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Neighborhood Walkability and Aerobic Physical Activity among Latinos

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Abstract

Objective: To examine neighborhood social cohesion (NSC) as a moderator in the association between neighborhood walkability and meeting the aerobic physical activity guideline among U.S. Latino adults.

Methods: We used 2015 National Health Interview Survey cross-sectional data from 4,525 adult U.S. Latino participants 18 years of age. NSC and walkability measures were self-reported. Higher walkability scores indicating higher walkability. Aerobic activity was assessed based on self-reported frequency and duration of activity. Minutes per week of moderate and vigorous aerobic activity were then categorized based on the *2018 Physical Activity Guidelines for Americans*. Survey logistic regression was used to compute odds ratios [OR] and 95% confidence intervals [CI]. Effect modification by neighborhood social cohesion was tested by inclusion of a walkability*NSC interaction term.

Results: A one-unit higher walkability score was associated with higher odds of meeting the aerobic activity guideline (OR: 1.06; 95% CI: 1.02, 1.11). After adding NSC to the model, the association remained significant (OR: 1.05; 95% CI: 1.01, 1.10). The walkability*NSC interaction term was not significant.

Conclusions: NSC does not moderate the association between neighborhood walkability and meeting the aerobic activity guideline among U.S. Latino adults.

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Keywords

Epidemiology; Latinos; Social Cohesion; Walkability; Physical Activity; Latinos

INTRODUCTION

Physical activity has been shown to help delay, prevent, or manage several chronic conditions, including cardiovascular disease, diabetes, and cancers.¹ However, Latino adults are less active than their non-Latino counterparts and are less likely to meet the current aerobic activity guideline compared with non-Latino adults.² Neighborhoods high in walkability or the presence of neighborhood factors that promote walking (eg, street connectivity, sidewalks, safety, aesthetics), have been associated with greater physical activity.^{3–5} Specifically among Latinos, favorable built environment factors that promote neighborhood walkability such as the presence of a safe park and sidewalks, and low levels of crime, have been associated with meeting aerobic physical activity recommendations.⁶ However, research on the role of social environment correlates of physical activity among Latinos has been limited.^{7,8} Thus, further research is warranted into social environment factors, such as neighborhood social cohesion, that may contribute to meeting the aerobic physical activity guideline and that could help inform physical activity promotion efforts among Latino adults.

Perceived neighborhood social cohesion has been generally defined as the solidarity and connectedness within a group.⁹ Social cohesion has been shown to be related to physical activity, and among Latinos,^{10–13} with those reporting higher neighborhood social cohesion being more likely to meet the aerobic physical activity guideline.¹¹ In a review of studies focused on the relationship between neighborhood characteristics that promote physical activity (ie, built environment) and obesity, the authors noted that one of the most cited recommendations for future research include examining moderators of the association of built environment factors that promote neighborhood walkability with physical activity.¹⁴ It has been specifically suggested that social environmental attributes, including social cohesion, should be examined as potential moderators of the built environment.¹⁵ Previous research has shown that there is a significant association between social cohesion and walkability/access to destinations.¹⁶ Further, perceived neighborhood walkability has been positively associated with neighborhood social environment (eg, social interaction, sense of community).¹⁷ Findings from a study among a community-based sample of Latina women, indicated that there was a positive association between neighborhood aesthetics and engaging in daily outdoor moderate-to-vigorous physical activity, only among women reporting high neighborhood social cohesion.¹⁸ However, to the authors' knowledge no research has examined whether social cohesion moderates the association between neighborhood walkability and meeting the aerobic physical activity guideline among a large nationally representative diverse sample of U.S. Latino adults.

Using data from a nationally representative sample of U.S. Latino adults, we examined the association between neighborhood walkability and meeting the 2018 aerobic physical activity guideline (ie, 150 minutes of moderate-intensity activity per week, 75 minutes of

vigorous-intensity activity per week, or 150 minutes of an equivalent combination of moderate- and vigorous-intensity activity per week). We also investigated whether neighborhood social cohesion moderated the association. We hypothesized that higher neighborhood walkability would be associated with higher odds of meeting the aerobic physical activity guideline, relative to not meeting the guideline. We also hypothesized that neighborhood social cohesion would moderate the walkability-aerobic activity association, and as result indicate variation in the association by neighborhood social cohesion level.

