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The Relationship between Community Participation and Physical Activity among Individuals with Serious Mental Illnesses

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Abstract

Introduction—The importance of physical activity (PA) and health outcomes for individuals with serious mental illnesses (SMI) has been well documented. It is also established that individuals with SMI engage in high amounts of sedentary behavior and low amounts of physical activity, which contributes to poor health outcomes. This study explores the relationship between community participation, physical activity, and sedentary behavior among individuals with SMI.

Methods—This study used a sample of individuals with SMI who were receiving community mental health services in a large urban area of the United States. Of the 526 individuals approached, 308 were interested in the study; 173 consented and completed data collection. This study reports on 152 participants who had complete data. Using the Temple University Community Participation Scale, participants reported on community-based activities completed independently in the previous 30 days. Additionally, participants were asked to wear a tri-axial accelerometer (ActiGraph GT3X) on the non-dominant wrist for seven days. The total number of community participation days was correlated with PA variables including steps, sedentary, light, and moderate-vigorous PA. Two groups of step data were analyzed using t-tests: ≥7500 steps, and ≥ 10,000 steps. Logistic regressions were run to examine the relationship between amount, breadth and sufficiency of community participation and having +/− 7,500 steps and +/− 10,000 daily steps, controlling for age, gender, and income

Results—Amount of community participation was inversely associated with the % of time in sedentary activity and positively associated with the % of time in moderate to vigorous PA. Those with at or more than 7500 steps and 10,000 steps reported significantly more days of community participation.

Conclusion—This study highlights the contribution of everyday activities for increased physical activity and reduced time spent in sedentary activity. Practitioners should consider recommendations for engagement in the community to increase opportunities for walking.

Keywords

Physical Activity; Serious Mental Illness; Community Participation; Walking

Introduction

Individuals diagnosed with serious mental illnesses (SMI) have high rates of physical inactivity, increasing their risk for cardiovascular and related health problems (Chuang,

Mansell, & Patten, 2008; De Hert et al., 2011; Lindamer et al., 2008; Soundy et al., 2013; Vancampfort, Probst, Knapen, Carraro, & De Hert, 2012). This has led to numerous recommendations, especially the development of interventions to improve lifestyle factors, including increased physical activity (Happell, Davies, & Scott, 2012; Stanton, Happell, & Reaburn, 2014). These approaches often seek to increase high intensity or moderate-vigorous physical activity (MVPA), which may be difficult for individuals with or without mental illnesses to sustain. Moreover, one of the biggest health risks for this population stems from significant periods of time spent in sedentary behavior (Chuang et al., 2008; De Hert et al., 2011; Lindamer et al., 2008; Soundy et al., 2013; Vancampfort et al., 2012), and comparatively short periods of MVPA may not be enough to negate the negative health impacts of sedentary behavior. Rather, interventions that aim to increase lower intensity levels of physical activity, such as walking and otherwise reducing time spent in sedentary activity may be more acceptable and could complement other MVPA efforts.

Sedentary behaviors require very little energy expenditure (1–1.5 Metabolic Equivalent of Task [MET] Units) and are often associated with seated, screen time activities (i.e., television viewing, computer use) (Pate, O'Neill, & Lobelo, 2008). Sedentary behavior is associated with increased mortality, with the greatest health risks (e.g., high blood pressure, obesity, diabetes, among others) accentuated in individuals who spend more than 6 hours/day in seated activity and who participated in less than 24.5 MET-hours in non-sedentary activity (i.e., light-vigorous) (Patel et al., 2010).

Health risks independently associated with sedentary behavior include hypertension, increased obesity, and an increased risk of chronic diseases (e.g., diabetes, digestive and circulatory diseases) (Healy, Matthews, Dunstan, Winkler, & Owen, 2011; Salmon, Owen, Crawford, Bauman, & Sallis, 2003). Increased sedentary behavior is significantly associated with increased triglycerides (Owen, Healy, Matthews, & Dunstan, 2010; Tremblay, Colley, Saunders, Healy, & Owen, 2010), higher cholesterol (Tremblay et al., 2010), larger waist circumference (Owen et al., 2010), and decreased muscle glucose transporter proteins, which affects the metabolism of carbohydrates (Healy et al., 2008; Owen et al., 2010). For all but the increased triglycerides, these outcomes were evident when controlling for MVPA levels (Healy et al., 2011). High levels of sedentary behavior are also associated with increased depression (Teychenne, Ball, & Salmon, 2010).

Because of these implications, research has examined the impact of light intensity activity on health risk factors (Healy et al., 2011; Pate et al., 2008; Ross & McGuire, 2011; Tremblay et al., 2010). Light activity (1.6–2.9 MET) is easier to accumulate and is significantly related to total energy expenditure (Pate et al., 2008). Light activity, including purposeful PA (i.e., walking for pleasure) and incidental PA (e.g., walking for transportation), is significantly related to cardiorespiratory fitness (Ross & McGuire, 2011). Similarly, frequent breaks in sedentary behavior are predictive of a lower BMI and reduced triglycerides levels (Healy et al., 2008). Light activities can also significantly increase muscle glucose transporter protein content, more so than MVPA (Tremblay et al., 2010).

