



2019

An Exploratory Study on Determinants of Regular Group Indoor Cycling Participation in Black and White Adults

Alvin L. Morton
University of Tennessee, Knoxville

Lyndsey Michelle Hornbuckle
University of Tennessee, Knoxville

Miguel Aranda
University of Tennessee, Knoxville

Derrick Yates
University of Tennessee, Knoxville

Courtney Anderson
University of Tennessee, Knoxville

Follow this and additional works at: https://trace.tennessee.edu/utk_exerpubs

Recommended Citation

Morton III, A. L., Hornbuckle, L. M., Aranda, M., Yates Jr, D. T., & Anderson, C. L. (2019). An Exploratory Study on Determinants of Regular Group Indoor Cycling Participation in Black and White Adults. *SAGE Open*, 9(3), 2158244019863568.

This Article is brought to you for free and open access by the Kinesiology, Recreation, and Sport Studies at TRACE: Tennessee Research and Creative Exchange. It has been accepted for inclusion in Kinesiology, Recreation, and Sport Studies Publications and Other Works by an authorized administrator of TRACE: Tennessee Research and Creative Exchange. For more information, please contact trace@utk.edu.

An Exploratory Study on Determinants of Regular Group Indoor Cycling Participation in Black and White Adults

SAGE Open
July-September 2019: 1–9
© The Author(s) 2019
DOI: 10.1177/2158244019863568
journals.sagepub.com/home/sgo


Alvin L. Morton III¹ , Lyndsey M. Hornbuckle¹, Miguel Aranda¹,
Derrick T. Yates Jr.¹, and Courtney L. Anderson²

Abstract

This study investigated factors influencing regular group indoor cycling (GIC) participation in a sample of Black (71%) and White (29%) adults. Seventeen regular GIC participants (≥ 1 day/week for ≥ 3 consecutive months) completed surveys that examined motivations for GIC participation. Treatment Self-Regulation Questionnaire (TSRQ), Preference for and Tolerance of Intensity of Exercise Questionnaire (PRETIE-Q), and open-ended survey questions were used. TSRQ showed autonomous motivation was significantly higher than controlled ($p < .001$) and amotivation ($p < .001$), with no significant difference between controlled and amotivation ($p = .08$). There was no significant interaction between motivation and race. There were no significant differences between race groups for PRETIE-Q. Five themes emerged as reasons for GIC participation: music, physical health, social support, studio atmosphere, and enjoyment/fun. Racial differences surfaced in the themes. More research is needed to understand the role of cultural relevance as it relates to exercise motivation and regular exercise participation. This could inform strategies for promoting regular exercise in various populations.

Keywords

African American, physical activity, exercise adherence, cultural relevance, bicycle, group exercise

Introduction

Evidence has shown that participation in regular physical activity has many positive physical (Lee, Djousse, Sesso, Wang, & Buring, 2010; Warburton, Nicol, & Bredin, 2006) and psychological health benefits (Gothe & Kendall, 2016; Norvell, Martin, & Salamon, 1991; Sieverdes et al., 2012; Sonstroem, 1997). The United States Department of Health & Human Services (2018) has established physical activity guidelines that promote 150 minutes per week of moderate-intensity aerobic activity or 75 minutes per week of vigorous-intensity aerobic activity for health benefits. Despite this evidence, recent data from the Centers for Disease Control and Prevention (CDC), National Center for Chronic Disease Prevention and Health Promotion, & Division of Nutrition, Physical Activity, and Obesity (2017) estimate that only 50.9% of adults in the United States meet these guidelines. Although reasons for not participating in physical activity differ among various individuals and populations, lack of time, dislike of exercise, fatigue, and lack of companionship are often cited as barriers (Gavarkovs, Burke, & Petrella, 2017; Herazo-Beltran et al., 2017; Reichert, Barros, Domingues, & Hallal, 2007).