METHODS

Data

This study utilized publicly available data from the 2015 National Health Interview Survey (NHIS) Cancer Control Supplement. NHIS is a cross-sectional survey conducted annually that uses a multistage probability sample survey design to obtain a nationally representative sample of the non-institutionalized US civilian population. The NHIS gathers information related to health and demographics from all family members. An adult (age 18 years old) within each family is randomly selected and interviewed to collect additional information. Additional NHIS survey details can be found elsewhere.¹⁹

Of the 5,591 U.S. Latino adult participants (18 years of age and older), participants with missing data on aerobic physical activity, neighborhood walkability, neighborhood social cohesion, education, country of origin, and acculturation proxies were excluded (N = 826). In addition, individuals whose country of origin was classified as “multiple Hispanic”, “other Latin American”, or “other Spanish” were excluded (N = 240). Therefore, the final sample included data from 4,525 U.S. Latino adults with complete data on the variables of interest.

Measures

Aerobic physical activity.—Participants self-reported aerobic physical activity by reporting how frequently during their leisure-time they engaged in 1) “vigorous activity that caused heavy sweating or large increases in their breathing or heart rate”; and 2) “light or moderate activity that caused light sweating or a slight to moderate increase in their breathing or heart rate for 10 minutes at a time”. Frequency of physical activity was measured as days, weeks, months or years and duration of physical activity was measured as minutes or hours.

Aerobic activity was categorized based on the *2018 Physical Activity Guidelines for Americans* criteria.¹ Participants were classified as meeting the aerobic physical activity guideline if they engaged in 150 minutes of moderate-intensity activity per week, 75 minutes of vigorous-intensity activity per week, or 150 minutes of an equivalent combination of moderate- and vigorous-intensity activity per week. Individuals were classified as not meeting the guideline if they failed to engage in the minimum recommendation of 150 minutes of moderate- and vigorous-intensity aerobic activity per week. In order to calculate an equivalent combination when moderate and vigorous-intensity activity were combined, minutes of vigorous-intensity aerobic activity were assigned twice

the credit of moderate-intensity activity minutes as suggested by the *2018 Physical Activity Guidelines for Americans*.¹ The aerobic physical activity measures in NHIS are comparable to those that have been shown to be valid and reliable in another national survey (ie, Behavioral Risk Factor Surveillance System).^{20,21}

Walkability.—An overall walkability score was created from 9 items assessing walkability access (places to walk to) and safety. Participants were asked “Where you live are there... where you can walk/ that you can walk to” and responded yes or no (yes=1; no=0) to the following items: 1) “roads, sidewalks, paths or trails”, 2) “shops, stores, or markets”, 3) “bus or transit stops”, 4) “places like movies, libraries, or churches”, 5) “places... that help you relax, clear your mind, and reduce stress” 6) “do most streets have sidewalks”. Participants were also asked the following reverse scored (yes=0; no=1) items regarding safety: 7) “does traffic make it unsafe for you to walk”, 8) “does crime make it unsafe for you to walk”, 9) “do dogs and other animals make it unsafe for you to walk”. Items were summed to create a total overall neighborhood walkability score; potential scores ranged from 0 to 9, with higher scores indicating greater overall walkability. Although the neighborhood items used in the 2015 NHIS have not been validated, similar valid and reliable measures have been used in previous studies using more extensive measures to assess neighborhood walkability.^{22,23}

Neighborhood social cohesion.—NHIS Participants were asked 4 questions related to their neighborhood; they responded on a 4-point Likert Scale ranging from “definitely agree” to “definitely disagree”. Individuals responded to the following statements: 1) “People in this neighborhood help each other out”; 2) “There are people I can count on in this neighborhood”; 3) “People in this neighborhood can be trusted”; and 4) “This is a close-knit neighborhood”. A total neighborhood social cohesion score was created by reverse scoring and summing the 4 items with higher scores indicating higher levels of neighborhood social cohesion. Approximate tertiles of the total neighborhood social cohesion score were used to create categories of low, medium, and high neighborhood social cohesion. Previous research has utilized these 4 items to assess neighborhood social cohesion, but has typically included an additional fifth item not measured in NHIS.⁹ However, these 4 items have been used in previous research and have been shown to demonstrate high internal consistency.^{11,24}