The high rates of obesity (De Hert et al., 2011), cardiovascular disease (Beebe, 2008), metabolic syndrome (Ohaeri & Akanji, 2011), and premature death (De Hert et al.,

2011; Ohaeri & Akanji, 2011) and the documented rates of sedentary activity among this population (Chuang et al., 2008; De Hert et al., 2011; Lindamer et al., 2008; Stubbs, Williams, Gaughran, & Craig, 2016; Vancampfort et al., 2012), suggest the move towards the inclusion of PA-oriented interventions in mental health agencies, especially those targeting a decrease in sedentary behavior, is warranted (Happell et al., 2012; Stanton et al., 2014).

Exercise and physical activity interventions designed for individuals with SMI have demonstrated beneficial effects in areas of weight reduction (Hutchinson, 2005; Richardson et al., 2005; Skrinar, Huxley, Hutchinson, Menninger, & Glew, 2005) and improved mental health (Snethen, 2013), but do little to address total time spent in sedentary behavior. However, research points to the importance of community participation on physical health. Specifically, participation in one's community requires some degree of walking; moving from one location to another, accessing and using public transportation, and walking in a store, to name a few. Walking is an activity that requires no specialized equipment and is a preferred physical activity among individuals with SMI (Subramaniapillai et al., 2016). Community resources and community participation has the potential to increase incidental activity, by means of walking for transportation or moving within community locations. Community resources, such as parks, gyms, and shops, that are within one half to one mile (0.8–2.4 km) from an individual's home, are associated with community participation among individuals with SMI (Townley, Brusilovskiy, Snethen, & Salzer, 2017). Combining the accessibility of resources with the preference for walking suggests that participation in meaningful activities in one's community may be associated with walking and reduce time spent in sedentary behavior.

Aims of the study

This study explores the relationship between community participation and physical activity as measured by an accelerometer. We hypothesize that participation in the community results in incidental physical activity measured in steps taken. Such a finding could expand efforts to promote physical activity for this population beyond a focus on intentional walking or more intensive exercise that is not always desired and toward the promotion of engagement in meaningful activities that have the added benefit of facilitating movement in one's community. The ultimate result may have important implications for addressing the numerous health problems experienced by this high-risk population.

Methods

Sample

The study sample took part in a randomized, controlled trial of an intervention aimed at enhancing PA. Baseline data, which were collected prior to randomizing participants into groups, were used to address the research aims. Research assistants approached 526 individuals receiving services at five community mental health centers in Philadelphia, PA about this study. Of those approached, 308 expressed interest, and 173 met inclusion criteria and consented to participate. Participants were screened using the Mini International Neurological Index (MINI; Sheehan et al., 1998). Eligibility was determined if participants

had a psychotic disorder, major depression, or bipolar disorder, were between the ages of 18–64, and had a desire to increase community participation. The study received required approval from two institutional review boards <blinded for review>. Participants provided informed consent and received up to $50 for interviews and equipment return.

Data Collection and Measures

Data collected from each participant included: basic demographic information, various psychosocial measures (e.g., loneliness, positive and negative emotions, and cognition), PA engagement, and community participation. This study presents information on PA and community participation.

Demographics—Demographic variables including age, gender, education, employment, income, and housing status were collected from participants.

Community Participation—The Temple University Community Participation Scale (TUCP), comprised of 26 items, was used to collect data on community participation. Examples of activities include “use public transportation,” “go to a church, synagogue, or place of worship,” among others (all items are listed in Table 2). The TUCP has been demonstrated to be a valid and reliable measure of community participation among this population (Salzer, Brusilovskiy, Prvu-Bettger, & Kottsieper, 2014). Respondents report on the number of days participating independently in an activity in the past 30 days, the importance of the activity, and perceived sufficiency (i.e., enough, not enough, too much) of current participation. Several participation summary scores were calculated. Amount of participation refers to the total number of days of participation in the past 30 days, and can range from 0 (no activity engagement in the past 30 days) to 780 (if individuals participate in all 26 areas, every day in the past 30 days) (Salzer, Brusilovskiy, et al., 2014). Days of participation provides a useful summary score of the amount of times an individual participates in a broad-range of areas over a 30-day time period. This construct has been demonstrated to be reported reliably (Salzer et al., 2014; Salzer, Kottsieper, & Brusilovskiy, 2015) and has been demonstrated to be positively correlated with measures of quality of life and recovery in individuals with serious mental illnesses (Burns-Lynch et al., 2016). Importance of participation was defined as the total number of participation areas considered important. Possible scores range between 0 and 26. Breadth of participation was defined as the number of important participation areas with at least one participation day, and possible scores also range between 0 and 26. Sufficiency of participation was computed as the % of important participation areas done enough. For this study, we evaluate the relationship between physical activity and amount of participation, breadth, and sufficiency.

