to exercise with me		111 (23)	118 (24)	255 (53)
Friend PASS score				
No/low support (0)	173 (36)			
Medium support (1)	129 (27)			
High support (2)	178 (37)			
Family PASS				
Relatives encourage me to exercise		119 (25)	145 (30)	216 (45)
I have at least one relative who would commit to exercise with me		129 (27)	110 (23)	242 (50)
Family PASS score				
No/low support (0)	190 (40)			
Medium support (1)	122 (25)			
High support (2)	167 (35)			
Overall PASS				
If I had someone like a friend or family member to exercise with, chances are I would exercise more		48 (10)	94 (20)	339 (70)
Overall PASS score				
No/low support (0–1)	145 (31)			
Medium support (2–3)	167 (35)			
High support (4–5)	163 (34)			

^aStrongly disagree and disagree^bStrongly agree and agree

Table 3.
Association between Self-Reported Sociodemographic Characteristics, Physical Activity, and Physical Activity Social Support (PASS)

	Physical activity			Friend PASS			Family PASS			Overall PASS		
	<5 days/week n (%)	5 days/week n (%)	No/low support n (%)	Medium support n (%)	High support n (%)	No/low support n (%)	Medium support n (%)	High support n (%)	No/low support n (%)	Medium support n (%)	High support n (%)	
Age												
18 – 24	30 (67)	15 (33)	9 (20)	18 (40)	18 (40)	14 (31)	13 (29)	18 (40)	7 (16)	17 (38)	21 (47)	
25 – 34	76 (68)	36 (32)	34 (30)	33 (29)	45 (40)	41 (37)	26 (23)	44 (40)	29 (26)	40 (36)	42 (38)	
35 – 44	90 (80)	22 (20)	39 (35)	29 (26)	44 (39)	43 (39)	28 (25)	40 (36)	38 (34)	29 (26)	44 (40)	
45 – 54	67 (71)	27 (29)	39 (41)	25 (27)	30 (32)	41 (44)	22 (23)	31 (33)	31 (33)	35 (37)	28 (30)	
55 – 64	46 (63)	27 (37)	33 (45)	17 (23)	23 (32)	32 (44)	21 (29)	19 (26)	26 (36)	28 (39)	18 (25)	
65+	37 (77)	11 (23)	19 (43)	7 (16)	18 (41)	19 (41)	12 (26)	15 (33)	14 (33)	18 (43)	10 (24)	
Sex												
Female	279 (77)	83 (23)	127 (35)	94 (26)	137 (38)	140 (39)	87 (24)	130 (36)	104 (29)	123 (35)	126 (36)	
Male	67 (55)	55 (45)	46 (36)	35 (29)	41 (34)	50 (41)	35 (29)	37 (30)	41 (34)	44 (36)	37 (30)	
Education												
< High school graduate	16 (59)	11 (41)	10 (37)	7 (26)	10 (37)	10 (38)	4 (15)	12 (46)	7 (27)	9 (35)	10 (38)	
High school graduate	100 (69)	45 (31)	54 (38)	37 (26)	50 (35)	58 (41)	33 (23)	51 (36)	48 (35)	42 (30)	48 (35)	
Some college or some technical school	110 (75)	37 (25)	47 (32)	44 (30)	56 (38)	59 (40)	39 (27)	49 (33)	41 (28)	57 (39)	49 (33)	
Associate's or technical school degree	80 (78)	22 (22)	43 (42)	22 (22)	37 (36)	39 (39)	27 (27)	35 (35)	30 (30)	35 (35)	36 (36)	
4-year college degree	40 (63)	23 (37)	19 (30)	19 (30)	25 (40)	24 (38)	19 (30)	20 (32)	19 (30)	24 (38)	20 (32)	
Site												
Tribal Nation A	199 (78)	55 (22)	94 (37)	63 (25)	94 (37)	95 (38)	64 (26)	91 (36)	77 (31)	83 (34)	86 (35)	
Tribal Nation B	147 (64)	83 (36)	79 (35)	66 (29)	84 (37)	95 (41)	58 (25)	76 (33)	68 (30)	84 (37)	77 (34)	

Note: Boldface indicates statistical significance ($P < .05$) for trend test comparing high levels of physical activity or PASS across levels of demographic characteristics. Participants who reported they do not engage in physical activity were excluded (n=36).

Table 4.

Adjusted^a Associations between Perceived Physical Activity Social Support (PASS) and Self-Reported Physical Activity (PA)^b

	5 days/week, n (%)	PR ^a	(95% CI)
Who most likely to exercise with^c			
Alone	63 (32)	1.0	Ref
Family	35 (22)	0.7	(0.5 – 1.0)
Friends or a group class	25 (35)	1.2	(0.8 – 1.7)
Pets/Other	13 (72)	2.0	(1.4 – 2.9)
A lot of people in my town are physically active			
No	83 (29)	1.0	Ref
Yes	52 (26)	0.9	(0.7 – 1.3)
Friend PA social support			
No/low support	48 (28)	1.0	Ref
Medium support	31 (24)	0.8	(0.6 – 1.2)
High support	58 (33)	1.2	(0.9 – 1.6)
Family PA social support			
No/low support	51 (27)	1.0	Ref
Medium support	40 (33)	1.2	(0.9 – 1.7)
High support	44 (26)	1.0	(0.7 – 1.5)
Overall PA social support			
No/low support	40 (28)	1.0	Ref
Medium support	44 (26)	1.0	(0.7 – 1.4)
High support	49 (30)	1.1	(0.8 – 1.6)

Note: Boldface indicates statistical significance ($P < .05$)

^a Adjusted for age, sex, education, tribal nation

^b 5 days/week of physical activity for at least 30 minutes

^c Participants who reported they do not engage in physical activity were excluded (n=36)

PR = prevalence ratio; CI = confidence interval