Group indoor cycling (GIC) classes have gained popularity and are offered at many fitness facilities and specialized cycling studios across the United States. Exercise in GIC classes is performed on stationary bicycles where flywheel resistance can be adjusted to change the intensity of the exercise. These classes are led by an instructor, typically last approximately 45 minutes in duration, and commonly take place in a dimly lit environment with synchronous music as an accompaniment (Shaulov & Lufi, 2009). Most GIC classes incorporate intervals that alternate moderate and vigorous intensities with active recovery. Incorporating vigorous-intensity aerobic exercise into a workout routine may be a time-saving mechanism to help individuals meet the suggested minimum physical activity guidelines in less time during a given week. Furthermore, the moderate to vigorous

¹The University of Tennessee, Knoxville, USA

²Georgia State University, Atlanta, USA

Corresponding Author:

Alvin L. Morton III, Department of Kinesiology, Recreation, and Sport Studies, The University of Tennessee, Knoxville, 1914 Andy Holt Avenue, 322 HPER Building, Knoxville, TN 37996, USA.

Email: amorto16@vols.utk.edu



intensity used during this exercise modality has been shown to elicit positive cardiorespiratory adaptations (Battista et al., 2008; Caria, Tangianu, Concu, Crisafulli, & Mameli, 2007). Participants have also reported improved affect immediately following a GIC class (Szabo, Gaspar, Kiss, & Radvanyi, 2015). More specifically, the unique environmental aspects of GIC (music, lighting scheme, etc.) have been shown to have a positive effect on pleasure and fatigue during exercise (Shaulov & Lufi, 2009). In addition, GIC inherently provides a space for comradery among participants, potentially increasing exercise adherence compared to individual exercise sessions (Burke, Carron, Eys, Ntoumanis, & Estabrooks, 2006).

While many adults may struggle to find an exercise regimen that will contribute to the accumulation of a sufficient amount of overall physical activity and health benefits, non-Hispanic Black (NHB) individuals are of particular concern due to low compliance with the aerobic physical activity guidelines at 43.6% (National Center for Health Statistics, 2016), high prevalence of obesity at 48.5% (Flegal, Kruszon-Moran, Carroll, Fryar, & Ogden, 2016), greater risk for obesity-related health disparities such as hypertension and cardiovascular disease (Mozaffarian et al., 2016), and a higher all-cause mortality rate compared to their non-Hispanic White (NHW) counterparts (Levine et al., 2016). Researchers have been successful in initiating interventions to increase physical activity in this population (Bland & Sharma, 2017; Whitt-Glover et al., 2014; Whitt-Glover & Kumanyika, 2009); however, few studies examine the maintenance of physical activity changes after the active intervention ends. Previous research on indoor cycling motivation has been centered on the instructor's communication technique (Ntoumanis, Thogersen-Ntoumani, Quested, & Hancox, 2017) and class characteristics such as music choice and physical environment (Shaulov & Lufi, 2009), yet do not examine the individual's motivation or how the environment may affect regular participation. Furthermore, the racial makeup of the sample is often not provided or considered during analyses.

Regular exercise participation can be influenced by a myriad of personal and environmental influences. Personal influences can be related to various aspects such as exercise intensity preferences and specific sources of motivation (intrinsic vs. extrinsic) for engaging in the activity. The influence of environment on exercise habits can include a wide variety of factors depending on the modality. A few examples may include climate, safety, available equipment, and/or facility atmosphere. Studying factors that contribute to regular GIC class participation in a diverse sample may help inform future exercise recommendations in various groups, which could help a greater number of Americans meet the established physical activity guidelines. In addition, there is a need to explore programs in which NHBs participate regularly and investigate reasons for their continued participation.

Therefore, the purpose of this study was to explore the factors that influence regular GIC participation in a sample of NHB and NHW adults.

Method

Participants

Twenty-nine men and women were recruited from a rhythm-based GIC studio in Atlanta, GA. Potential participants were recruited by post-class announcements at all times of day, and by posted study flyers in the studio. The chosen studio was targeted for this exploratory study based on its location in a racially diverse city and its stated effort to attract a diverse membership base. During the period of recruitment for the study, there were approximately 280 memberships at the studio. The studio promotes all classes with various music themes and corresponding music videos, as well as the occasional live disc jockey (approximately two classes per month). Individuals between the ages of 18 and 75 years, who self-reported attending at least one class per week for at least the previous 3 months were eligible to enroll in the study. Interested participants were screened and excluded for active/uncontrolled heart or lung disease, any disability that limited physical activity/exercise, pregnancy, or current smoking, as these factors could have affected general health and individual affective responses toward GIC classes. The University of Tennessee, Knoxville, Institutional Review Board reviewed and approved the research protocol. Informed consent was obtained from all participants included in the study prior to any data collection.