Physical Activity—PA was measured using tri-axial accelerometers (ActiGraph GT3X) worn on the non-dominant wrist for seven consecutive days. Participants were instructed to wear the watch at all times except during water-related activities. Wrist-worn accelerometers increase compliance, as participants are able to wear them when sleeping and are less likely to forget to wear it. Variables from accelerometers include steps/day and the total and percentage time spent in sedentary, light, and MVPA across the seven-day period. Freedson (1998) cutpoints were used for sedentary (0–99), light (100–1951), and MVPA (1952+).

Steps are included with sedentary, light, and MVPA as step counts are easily quantifiable by practitioners and individuals with SMI, and therefore easier to translate into practice.

Data were examined to determine non-wear time using a $Alg_{[Choi]}$ 90-minute window and vector magnitude counts. A 90-minute window is recommended when analyzing data from sedentary populations (Choi, Ward, Schnelle, & Buchowski, 2012). Twenty-one participants who had less than five 8-hour days of data were removed, leaving a total of 152 participants. The average weekly percentage of time spent in sedentary, light, and moderate-vigorous PA were calculated from accelerometer data. The average number of steps per day was also calculated from the accelerometer data. Step data were grouped in two categories: those with average daily steps above 7,500 steps and those above 10,000 steps. These were chosen as 7,500 daily steps is identified as the number of daily steps required to meet the physical activity guidelines (Hajna, Ross, & Dasgupta, 2018) and 10,000 daily steps is a commonly identified step goal associated with health benefits (Wattanapisit & Thanamee, 2017).

Statistical Analyses

Pearson correlations were used to examine the relationship between community participation and PA variables. Independent samples t-tests were used to determine the relationship between community participation, sociodemographic factors, and steps per day. In addition, logistic regressions were run to examine the relationship between amount, breadth and sufficiency of community participation and having +/− 7,500 steps and +/− 10,000 daily steps, controlling for age, gender, and income.

Results

Sample Characteristics

Table 1 shows the demographic characteristics of the sample. Participants were mostly male (n=90, 59%) with an average age of 48.38±10.16 (M±SD) years. Approximately two-thirds of the participants were black (n=85, 56%), 30 (20%) were white, 2 (1%) were Latino or Hispanic, 2 (1%) were Native American, 28 (18%) were multiracial, and 5 (3%) were of another race or ethnicity. The majority of participants were not currently married (n=118, 78%), but 40 (26%) were married or had a significant other. Half of the participants (n=75) reported having children. Equal numbers of participants had less than a high school education (n=53, 35%) or had received a GED or high school diploma (n=53, 35%); the remaining 46 (30%) had completed some college or had a higher-education degree. Most (n=106, 69%) participants lived in independent housing; the remainder lived in supervised housing or in ‘other’ housing situations. Only a small proportion of participants (n=20, 14%) reported being currently employed. The average income in the past month was $714.28±323.17.

Community Participation

In the previous 30 days, individuals reported an average of 64.1±47.6 participation days (amount). There were 18.8±5.2 important participation areas (importance), and 8.2±3.8 of these important areas had at least one day of participation (breadth). Furthermore, 37.1% ±2.4 of the important participation areas were perceived as being done enough (sufficiency).

This information, along with how much individuals participated in each of the 26 areas, is presented in Table 2.

Physical Activity

Participants spent an average of 101.3±24.4 hours in sedentary or sleep activities over the weeklong data collection period [approximately 14.5 hrs/day]. Sedentary activity was the majority energy expenditure category during this tracking period (67.2%±11.4 of the period). Participants spent an average of 31.0±11.1 hours in light activity, which corresponded to 21.0%±7.1 of the time. Participants spent the least amount of time in MVPA (17.8±9.5 hours; ~2.5 hrs/day; 11.8%±6.1 of time). The average number of steps per day was 10,496.64±5074.64, with two-thirds (n=102, 67% recording an average of 7,500 daily steps or more and half of the participants (n=76, 50.0%) recording an average of 10,000 daily steps or more. This is shown in Table 2.

T-test results indicate that a few sociodemographic factors were associated with the various step levels. Individuals with at least 7,500 daily steps were more likely to be male (n=66, 65%) than individuals with fewer than 7,500 daily steps (n=24, 48%; χ^2=3.88, df=1, p=.0489). In addition, those who had at least 7,500 daily steps had lower average income in the past month ($663.50±321.50) than those with a smaller step count (M±SD=$820.00±303.50; t=2.88, df=97.79, p=.0049). Similarly, individuals with at least 10,000 daily steps were more likely to be male (n=55, 72%) than individuals with fewer than 10,000 daily steps (n=35, 46%; χ^2=10.90, df=1, p=.0010). In addition, those who had at least 10,000 daily steps had lower average income in the past month ($658.90±334.30) than those with a smaller step count (M±SD=$769.60±303.90; t=2.11, df=146.69, p=.0368). The groups did not differ on any other demographic variables.