Covariates.—Multivariable models included covariates that may confound the association between walkability and meeting the aerobic physical activity guideline. Covariates included age (years), sex (male vs. female), education [less than high school diploma (reference), high school graduate, some college, college graduate], country of origin [Mexican/Mexican-American (reference), Puerto Rican, Cuban/Cuban American, Dominican, and other Central or South American], and acculturation proxies that used a combination of nativity and years living in the U.S. [U.S. born (reference), 10 years living in U.S., <10 years living in U.S.). We categorized years living in the U.S. based on previous research that has suggested that a threshold effect in CVD risk factors occurs among immigrants residing in the U.S. 10 years.^{25,26}

Statistics

Means, frequencies, and standard errors of participant characteristics (walkability, neighborhood social cohesion, and demographics) were computed for the total sample and by aerobic physical activity level. One-way ANOVAs and chi-squares analyses were used to identify differences by physical activity level. Logistic regression models were used to estimate the adjusted odds ratios of the likelihood of meeting the aerobic activity recommendation. Analyses were conducted using STATA SE version 14.0 statistical software. Survey procedures (ie, “svy” command) were used to account for the NHIS sampling design. Additionally, we formally tested whether neighborhood social cohesion was a moderator of the walkability-aerobic activity association by including an overall neighborhood walkability and neighborhood social cohesion interaction term (overall walkability score * neighborhood social cohesion) into the fully adjusted model.

RESULTS

On average, U.S. Latino adults reported an overall walkability score of 6.86 (SE=0.05). Participants were approximately 41 years old (SE=0.30). The majority of participants were male (51%), had less than a high school diploma (33%) and foreign born (58%), but had been living in the United States for at least ten years (50%). Those who met the aerobic physical activity guideline reported higher overall walkability scores and higher levels of neighborhood social cohesion; they were typically younger and more educated. A greater percentage of those who met the aerobic physical activity guideline were male and born in the United States.

Logistic Regression Models

Logistic regression models using an overall walkability score to predict whether the guideline for aerobic physical activity was met among U.S. Latino adults are presented in Table 2. In the unadjusted model (Model 1), a one-unit higher neighborhood walkability score was associated with significantly higher odds of meeting the aerobic physical activity guideline (OR: 1.09; 95% CI: 1.04, 1.13; $p < .001$), relative to not meeting the aerobic activity guideline. In model 2, adjustment for demographics and acculturation proxies slightly attenuated the neighborhood walkability-aerobic activity association. A one-unit higher neighborhood walkability score was associated with significantly higher odds of meeting the aerobic physical activity guideline (OR: 1.06; 95% CI: 1.02, 1.11; $p < .001$), relative to not meeting the aerobic activity guideline. When neighborhood social cohesion was added to the model, higher overall walkability scores remained significantly associated with meeting the aerobic physical activity guideline (OR: 1.05; 95% CI: 1.01, 1.10; $p < .01$). Those in the highest neighborhood social cohesion category had 58% increased odds of engaging in the recommended amount of aerobic physical activity compared to those in the lowest neighborhood social cohesion category (OR: 1.58; 95% CI: 1.31, 1.91; $p < .001$).

Moderation Analysis

We examined if the association between neighborhood walkability and meeting the aerobic physical activity guideline among U.S. Latino adults varied by neighborhood social cohesion

level (Table 2, Model 4). Formal tests for interaction were not statistically significant (interaction OR: 1.03; 95% CI: 0.95, 1.11; $p = .49$).

DISCUSSION

Our study examined the association between neighborhood walkability and meeting the aerobic physical activity guideline among U.S. Latino adults, and whether neighborhood social cohesion moderated this association. Our findings indicated that neighborhood walkability was associated with meeting the aerobic physical activity guideline. Specifically, higher neighborhood walkability was associated with meeting the aerobic activity guideline among U.S. Latino adults. However, neighborhood social cohesion was not a significant moderator of the association between neighborhood walkability and meeting the aerobic activity guideline.

Our findings were generally consistent with previous research indicating a significant positive association between neighborhood walkability and aerobic physical activity. Several studies have shown that a greater presence of factors that promote walkability, which takes into account built environment and safety, is associated with greater physical activity, and meeting the aerobic physical activity recommendations.^{3,27} Specifically among Latinos, the presence of factors promoting neighborhood walkability, such as sidewalks and a safe park, is associated with greater physical activity and meeting aerobic physical activity recommendations.^{6,28} Further, safety has also been shown to be particularly influential on aerobic physical activity and ultimately health outcomes, such as obesity, among disadvantaged groups, including Latinos.²⁹ Neighborhood safety is often cited as a barrier to aerobic physical activity among Latinos populations.^{6,30–32} Neighborhoods that promote aerobic physical activity through providing individuals a safe, supportive environment to exercise remains important among Latinos to reduce health disparities.