Procedures

Participants were instructed to report to the cycling studio 45 minutes prior to their normal cycling class to participate in the study. Trained researchers asked participants to remove their shoes, then measured body height using a portable stadiometer (SECA; Hamburg, Germany) and body weight using a digital scale (SECA; Hamburg, Germany). Body mass index (BMI) was calculated using measured height and weight. Participants were then given four written surveys to obtain further descriptive information, as well as information about both personal and environmental factors that may influence regular participation in GIC classes. If there was not enough time to answer all survey questions thoroughly, participants were able to revisit the surveys after their class.

The Readiness to Change Physical Activity Survey is a four-item instrument based on the Transtheoretical Model of Health Behavior Change, but specific to general physical activity behavior (Marcus & Forsyth, 2018; Marshall & Biddle, 2001; Prochaska & Velicer, 1997). The transtheoretical model dictates that when a person is attempting to change a behavior, they move through a sequence of ordered stages

as they progress toward the new behavior. Per this theory, the behavior change will occur in five sequential stages including precontemplation, contemplation, preparation, action, and maintenance. An individual's given stage is considered dynamic, as they may have bidirectional movement between stages. This survey was used in the current study to identify participants' specific stage of change.

The Treatment Self-Regulation Questionnaire (TSRQ) is a validated 18-item questionnaire composed of subscales that assess different forms of motivation (autonomous/internal motivation, controlled/external motivation, or amotivation) on a 7-point Likert-type scale, where 1 indicated a low level of a given type of motivation and 7 indicated a high level of a given type of motivation (Levesque et al., 2006). This survey was used to assess participants' motivation to participate in GIC, specifically. The Preference for and Tolerance of Intensity of Exercise-Questionnaire (PRETIE-Q) survey was then administered to assess participants' preference for and tolerance of high-intensity exercise. This 16-item questionnaire was answered on a 5-point Likert-type scale, where 1 indicated a low preference for or tolerance of high-intensity exercise and 5 indicated a high preference for or tolerance of high-intensity exercise (Ekkekakis, Hall, & Petruzzello, 2005). Finally, participants were asked to respond to two open-ended questions designed to broadly explore participants' motivation for their continued participation in GIC classes. The open-ended questions were the following: (1) Why do you continue to regularly choose GIC classes for exercise? and (2) How does the environment at *THIS* cycling studio motivate you to continue to choose GIC for exercise?

Data Summary and Analyses

Means and standard deviations were computed to report participant characteristics and survey data that elicited quantitative scores. Chi-square tests were used to analyze categorical data for education and annual income between race groups. Independent paired-sample *t* tests were used to evaluate differences in participant characteristics and survey data between NHB and NHW. A repeated measures analysis of variance (ANOVA) was run for TSRQ survey data. Post hoc tests consisted of Bonferroni adjusted pairwise comparisons. All analyses were conducted using SPSS (version 25) with statistical significance accepted a $p \leq .05$.

Three investigators independently analyzed data reported in the open-ended questions according to established procedures (Hill, Thompson, & Williams, 1997). Researchers developed codes independently to generate and find meaningful patterns to categorize responses from participants. After codes were agreed upon, participant responses were filtered into themes for further analysis. The research team described the reported experiences and the importance of the responses in the context of why the participants continue attending GIC classes.

Results

Participant Characteristics

Of the 29 potential participants recruited, 12 were excluded from the study (nine declined to participate and three did not meet inclusion criteria). As such, 17 participants were enrolled into the study. Descriptive characteristics of the participants overall and by race are presented in Table 1. The mean age of the sample was 32 ± 7.2 years (range = 23-47 years), and participants were mostly female (88%; $n = 15$) and NHB (71%; $n = 12$). There were no significant differences between race groups for age, height, weight, BMI, weekly class attendance, education, or income.

The Readiness to Change Physical Activity Survey showed that 14 participants (82%) were in the maintenance phase, indicating that for the past 6 months or more, they participated in ≥ 30 minutes of moderate-intensity physical activity ≥ 5 days per week. Three participants (18%) were in the preparation phase, indicating that for the past 6 months or more, they participated in ≥ 30 minutes of moderate-intensity physical activity ≥ 1 day per week (yet less than 5 days per week).