Relationship between Participation and Physical Activity

Table 3 presents the Pearson correlations between the participation constructs and percentages of time individuals spent in sedentary, light and moderate-vigorous physical activity. Amount of participation was negatively associated with percent of time in sedentary activity (r=−.23, p=.0040) and positively associated with percent of time in MVPA (r=.32, p<.0001). Breadth of participation was positively associated with percent of time in MVPA (r=.18, p=.0227). Amount and breadth of participation were not correlated with percent of time in light physical activities. Sufficiency of participation were not related to any of the physical activity variables.

Unadjusted descriptive statistics and T-tests comparing community participation summary scores and participation in individual domains among those who had an average of +/− 7,500 steps are presented in Table 4 and for those who averaged +/− 10,000 steps per day are presented in Table 5. In the +/− 7,500 group, those with a higher number of daily steps (n=102) had 31 more participation days and participated in approximately 1.5 more diverse activities (breadth), but the groups did not differ on sufficiency of participation. In the +/− 10,000 steps group, those with a higher number of daily steps (n=76) had 25 more participation days, but the two groups did not differ on importance, breadth or sufficiency of participation. Table 6 presents the results of logistic regressions indicating that even after

controlling for age, gender, and income, greater amount and breadth of participation remain predictive of achieving an average of 7,500 steps or more per day, while greater amount of participation is associated with achieving an average of 10,000 steps or more per day.

An examination of amount of participation in individual domains as they relate to step levels demonstrates that those with more than 7,500 steps per day reported a higher number of days in 7 different activities including: going to a park or recreation center; running errands; going to the library; going to a barber shop beauty salon, nail salon, or spa; attending a social group in the community; entertaining or visiting family/friends in the home or visiting; and going to a community fair, event, or activity. Those with more than 10,000 daily steps reported greater participation in five domains: going to a park or recreation center; a barber shop, beauty salon, nail salon or spa; using public transportation; and entertaining family or friends in their own home or visiting family or friends.

Discussion

This study is the first to explore the relationship between independent community participation and objectively measured PA among individuals with SMI. Findings indicate that community participation is associated with a smaller percentage of time spent in sedentary activity and a greater percentage of time in MVPA. One plausible explanation for this is that community participation requires engagement in incidental activity (e.g., walking, standing, changing locations), and an increase in opportunities for more vigorous PA, contributing to total energy expenditure (1, 27). For example, going to a restaurant or café is not inherently active; however, a person must change body positions and ambulate to and from the location, increasing incidental PA. Once an individual is out in the community, this may be a catalyst for even more active behaviors. One implication of this finding, for example, is that even encouraging attendance at events involving sedentary behaviors, such as a knitting group at community center or book club at a library, gets someone off the couch and out of the house, which has PA benefits.

Breadth of participation, which is the number of areas that are important to respondents in which they participated at least once in the past 30 days, was also associated with a higher percentage of time in MVPA. The relationship was modest, but it is possible that more diverse interests may increase the chances that some of those interests may include more robust PA associated with MVPA. These results are correlational, and it may also be the case that those who tend to be more physically active may also have more interests and engage in those activities at least to some degree.

The t-tests provide additional insight into the relationship between community participation and PA, both in the accelerometry findings and in the use of steps as a variable. First, categorizing light, moderate, and vigorous PA may be challenging for providers and individuals with SMI; however, steps are also an easy PA metric to communicate with individuals. Two-thirds of the sample achieved 7,500 steps and half achieved 10,000 steps. This demonstrates that individuals with SMI are able to achieve the physical activity guidelines (7,500 steps Hajna et al., 2018) and also may experience the health benefits associated with achieving 10,000 steps/day (Wattanapisit & Thanamee, 2017).

Interestingly, both gender and income were both found to be associated with step levels. Within the general population, relationships between gender and walking are inconsistent and appear to vary by age and socioeconomic status (Pollard & Wagnild, 2017), but recent research among individuals with SMI indicated that women tend to walk significantly less and be less physically active compared to men (Cabassa et al., 2020). Among the general population, higher income is typically associated with greater intensity of physical activity, such as might be achieved through exercise, but less frequent bouts of physical activity (Shuval, Li, Gabriel, & Tchernis, 2017). Individuals with lower incomes participate in more light activity, which includes walking, than those with higher incomes (Shuval et al., 2017). The current study was conducted in an urban environment, which are more dense in terms of resource availability, which is associated with greater walking among low-income adults (Chudyk et al., 2017), rather than, for example, using a car if one was even available.