Our findings also contribute to literature on the role of social environment in the association between neighborhood walkability and meeting the current aerobic physical activity guideline. To our knowledge, our study is the first study to examine the role of social cohesion in the association between neighborhood walkability and meeting the aerobic physical activity guideline among a large diverse sample of U.S. Latino adults. Previous research has suggested that neighborhood walkability may contribute to a sense of community,³³ and neighborhood social cohesion and social interactions.³⁴ Our findings suggested that high levels of neighborhood social cohesion were associated with meeting the aerobic activity guideline, which is consistent with other studies that have found that neighborhood social cohesion is positively associated with aerobic physical activity, and contributes to meeting the aerobic activity guideline among Latinos.^{10,11} No study to date had examined whether neighborhood social cohesion moderated the association between neighborhood walkability and meeting the aerobic physical activity guideline among Latinos; however, our study findings indicated that neighborhood social cohesion was not a moderator of the walkability-aerobic activity association. A possible explanation for our findings is that neighborhoods where a high proportion of Latinos reside, may be walkable neighborhoods but may have adverse social environments, that include lower collective efficacy and perceptions of safety.^{9,18,29,35,36} Therefore, despite residing in a walkable

neighborhood, an unfavorable social environment could inhibit physical activity in Latinos.

¹⁸ Another possible explanation is that other factors related to the social process that can occur in a neighborhood may moderate the walkability-aerobic activity association. Previous research has suggested that factors such as the processes associated with social cohesion, communication (ie, the process through which individuals negotiate meaning, exchange messages, and come to a mutual understanding), ³⁷ and anonymity (ie, extent to which neighborhood residents are unknown or known to their neighbors within their neighborhood) ³⁸ play a role in differences observed in physical activity levels across neighborhoods. ^{34,39,40} Thus, these social factors, while they are related to social cohesion, were not measured in our study, but may provide further insight into the complexity of how social interactions within neighborhoods and between neighbors can influence meeting the aerobic physical activity guideline. Future studies should consider examining additional social environment factors not measured in our study to further investigate how social processes within neighborhoods contribute to aerobic physical activity outcomes among Latinos. Lastly, immigrant-related factors and neighborhood composition, such as whether an individual resides in an immigrant enclave, could also contribute to aerobic physical activity outcomes. For example, previous research has shown that Latinos who reside in neighborhoods that have a high proportion of immigrants are less likely to be active. ⁴¹ Thus, further research is warranted to determine how residing in ethnic and immigrant enclaves may uniquely contribute to disparities in meeting the aerobic physical activity guideline beyond the neighborhood factors found to contribute aerobic activity across all populations.

Strengths of our study should be considered in light of the study limitations. NHIS data is cross-sectional in nature, which limits the examination of changes in aerobic physical activity in individuals over time, and precludes the ability to establish a causal relationship between neighborhood walkability and meeting the aerobic physical activity guideline. Further, the aerobic physical activity estimates were based on self-reported measures rather than device-measured activity. Previous research has suggested that an overestimation of physical activity can occur due to reporting bias from self-reported physical activity, as compared with device measured activity. ^{42,43} In a recent study among U.S. Latinos, individuals overestimated their physical activity when using a self-reported measure versus an objective measure. ⁴⁴ However, the aerobic physical activity recommendations in the *2018 Physical Activity Guidelines for Americans* were based on self-reported measures of physical activity. ¹ Further, our measure of aerobic physical activity only accounted for leisure-time physical activity, since the NHIS study does not have measures on other domains of aerobic physical activity (eg, occupational activity, transportation activity) that also contribute to meeting the aerobic activity guideline. Another limitation of our study was the utilization of 4 neighborhood social cohesion measures, compared with the 5 items typically used to measure neighborhood social cohesion. ⁹ However, the 4 neighborhood social cohesion measures we used have been shown to demonstrate high internal consistency. ¹¹ Lastly, the neighborhood walkability measures available in NHIS did not capture all items that have been used in previous studies to measure neighborhood walkability. ^{22,23}