Table 2 presents TSRQ scores. There was no significant interaction between type of motivation and race. However, there were significant differences between types of motivation for the overall sample ($p < .001$), where pairwise comparisons showed autonomous was higher than both controlled ($p < .001$) and amotivation ($p < .001$). There was no significant difference between controlled and amotivation for the overall sample ($p = .08$). Table 3 presents PRETIE-Q scores. Overall, participants scored 3.75 ± 0.50 for preference and 3.49 ± 0.45 for tolerance of high-intensity exercise. Scores can range from 1 to 5, with higher scores indicating a higher preference and tolerance for high-intensity exercise. There were no significant differences between race groups for exercise intensity preference or tolerance.

Participant responses to the survey containing the two open-ended questions that explored reasons for continued participation in GIC (both in general [Question 1], and specific to the current cycling facility [Question 2]) are presented in Table 4. The following five main themes were revealed:

Theme 1: Music. This sample indicated strong preferences for the music selections played during classes as most participants (82%) specifically cited the music as a reason for regular participation in GIC either in general, and/or at this studio's classes. Representative responses included "I love that [they play] hip-hop music!"; "The music is inspiring, [and] exciting"; "This studio has awesome music and I love the rhythm they incorporate into the rides"; and "Music. Particularly trap music." Trap music is a contemporary subform of hip-hop music with roots in the Southeastern United States. Given the studio's location in Atlanta, GA, this genre

Table 1. Descriptive Characteristics of Participants ($N = 17$).

Variable	Total ($N = 17$)	Non-Hispanic Black ($n = 12$)	Non-Hispanic White ($n = 5$)
Age (years)	32.2 ± 7.2	33.1 ± 7.2	30.0 ± 7.5
Height (m)	1.68 ± 0.10	1.69 ± 0.11	1.66 ± 0.06
Weight (kg)	74.2 ± 16.3	78.9 ± 16.6	65.0 ± 9.8
Body mass index (kg/m ²)	26.2 ± 3.9	27.4 ± 3.8	23.6 ± 2.1
Classes attended per week	2.8 ± 1.0	2.5 ± 0.9	3.4 ± 0.9
Stage of change per transtheoretical model ^a	Preparation: 18% ($n = 3$) Maintenance: 82% ($n = 14$)	Preparation: 17% ($n = 2$) Maintenance: 83% ($n = 10$)	Preparation: 20% ($n = 1$) Maintenance: 80% ($n = 4$)
Self-identified gender	Female: 88% ($n = 15$) Male: 12% ($n = 2$)	Female: 83% ($n = 10$) Male: 17% ($n = 2$)	Female: 100% ($n = 5$) Male: 0% ($n = 0$)
Highest education level ^b	Some college: 6% ($n = 1$) Bachelor's degree: 56% ($n = 9$) Master's degree: 38% ($n = 6$)	Some college: 0% Bachelor's degree: 64% ($n = 7$) Master's degree: 36% ($n = 4$)	Some college: 20% ($n = 1$) Bachelor's degree: 40% ($n = 2$) Master's degree: 40% ($n = 2$)
Annual income ^b	<\$25,000: 13% ($n = 2$) \$25,000-\$49,999: 19% ($n = 3$) \$50,000-\$74,999: 25% ($n = 4$) \$75,000-\$99,999: 13% ($n = 2$) \$100,000 or more: 31% ($n = 5$)	<\$25,000: 9% ($n = 1$) \$25,000-\$49,999: 9% ($n = 1$) \$50,000-\$74,999: 27% ($n = 3$) \$75,000-\$99,999: 18% ($n = 2$) \$100,000 or more: 36% ($n = 4$)	<\$25,000: 20% ($n = 1$) \$25,000-\$49,999: 40% ($n = 2$) \$50,000-\$74,999: 20% ($n = 1$) \$75,000-\$99,999: 0% ($n = 0$) \$100,000 or more: 20% ($n = 1$)

Note. Values are mean ± SD. $N = 10$ for non-Hispanic Black participants' height, weight, and body mass index; $n = 11$ for non-Hispanic Black participants' education and income. There were no significant differences between race groups for age, height, weight, body mass index, weekly class attendance, education, or income.

^aPossible stages of change for general physical activity behavior using the transtheoretical model include precontemplation, contemplation, preparation, action, and maintenance.

^bChi-square analysis for categorical data.

Table 2. Treatment Self-Regulation Questionnaire Scores.