Achieving these step levels was clearly associated with amount of participation. Those meeting or exceeding 7,500 daily steps had 31 more participation days and those meeting or exceeding the daily step recommendation of 10,000 steps had an average of 25 more participation days in which they participated in some type of activity in the community. The relationship between amount of participation and step levels remained even after controlling for gender and income. It is entirely reasonable to conclude that having more to do in one's community requires more steps to get to them and engage in them. One implication of this finding is that promoting community participation would be expected to have a side benefit of also increasing daily steps; complementing existing research that increases in daily, sporadic MVPA are associated with physical health benefits (Ross & McGuire, 2011). Those with 7,500 steps or more had a slightly, but significantly greater breadth of activities, that held after controlling for gender and income. This was not the case in those with 10,000 or more steps. It was not clear why breadth was associated with MVPA, but not increased steps in both groups. While breadth indicates greater diversity in activities, it does not indicate more participation. This may be important to consider when working with individuals who identify few activities of interest. That is, two or three activities done frequently may be more beneficial than or at least equally beneficial as five or six activities done sporadically. Finally, while sufficiency was not related to total steps, it still may provide insight into intervention development. Similar to previous research (Salzer, Brusilovskiy, et al., 2014), this study found that many people with SMI reported their level of participation as insufficient in activities they considered important, indicating a desire to increase community participation. This desire could be a map for increasing physical activity.

While the overall focus of these findings is on the relationship between community participation broadly and physical activity, there were some specific activities that warrant additional discussion. People with more than 7,500 steps reported a higher number of days going to places like a park or recreation center, as well as the library. People who obtained 10,000 steps or more daily steps reported a higher number of days of going to a place of worship; a park or recreation center; a barber shop, beauty salon, nail salon or spa; using public transportation, or entertaining family or friends in their own home or visiting family or friends. The majority of these ordinary activities stand out from other activities that may more logically connect to physical activity (e.g., going to a fitness center), as

they are everyday activities that exemplify the importance of incidental activity. Simply put, individuals who participate in more day-to-day activities may be more likely to achieve either important level of steps per day - 7,500 or 10,000. This suggests that conversations about “getting out of the house” and engaging in meaningful activities may be just as important for promoting physical activity and health as conversations about going to the gym and exercising.

The high use of public transportation among those with 10,000 or more steps may be a factor of the location where this study took place. Urban infrastructures support active transportation, which may be a contributing factor in this study. Individuals using public transportation are often required to walk between destinations. In our study, using public transportation was frequently identified as an important participation area. A survey of transit users in the United States found riders spent a median of 19 minutes per day walking to and from transit stops. Demographic characteristics consistent with participants in our study (i.e., low income households, minorities, and in high-density urban neighborhoods) often walked more than 30 minutes to transit (Besser & Dannenberg, 2005).

In addition to the relationship between participation, sedentary behavior, and steps, this study, as well as other research (Salzer, Baron, Menkir, & Breen, 2014; Salzer & Brusilovskiy, 2014; Snethen, Salzer, Bilger, & Maula, 2016), indicate consumers’ desire to increase community participation. The correlations between specific activities and daily steps provide a tool for providers and consumers to begin discussion about the influence of community participation on PA. Understanding an individual’s current levels of community participation and the areas in which increased participation is desired may better equip providers to engage in meaningful conversations about daily PA engagement and strategies to replace sedentary behavior with walking. This type of intervention is consistent with recommendations for promoting light activity (Ross & McGuire, 2011) and supporting increased engagement in incidental PA (Pate et al., 2008). Furthermore, motivation is a key factor in any behavioral change and is particularly important for consumer engagement in PA (Vancampfort et al., 2013; Vancampfort, Stubbs, Venigalla, & Probst, 2015). Providers who focus strictly on MVPA and traditional exercise activities as a means to promote PA will not meet the needs of all consumers. However, approaches that incorporate consumer interests and participation in community activities have the potential to reduce time spent in sedentary activities and increase engagement in lower intensity PA. This engagement may lead to interest in other areas of PA participation.

Finally, this study provides initial evidence of the relationship between community participation and sedentary activity as well as steps. Future research should explore what community environments best support PA for this population and what interventions promote independent engagement. Pattern analyses research on PA data obtained from community participation through a combination of technologies such as accelerometers and global positioning systems may provide better insight of the PA potential within specific community environments. By understanding the environmental PA potential combined with community participation, integration interventions can more intentionally promote healthier lifestyles.

Limitations

There are inherent limitations related to the measures used in this study. PA data were collected using objective measures of accelerometer over a 7-day period, while community participation was a self-report measure reflecting a 30-day period. Analyses assume that these were normal representations of community participation and PA engagement. The TUCP focused only on activities an individual does independently in the community; however, PA may have occurred while in the home or in the community mental health center, which are activities not captured by the TUCP.

The findings in this study are correlational in nature. This study did not measure one's PA capacity or aerobic fitness levels. A cyclical relationship may exist; individuals with higher fitness levels engage more in the community and those that engage more in the community experience better fitness. Future research should explore potential cause-and-effect relationships in order to provide further support for interventions that promote independent community participation.