Our study adds to current research on how neighborhood factors, specifically those that promote neighborhood walkability, contribute to meeting the aerobic physical activity

guideline by examining this association in a large nationally representative sample of U.S. Latino adults. Our study findings highlight the continued importance of health-promoting environments that are safe, cohesive, and provide resources for exercise, among vulnerable populations disproportionately burdened by chronic disease, such as Latinos. When developing interventions to promote aerobic physical activity among Latino adults, it will be important to consider the role of neighborhood environment as it relates to disparities in meeting the aerobic physical activity guideline among Latinos. By obtaining further insight into the built and social environment factors that contribute to health in Latinos, we can gain further understanding into the development and promotion of healthier and more equitable communities.

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Table 1.

Participant Characteristics Overall and by Meeting Aerobic Physical Activity Guideline among U.S. Latino Adults: National Health Interview Survey, 2015

Characteristic	Total (N = 4,525)		Met Aerobic Physical Activity Guideline ^a (N = 1,897)		Do Not Meet Aerobic Physical Activity Guideline ^b (N = 2,628)	
	Mean or % (SE)	Mean or % (SE)	Mean or % (SE)	Mean or % (SE)		
<u>Neighborhood Walkability</u>						
<i>Walkability Access</i>						
Walkability access score (mean)	4.43 (0.04)	4.54 (0.06)	4.34 (0.05)**			
Presence of roads, sidewalks, paths or trails, %	87% (0.01)	88% (0.01)	86% (0.01)			
Presence of shops, stores, or markets, %	74% (0.01)	76% (0.01)	72% (0.01)*			
Presence of bus or transit stops, %	73% (0.01)	72% (0.02)	73% (0.01)			
Presence of movies, libraries, or churches, %	56% (0.01)	58% (0.02)	54% (0.01)*			
Presence of places to reduce stress, %	74% (0.01)	79% (0.01)	70% (0.01)***			
Most streets have sidewalks, %	79% (0.01)	80% (0.01)	79% (0.01)			
<i>Safety</i>						
Safety access score (mean)	2.42 (0.02)	2.50 (0.02)	2.35 (0.03)***			
Traffic makes it unsafe, %	24% (0.01)	21% (0.01)	26% (0.01)***			
Crime makes it unsafe, %	20% (0.01)	16% (0.01)	23% (0.01)***			
Animals make it unsafe, %	15% (0.01)	13% (0.01)	16% (0.01)			
<i>Overall Walkability Score (mean)</i>	6.84 (0.05)	7.04 (0.07)	6.69 (0.06)***			
<u>Neighborhood Social Cohesion</u>						
Low, %	34% (0.01)	29% (0.01)	38% (0.01)***			
Medium, %	33% (0.01)	33% (0.02)	33% (0.01)			
High, %	33% (0.01)	38% (0.02)	29% (0.01)***			
<u>Demographic Characteristics</u>						
Age, years (mean)	40.93 (0.30)	38.56 (0.46)	42.86 (0.39)***			
Male, %	51% (0.01)	54% (0.01)	49% (0.01)*			
<i>Education, %</i>						
Less than high school	33% (0.01)	25% (0.01)	40% (0.01)***			
High School Graduate	28% (0.01)	28% (0.02)	29% (0.01)			
Some College	25% (0.01)	30% (0.01)	22% (0.01)***			

Characteristic	Total (N = 4,525)		Met Aerobic Physical Activity Guideline ^a (N = 1,897)		Do Not Meet Aerobic Physical Activity Guideline ^b (N = 2,628)	
	Mean or % (SE)		Mean or % (SE)		Mean or % (SE)	
College Graduate	13% (0.01)		17% (0.01)		10% (0.01)***	
Acculturation Proxies, %						
US-born	42% (0.01)		49% (0.02)		36% (0.01)***	
Foreign-born	58% (0.01)		51% (0.02)		64% (0.01)***	
Living in the US 10 years	50% (0.01)		44% (0.01)		54% (0.01)***	
Living in the US <10 years	9% (0.01)		7% (0.01)		10% (0.01)**	
Latino Subgroup, %						
Mexican/Mexican-American	65% (0.01)		65% (0.02)		65% (0.02)	
Puerto Rican	10% (0.01)		9% (0.01)		10% (0.01)	
Cuban/Cuban American	5% (0.00)		4% (0.01)		5% (0.01)*	
Dominican	3% (0.00)		3% (0.01)		3% (0.00)	
Central or South American	18% (0.01)		20% (0.01)		16% (0.01)*	

^aMeets Aerobic Physical Activity Guideline: 150 minutes of moderate-intensity aerobic activity, 75 minutes of vigorous-intensity aerobic activity, or 150 minutes of an equivalent combination of moderate- and vigorous-intensity aerobic activity per week.