Motivation type	Total ($N = 17$)	Non-Hispanic Black ($n = 12$)	Non-Hispanic White ($n = 5$)
Autonomous	6.05 ± 1.11*	5.93 ± 1.30	6.33 ± 0.42
Controlled	3.23 ± 1.33	2.93 ± 1.42	3.93 ± 0.79
Amotivation	2.41 ± 1.18	2.61 ± 1.21	1.93 ± 1.04

Note. Values are mean ± SD. The Treatment Self-Regulation Questionnaire was scaled from 1 to 7, with 7 as the highest indication that a given type of motivation is driving participation in group indoor cycling. There was no significant interaction between motivation type and race.

*Significantly different from both controlled ($p < .001$) and amotivation ($p < .001$).

Table 3. Preference for and Tolerance of Intensity of Exercise Survey Scores.

Outcome	Total ($N = 17$)	Non-Hispanic Black ($n = 12$)	Non-Hispanic White ($n = 5$)
Preference	3.75 ± 0.50	3.75 ± 0.43	3.75 ± 0.69
Tolerance	3.49 ± 0.45	3.44 ± 0.40	3.63 ± 0.56

Note. Values are mean ± SD. The Preference for and Tolerance of Intensity of Exercise survey was scaled from 1 to 5, with 1 indicating the lowest and 5 indicating the highest preference for or tolerance of high-intensity exercise. There were no significant differences between race groups for exercise intensity preference or tolerance.

of music may be particularly relevant and/or familiar to its participants.

Music was given as a reason for general GIC participation in 25% and 20% of NHB and NHW participants, respectively. Among NHBs, music was the most commonly mentioned motivator for continued attendance at this studio

(83%), and the second most commonly cited motivator in NHWs (60%).

Theme 2: Physical health. Many participants in this sample (71%) indicated physical health and/or aesthetic benefits as a reason for participating in GIC, in general. Seeing positive

Table 4. Thematic Analysis of Open-Ended Survey Questions (N = 17).

Theme	Question 1			Question 2		
	Total (N = 17)	Non-Hispanic Black (n = 12)	Non-Hispanic White (n = 5)	Total (N = 17)	Non-Hispanic Black (n = 12)	Non-Hispanic White (n = 5)
Music	4 (24%)	3 (25%)	1 (20%)	13 (76%)	10 (83%)	3 (60%)
Physical health	12 (71%)	7 (58%)	5 (100%)	0	0	0
Social support	7 (41%)	5 (42%)	2 (40%)	9 (53%)	5 (42%)	4 (80%)
Studio atmosphere	5 (29%)	4 (33%)	1 (20%)	9 (53%)	7 (58%)	2 (40%)
Enjoyment/fun	8 (47%)	6 (50%)	2 (40%)	2 (12%)	2 (17%)	0

Note. Question 1: Why do you continue to regularly choose group indoor cycling classes for exercise? Question 2: How does the environment at *THIS* cycling studio motivate you to continue to choose group indoor cycling for exercise?

exercise outcomes surfaced as an important contributor to regular class participation as indicated by representative responses such as “[I] want to make sure I am doing cardio[vascular exercise]. I enjoy it. I sweat a lot” and “I found [indoor cycling] has been the most challenging exercise for me. I have seen the most physical results from it.” This indicates positive feelings about the physiological state reached by this participant during GIC. Weight maintenance was also identified as a reason for continued class participation that was related to physical health. For these individuals, the direct physiological benefits of exercise may be less of a driving force for continued participation, and instead they participate to avoid weight gain or any tangential burden of minimizing weight gain (such as strict dieting). Participants said, “[Indoor cycling] helps me maintain my body weight without me having to overly stress about calorie intake, etc.” and “Great calorie burn . . .”

When examined by race, all NHW participants and 58% of NHB participants cited the health benefits of the classes as motivators for regular GIC participation, in general. No participants indicated physical health as a reason for participation at the current studio.

Theme 3: Social support. As is common in group exercise settings, several participants (71%) cited social support mechanisms (friendships, instructors, facility staff) as reasons for continued participation in the GIC classes in general and/or at this studio. One participant said, “. . . working out in groups motivates me. I got into indoor cycling with friends, so it’s always been [both] exercise and social for me.” Others stated, “Making new friends easily” and “[The studio is] small enough to feel included/part of [a] community” as a motivators to attend classes. Instructors were also mentioned multiple times for their motivational roles, with quotes such as, “. . . instructors push me, which is needed” and “The coaches are motivating.”