Conclusions

Individuals diagnosed with SMI are more sedentary (Chuang et al., 2008; De Hert et al., 2011; Lindamer et al., 2008; Soundy et al., 2013; Vancampfort et al., 2012) and experience higher rates of diabetes and obesity (De Hert et al., 2011; Ohaeri & Akanji, 2011) than those without a SMI diagnosis. Promising research suggests approximately 60% of mental health providers counsel half of their consumers about the importance of PA (Chwastiak, Cruza-Guet, Carroll-Scott, Sernyak, & Ickovics, 2013). Providers offering PA guidance likely discuss opportunities for MVPA (e.g., going to the gym, exercising, or intentional walking). In contrast, practitioners likely do not discuss the relevance of activities like grocery shopping, going to a religious service, or going to the library to increasing PA. This study suggests expanding this discussion to focus on reducing sedentary behavior and the potential of community participation.

Providers express interest in continuing education focused on counseling consumers to increase PA (Burton, Pakenham, & Brown, 2010; Chwastiak et al., 2013). Trainings should educate providers on the unique impact of sedentary behavior and strategies to reduce sedentary time. The results of this study suggest community participation may be effective in reducing sedentary time. Intrinsic motivation is a key factor in the adoption of and adherence to PA (Vancampfort et al., 2015) and participants in this study expressed a desire to increase participation in a number of areas. Diverse community interests allow for engagement in intrinsically motivated activities, increasing the likelihood of sustainable behavior change. This diverges from a strict focus on exercise, which may not be an interest for all individuals (Ross & McGuire, 2011).

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Table 1.

Sample Demographics

	N	%
Gender		
Male	90	59.2
Female	62	40.8
Race		
White	30	19.7
Black	85	55.9
Latino/Hispanic	2	1.3
Native American	2	1.3
Pacific Islander/Native Hawaiian	0	0.0
Asian	0	0.0
Other Race/Ethnicity	5	3.3
Multiracial	28	18.4
Relationship Status		
Never Married	118	77.6
Married or Have Significant Other	40	26.3
Have Children	75	50.0
Education		
Less than High School	53	34.9
High School or GED	53	34.9
More than High School	106	30.3
Living in Independent Housing	106	69.7
Currently Employed	20	13.6
	Mean	**SD**
Average Age	48.38	10.2
Average Income	$714.28	323.2

Table 2.

Community Participation and Physical Activity Summary Statistics

	N	Mean	Std Dev
Participation Constructs			
Amount of Participation	152	64.06	47.61
Breadth of Participation	152	8.18	3.81
Sufficiency of Participation	152	0.37	0.22
Amount of Participation in Indivudal Areas (# Participation Days)			
Go shopping	152	7.95	9.46
Go to a restaurant of coffee shop	152	4.20	6.94
Go to a church, synagogue, or place of worship	152	2.40	4.06
Go to a movie	152	0.49	2.66
Go to a park or recreation center	152	3.24	6.57
Go to a theater of cultural event	152	0.45	1.56
Go to a zoo, botanical garden, or museum	152	0.28	1.11
Go to run errands	152	5.88	8.59
Go to a library	152	1.20	3.60
Go to watch a sports event	152	0.55	2.75
Go to a gym	152	1.39	3.87
Go to a barber shop, beauty salon, nail salon, spa	152	1.11	2.05
Use public transportation	151	14.97	12.02
Go to a 12-step group for mental health issues	152	2.82	6.59
Go to a 12-step group for substance use problems	150	2.31	5.90
Go to another type of support group	152	0.52	2.69
Go to a consumer-run organization	152	3.69	6.24
Go to a social group in the community	152	0.49	1.66
Work for pay	152	1.86	5.59
Go to school to earn a degree or certificate	152	0.96	4.44
Take a class for leisure or life skills	152	0.54	2.80
Participate in volunteer activities	152	1.39	3.92
Get together in the community or attend an event with family or friends	152	0.84	1.97
Entertain family or friends in your home or visit family or friends	152	4.07	7.13
Go to a community fair, community event or activity	152	0.41	1.10
Go to or participate in civic or political activities or organizations	152	0.19	0.70
Physical Activity Constructs			
Total Time Spent in MVPA Activity (Mins)	152	1066.77	572.17
Percent of Time Spent in MVPA	152	0.12	0.06
Total Time Spent in Sedentary Activity (Mins)	152	6078.25	1465.94
Percent of Time Spent in Sedentary Activity	152	0.67	0.11
Total Time Spent in Light Activity (Mins)	152	1862.32	668.35
Percent of Time Spent in Light Activity	152	0.21	0.07
Total Time Spent in Moderate Activity (Mins)	152	1061.11	567.88

	N	Mean	Std Dev
Percent of Time Spent in Moderate Activity	152	0.12	0.06
Total Steps	152	73461.02	35547.96
Steps Per Day	152	10496.64	5074.64
Total Sedentary Breaks	152	101.93	41.90

Table 3.

Pearson Correlations between Participation and Physical Activity Level

	% Time in Sedentary Activity	% Time in Light Physical Activity	% Time in MVPA
Amount of Participation	−.23**	.10	.32***
Importance of Participation	−.06	.12	−.01
Breadth of Participation	−.16	.10	.18*
Sufficiency of Participation	−.02	.06	−.02

Notes:

* p<.05;

** p<.01;

*** p<.001

Table 4.