^bDoes Not Meet Aerobic Physical Activity Guideline: < 150 minutes of moderate- and vigorous-intensity aerobic activity per week.

SE=standard error.

Association of Neighborhood Walkability with Meeting Aerobic Physical Activity Guideline among U.S. Latino Adults: National Health Interview Survey, 2015^a

	Model 1 ^b	Model 2 ^c	Model 3 ^d	Model 4 ^e
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
<u>Neighborhood Walkability</u>				
Overall Walkability Score	1.09 (1.04 – 1.13)***	1.06 (1.02 – 1.11)**	1.05 (1.01 – 1.10)**	1.04 (0.98 – 1.10)
<u>Demographics</u>				
Age	–	0.99 (0.98 – 0.99)***	0.99 (0.98 – 0.99)***	0.99 (0.98 – 0.99)***
Male	–	1.21 (1.02 – 1.43)*	1.21 (1.02 – 1.43)**	1.21 (1.02 – 1.43)*
<u>Education</u>				
Less than high school	–	1.00	1.00	1.00
High school graduate	–	1.36 (1.09 – 1.70)**	1.35 (1.08 – 1.70)**	1.35 (1.08 – 1.70)**
Some college	–	1.78 (1.40 – 2.27)***	1.73 (1.37 – 2.20)***	1.73 (1.36 – 2.20)***
College graduate	–	2.69 (2.07 – 3.50)***	2.59 (1.99 – 3.37)***	2.59 (1.99 – 3.37)***
<u>Acculturation Proxies</u>				
US born	–	1.00	1.00	1.00
Foreign born	–			
10 years in US ^f	–	0.80 (0.67 – 0.96)*	0.81 (0.67 – 0.97)*	0.81 (0.67 – 0.97)**
<10 years in US ^g	–	0.57 (0.41 – 0.81)***	0.60 (0.43 – 0.84)**	0.60 (0.43 – 0.84)**
<u>Latino Subgroup</u>				
Mexican/Mexican-American	–	1.00	1.00	1.00
Puerto Rican	–	0.85 (0.66 – 1.11)	0.88 (0.68 – 1.14)	0.88 (0.68 – 1.14)
Cuban/Cuban American	–	0.75 (0.49 – 1.14)	0.73 (0.47 – 1.14)	0.73 (0.47 – 1.14)
Dominican	–	0.81 (0.49 – 1.34)	0.82 (0.49 – 1.35)	0.81 (0.49 – 1.34)
Central or South American	–	1.27 (0.98 – 1.65)	1.29 (0.99 – 1.69)	1.29 (0.99 – 1.69)
<u>Neighborhood Social Cohesion</u>				
Low	–	–	1.00	1.00
Medium	–	–	1.22 (0.99 – 1.50)	1.23 (1.00 – 1.51)
High	–	–	1.58 (1.31 – 1.91)***	1.59 (1.32 – 1.92)***

	Model 1 ^b	Model 2 ^c	Model 3 ^d	Model 4 ^e
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
<i>Interaction</i>				
Overall Walkability	–	–	–	1.03 (0.95 – 1.11)
Score * Neighborhood				
Social Cohesion ^h				

^aMeets Aerobic Physical Activity Guideline: 150 minutes of moderate-intensity aerobic activity, 75 minutes of vigorous-intensity aerobic activity, or 150 minutes of an equivalent combination of moderate- and vigorous-intensity aerobic activity per week.

^bModel 1 is crude unadjusted model.

^cModel 2 adjusted for age, sex, education, and acculturation.

^dModel 3 adjusted Model 2 + neighborhood social cohesion.

^eModel 4 adjusted Model 2 + neighborhood social cohesion + interaction of walkability score and neighborhood social cohesion.

^fLiving in the US 10 years.

^gLiving in the US <10 years.

^hHigh and medium vs low neighborhood social cohesion.

OR=Odds Ratio. CI=Confidence Interval.