Social support was cited as a reason for general GIC participation in 42% and 40% of NHB and NHW participants, respectively. Forty-two percent of NHBs also cited social support as a motivator for continued attendance at the current studio, while social support was the most cited reason in NHWs (80%).

Theme 4: Studio atmosphere. Fifty-nine percent of participants cited the atmosphere as having an influence on their continued class attendance in general and/or at this studio. In addition to music and social support, which are present in all GIC classes, this particular studio offered supplemental features that influenced regular participation. Participants said, “I like the atmosphere, which makes me feel like I’m at a club or a party or something.” and “The lights, music, and energy feels like you’re at a party.” Investigators noted that participants equated an exercise facility to a party, which when used in the current context is considered pleasing and a place to which the participants are likely to return. Additional feedback indicated that technological elements of the studio provided additional motivation for regular participation. One participant stated, “the leaderboard makes me work harder.” The leaderboard displays individual and class performance results in real time.

Thirty-three percent and 20% of NHBs and NHW participants, respectively, indicated the studio atmosphere as a reason for participating in GIC, in general. Fifty-eight percent and 40% of respective NHB and NHW participants stated the atmosphere as a reason for participating at this particular studio.

Theme 5: Enjoyment/fun. The enjoyment/fun of the classes was indicated as a reason for regular general GIC participation and/or participation at this studio by 53% of the sample. Investigators speculate that this reference to the classes being enjoyable may distract participants from the often high-intensity nature of the exercise being suggested by the instructors. Participants state, “I enjoy the energy of the class . . . I enjoy the class and the feeling after the class”; “[This studio] is all about having a good time”; and “It is a fun way to stay in shape and healthy.” This pleasant experience with the class and exercise in general may be a positive indicator that the behavior will be repeated in the future.

Fifty percent of NHBs and 40% of NHWs cited enjoyment as a reason for general GIC participation. Few participants (17% of NHBs and no NHWs) indicated this theme as reason for participation at this studio. The authors suspect this is due to previously cited specific comments related to the experience at this studio.

In summary, these qualitative data showed that the most cited reason for general GIC participation (Question 1) was physical health benefit, and the most cited reason for attending classes at this particular GIC studio (Question 2) was the music.

Discussion

The current study explored the motivations and reasons for continued participation in GIC classes in NHB and NHW adults. With the knowledge that those who do not exercise regularly are at greater risk of several chronic diseases, it is crucial to identify factors that influence regular exercise participation to promote long-term adherence. The vast majority of the current sample self-reported they were in the maintenance phase of physical activity behavior change (≥ 30 min of moderate-intensity physical activity on ≥ 5 days per week for the past 6 months). Although the accumulation of activity did not necessarily come exclusively from GIC classes, the sample reported attending an average of 2.8 ± 1.0 classes weekly. This suggests that GIC class attendance was likely an influential modality for meeting national physical activity guidelines in many of the participants surveyed.

The current sample of indoor cyclists scored significantly higher on the TSRQ for autonomous motivation than for controlled and amotivation. This may explain their desire to continue engaging in regular exercise and exercise at a higher intensity. Duncan, Hall, Wilson, and Jenny (2010) found that exercisers who demonstrated high scores of autonomous motivation were able to sustain exercise more frequently for a longer duration, and at a higher intensity. Individuals who score high for autonomous motivation are goal-driven and do activities because they identify themselves with that activity (e.g., an indoor cyclist; Webber, Tate, Ward, & Bowling, 2010).

Although exercise intensity was not measured in this study and individuals have the freedom to manipulate the intensity of their workouts in GIC classes (i.e., intensity is not standardized among participants), this exercise modality has been categorized as a moderate- to vigorous-intensity activity (Ainsworth et al., 2011; Caria et al., 2007). Although reaching vigorous-intensity exercise may be an evolutionary cue to reduce exercise intensity or stop exercising in the general population (H. H. Lee, Emerson, & Williams, 2016), the intensity of the classes in this sample appeared to have little effect on regular class participation. In fact, several participants specifically stated that the vigorous nature of the classes and wanting to “sweat a lot” as reasons for continuing to participate. This could be due in part to the sample having a relatively high (i.e., average scores closer to 5 than 1) preference for and tolerance of high-intensity exercise (Table 3).