T-Tests Comparing Participation by Number of Steps Per Day

	Average of 7,500+ Steps Per Day			Average of Less than 7,500 Steps Per Day			T-Tests		
	N	Mean	SD	N	Mean	SD	t-Value	DF	p-Value
Participation Constructs									
Amount of Participation***	102	74.451	52.120	50	42.86	26.505	−4.95	149.76	< 0.001
Breadth of Participation*	102	8.677	3.877	50	7.18	3.486	−2.4	107.31	0.018
Sufficiency of Participation	102	0.388	0.234	50	0.3371	0.198	−1.39	113.56	0.167
Amount of Participation in Individual Areas (# Participation Days)									
Go shopping?	102	8.68	9.74	50	6.46	8.77	−1.41	107.17	0.161
Go to a restaurant of coffee shop?	102	4.56	7.36	50	3.46	6.00	−0.98	117.07	0.328
Go to a place of worship?	102	2.77	4.58	50	1.64	2.55	−1.96	147.5	0.052
Go to a movie?	102	0.58	3.21	50	0.32	0.71	−0.78	119.83	0.440
Go to a park or recreation center?*	102	4.03	7.08	50	1.62	5.08	−2.4	129.63	0.018
Go to a theater of cultural event?	102	0.41	1.15	50	0.54	2.19	0.39	62.739	0.699
Go to a zoo, botanical garden, or museum?	102	0.33	1.29	50	0.16	0.55	−1.16	147.72	0.249
Go to run errands?***	102	7.56	9.91	50	2.46	2.67	−4.85	127.43	< 0.001
Go to a library?**	102	1.62	4.30	50	0.36	0.88	−2.84	117.09	0.005
Go to watch a sports event?	102	0.75	3.31	50	0.12	0.59	−1.87	113.66	0.063
Go to a gym?	102	1.71	4.14	50	0.74	3.20	−1.58	122.49	0.116
Go to a barber shop, beauty salon, nail salon, spa?***	102	1.40	2.42	50	0.52	0.65	−3.44	127.04	< 0.001
Use public transportation?	101	16.06	12.31	50	12.76	11.19	−1.65	106.56	0.102
Go to a 12-step grp for mental health issues?	102	3.23	7.24	50	2	4.95	−1.22	134.07	0.224
Go to a 12-step grp for substance use problems?	101	2.62	6.27	49	1.674	5.04	−1	115.88	0.321
Go to another type of support group?	102	0.62	3.05	50	0.32	1.74	−0.76	146.49	0.447
Go to a consumer-run organization?	102	4.15	6.76	50	2.76	4.93	−1.43	128.15	0.154
Go to a social group in the community?**	102	0.68	1.98	50	0.1	0.36	−2.84	114.29	0.005
Work for pay?	102	2.35	6.49	50	0.86	2.81	−1.98	148.35	0.050
Go to school to earn a degree or certificate?	102	1.29	5.26	50	0.28	1.70	−1.77	135.95	0.080
Take a class for leisure or life skills?	102	0.73	3.37	50	0.16	0.79	−1.61	121.86	0.111

	Average of 7,500+ Steps Per Day			Average of Less than 7,500 Steps Per Day			T-Tests		
	N	Mean	SD	N	Mean	SD	t-Value	DF	p-Value
Participate in volunteer activities? ***	102	1.94	4.65	50	0.26	0.92	−3.52	116.31	< 0.001
Get together in the community or attend an event with family or friends?	102	0.92	2.23	50	0.66	1.30	−0.91	145.3	0.364
Entertain family or friends in your home or visit family or friends? **	102	4.94	8.13	50	2.28	3.95	−2.72	150	0.007
Go to a community fair, community event or activity? **	102	0.55	1.29	50	0.12	0.39	−3.08	131.94	0.003
Go to or participate in civic or political activities or organizations?	102	0.157	0.75	50	0.26	0.56	0.94	125.63	0.347

Notes:

* p<.05;

** p<.01,

*** p<.001

Table 5.