Music emerged as a main reason why this sample regularly attended GIC classes. When considering what encompasses a culture, the music of a community is often an important aspect. Stork, Kwan, Gibala, and Martin (2015) showed that listening to music during treadmill exercise had a positive effect on both performance and enjoyment. This is consistent with the current findings indicating that music was

a key reason for continued class participation and contributed to the positive atmosphere that was created at this cycling studio. Furthermore, it has been shown that music may help blunt displeasure that may be experienced secondary to exercise intensity (Karageorghis & Priest, 2012). Shaulov and Lufi (2009) showed a significant increase in pleasure in both experienced and inexperienced indoor cyclists with the introduction of music. The authors speculate that the music choices in this studio (majority hip-hop and rap) play an integral role in attracting a demographic that enjoys this genre, which may help explain why this studio attracts several young and NHB participants. While the authors recognize that any given genre of music can be appreciated and enjoyed by people of any race, ethnicity, or culture, hip-hop/rap music is often associated with having a close cultural connection to NHBs (Dyson, 2004). The connection between the use of culturally relevant music during exercise and its effect on exercise adherence warrants further research.

Factors related to physical health were also cited as a motivator for regular engagement in GIC. This finding was encouraging to the authors and may provide evidence of some success in the efforts of health organizations to bring awareness to the need for increased physical activity among American adults (Ainsworth & Macera, 2018; Physical Activity Guidelines Advisory Committee, 2008). The current sample identified cardiovascular health and weight maintenance as the specific health-related reasons why they attended GIC classes regularly. The awareness of these issues (preventive cardiovascular health and weight control/maintenance) could be a result of the higher education status of our sample. The authors also noted that three (60%) of the five NHW female participants mentioned body weight control/body shape as a reason for regular participation in GIC classes, versus two (20%) out of 10 NHB female participants. Furthermore, reasons related to physical health as cited by NHBs in this sample tended to identify factors related to the desire to obtain aerobic exercise (i.e., “cardio”). These data suggest that a slim physique may not be a strong motivator for regular exercise in NHB women. This may speak to previously shown cultural differences in standards of body satisfaction between NHBs and NHWs, particularly in females (Awad et al., 2015; Huey, 2013; Powell & Kahn, 1995). Previous results of focus group interviews among a group of 31 young NHB women revealed that a larger, more curvaceous body was preferable and that being thin was an attribute that they associated with NHW women (Awad et al., 2015). In a longitudinal survey study of 1,694 women (NHB = 531), data showed a significant inverse relationship between BMI and self-assessed attractiveness among NHW women, and no relationship among NHB women (Huey, 2013). That said, it is notable that only two (20%) of 10 current NHB female participants were categorized as obese. This is a much lower percentage than the 57% obesity prevalence in NHB women in the National Health and Nutritional Examination Study, which is nationally representative (Flegal et al., 2016).

The kinship between the individuals in a group exercise environment has also been shown to have a positive influence on regular participation (Annesi, 1999) and exercise enjoyment (Fox, Rejeski, & Gauvin, 2000). These factors may also increase the propensity of regular attendance (Hagberg, Lindahl, Nyberg, & Hellénus, 2009). The addition of personal relationships may play a role in keeping the participant engaged and accountable to their chosen exercise routine (Fox et al., 2000). This is consistent with results of the current study, where social support and community surfaced as a prominent theme when participants were asked why they continue to participate in GIC.

Participants in the current study indicated that the music, in combination with the disco-like lighting, created a party-like atmosphere that appeared to increase pleasure during this modality of exercise. The hedonic principle, which states that an individual will seek out an activity that they find pleasurable and avoid activities that bring them displeasure, suggests that this post-class positive affect may contribute to increased participation in this often vigorous-intensity exercise modality (Ekkekakis, 2003; Ekkekakis, Parfitt, & Petruzzello, 2011). The current findings do contrast a study that examined adherence to two walking protocols of varied intensities (Perri et al., 2002). In this study of sedentary adults, participants assigned to a high frequency (5-7 days/week) of moderate-intensity walking had greater adherence than those prescribed to 3-4 days/week of high-intensity walking (Perri et al., 2002). However, the current findings are similar to a study that examined exercise enjoyment with varying intensities of treadmill exercise where enjoyment was higher in high-intensity interval running exercise than in moderate-intensity continuous running (Bartlett et al., 2011). The varied outcomes of these studies could speak to differences in the fitness levels of each population (sedentary vs. regularly active, respectively) or the exercise modalities (walking vs. running). Future research should examine these differences by personal participant characteristics (e.g., motivation types, preferences for and tolerance of exercise intensity), which may help exercise professionals suggest exercise prescriptions that will more likely have long-term potential at the individual level.