T-Tests Comparing Participation by +/− 10,000 steps

	Average of 10,000+ Steps Per Day			Average of Less than 10,000 Steps Per Day			T-Tests		
	N	Mean	SD	N	Mean	SD	t-Value	DF	p-Value
Participation Constructs									
Amount of Participation***	76	76.76	56.08	76	51.36	33.04	−3.4	121.48	< 0.001
Breadth of Participation	76	8.62	3.94	76	7.75	3.64	−1.41	149.06	0.160
Sufficiency of Participation	76	0.38	0.25	76	0.36	0.20	−0.36	143.89	0.718
Amount of Participation in Individual Areas (# Participation Days)									
Go shopping?	76	8.95	9.97	76	6.95	8.87	−1.31	147.98	0.193
Go to a restaurant of coffee shop?	76	4.54	7.46	76	3.86	6.42	−0.61	146.71	0.545
Go to a place of worship?*	76	3.11	5.10	76	1.70	2.48	−2.17	108.53	0.033
Go to a movie?	76	0.26	1.44	76	0.72	3.47	1.07	99.913	0.288
Go to a park or recreation center?*	76	4.33	7.36	76	2.14	5.51	−2.07	138.98	0.040
Go to a theater of cultural event?	76	0.37	1.04	76	0.54	1.96	0.67	114.51	0.503
Go to a zoo, botanical garden, or museum?	76	0.38	1.47	76	0.17	0.53	−1.18	93.933	0.243
Go to run errands?	76	6.78	9.39	76	4.99	7.67	−1.29	144.20	0.200
Go to a library?	76	1.66	4.57	76	0.75	2.19	−1.56	107.63	0.121
Go to watch a sports event?	76	0.75	3.70	76	0.34	1.18	−0.91	90.174	0.363
Go to a gym?	76	1.46	3.97	76	1.32	3.80	−0.23	149.68	0.819
Go to a barber shop, beauty salon, nail salon, spa?**	76	1.55	2.69	76	0.67	0.93	−2.7	92.65	0.008
Use public transportation?*	75	17.07	12.15	76	12.89	11.59	−2.16	148.46	0.033
Go to a 12-step grp for mental health issues?	76	3.14	7.27	76	2.50	5.85	−0.6	143.43	0.548
Go to a 12-step grp for substance use problems?	75	3.17	6.95	75	1.45	4.50	−1.8	126.77	0.074
Go to another type of support group?	76	0.78	3.50	76	0.26	1.48	−1.18	101.05	0.242
Go to a consumer-run organization?	76	4.20	7.09	76	3.18	5.25	−1	138.28	0.318
Go to a social group in the community?	76	0.72	2.11	76	0.25	0.98	−1.78	106.07	0.079
Work for pay?	76	2.25	6.16	76	1.47	4.96	−0.86	143.39	0.394
Go to school to earn a degree or certificate?	76	1.34	5.08	76	0.58	3.69	−1.06	136.93	0.291
Take a class for leisure or life skills?	76	0.89	3.86	76	0.18	0.81	−1.57	81.611	0.121
Participate in volunteer activities?	76	1.97	5.01	76	0.80	2.26	−1.86	104.22	0.066

	Average of 10,000+ Steps Per Day			Average of Less than 10,000 Steps Per Day			T-Tests		
	N	Mean	SD	N	Mean	SD	t-Value	DF	p-Value
Get together in the community or attend an event with family or friends?	76	0.93	2.23	76	0.74	1.68	−0.62	139.58	0.539
Entertain family or friends in your home or visit family or friends? **	76	5.75	9.09	76	2.38	3.73	−2.99	99.515	0.004
Go to a community fair, community event or activity?	76	0.47	1.15	76	0.34	1.05	−0.74	148.87	0.463
Go to or participate in civic or political activities or organizations?	76	0.20	0.86	76	0.18	0.48	−0.12	117.52	0.908

Notes:

* p<.05;

** p<.01,

*** p<.001

Ment Health Phys Act. Author manuscript; available in PMC 2022 January 01.

Table 6.

Logistic Regressions Examining Relationships between Steps and Community Participation Controlling for Demographics

		DV: 1=More than 7,500 Steps vs. 0=7,500 Steps or Less					DV: 1=More than 10,000 Steps vs. 0=10,000 Steps or Less				
		Beta	**SE**	**OR**	**Wald χ^2**	**P-Value**	**Beta**	**SE**	**OR**	**Wald χ^2**	**P-Value**
1	Intercept	0.19	0.96	1.20	0.04	0.8476	−0.40	0.87	0.67	0.21	0.6459
	Amount of Participation	0.02	0.01	1.02	11.26	0.0008	0.01	0.00	1.01	6.59	0.0103
	Gender (1=M, 0=F)	0.39	0.38	1.47	1.04	0.3088	0.99	0.36	2.69	7.39	0.0065
	Age	−0.02	0.02	0.98	0.87	0.3502	−0.02	0.02	0.98	1.12	0.2896
2	Intercept	0.58	0.94	1.78	0.38	0.5377	−0.12	0.87	0.89	0.02	0.8951
	Breadth of Participation	0.11	0.05	1.12	4.63	0.0314	0.05	0.05	1.05	1.25	0.2634
	Gender (1=M, 0=F)	0.67	0.36	1.95	3.39	0.0657	1.14	0.35	3.14	10.42	0.0012
	Age	−0.02	0.02	0.98	1.56	0.2122	−0.02	0.02	0.98	1.42	0.2342
3	Intercept	0.90	0.92	2.47	0.97	0.3247	0.11	0.86	1.12	0.02	0.8973
	Sufficiency of Participation	1.13	0.84	3.09	1.82	0.1768	0.27	0.76	1.31	0.13	0.7229
	Gender (1=M, 0=F)	0.74	0.36	2.09	4.25	0.0393	1.18	0.35	3.26	11.23	0.0008
	Age	−0.02	0.02	0.98	1.33	0.2489	−0.02	0.02	0.98	1.23	0.2677