The authors recognize that this study had some limitations. As this research design was exploratory in nature, investigators were unable to capture all the reasons for regular GIC class participation given the broad, open-ended questions asked of the participants. Furthermore, in choosing to administer surveys in a written format, there was no opportunity for follow-up questions in order to probe for added details on a given topic. Future studies in this area may provide a more comprehensive perspective by conducting either individual interviews or focus groups. Participants could have also answered the first open-ended question (general reasons for participation in GIC) with their current cycle studio in mind. This may have entangled these responses with those of the second open-ended question, which did ask for reasons for regular GIC class participation at that specified

studio. The methods mentioned above (interviews, focus groups) may be preferred methods for attempting to separate out general modality questions versus specific facility-related questions. It should also be acknowledged that this sample size ($N = 17$) was small; therefore, our results are not representative of all GIC participants or the studio examined. Furthermore, a pointed effort to recruit a greater number of male participants and a more even racial distribution should be a focus in future studies of this nature for more balanced representation. In addition, most participants in this sample reported moderate to high annual incomes, which could have also been assumed by their ability to purchase memberships to this specialized exercise studio. This certainly contributes to the studio's ability to provide leading-edge technology and several amenities, yet likely presents an access barrier when considering widespread application of recreating this particular atmosphere. As such, the current findings will not directly translate to low-income communities or public/community-based fitness facilities. That said, investigators feel that lessons learned from this study about the potential role of providing an environment that is inviting to a particular population can be adapted to fit a variety of populations and settings.

While GIC has recently grown into a popular trend in the United States, a studio that provides a culturally relevant exercise experience for NHBs is novel. The studio studied offers a unique GIC experience with the incorporation of a variety of culturally relevant music selections, music videos, and even an occasional live disc jockey to create a particularly energetic class. Investigators targeted this particular facility to be able to study a diverse sample of regular GIC participants and identify why this facility keeps them actively engaged. The current study is important because most of its participants included an underrepresented and historically inactive group (NHBs) that, in this case, was habitually active. This study begins to analyze characteristics of an environment that has facilitated this habitual activity.

Results from this study may help exercise and health professionals better understand the factors that contribute to long-term participation in GIC, which could translate to other exercise modalities. The authors found it encouraging that so many participants were motivated to participate in classes regularly due to benefits related to health and that this moderate- to vigorous-intensity modality had been adopted regularly and enjoyed. The culturally relevant accommodations that contributed to a sense of comfort and belonging, as well as the overall enjoyment of this exercise modality, appeared to encourage consistent class participation at this facility by NHBs. Understanding the factors that promote the motivation to exercise and using them to adapt other exercise environments to be more relevant to a given population may contribute to more regular participation in a variety of exercise modalities. Future studies should build on the current findings to continue to specify reasons for exercise adherence in vulnerable populations.

Ethical Approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Declaration of Conflicting Interests

The author(s) declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: The authors would like to disclose that Courtney L. Anderson is co-owner of the cycling studio used in this study. Courtney L. Anderson did not participate in data collection or analysis.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The publication of this article was supported by the University of Tennessee's Open Publishing Support Fund.

ORCID iD

Alvin L. Morton III  <https://orcid.org/0000-0003-2177-8148>

References

- Ainsworth, B. E., Haskell, W. L., Herrmann, S. D., Meckes, N., Bassett, D. R., Jr., Tudor-Locke, C., . . . Leon, A. S. (2011). 2011 compendium of physical activities: A second update of codes and MET values. *Medicine & Science in Sports & Exercise*, *43*, 1575-1581. doi:10.1249/MSS.0b013e31821ece12
- Ainsworth, B. E., & Macera, C. A. (2018). Promoting physical activity in a public health context. *Journal of Sport and Health Science*, *7*, 1-2. doi:10.1016/j.jshs.2017.10.004
- Annesi, J. J. (1999). Effects of minimal group promotion on cohesion and exercise adherence. *Small Group Research*, *30*, 542-557.
- Awad, G. H., Norwood, C., Taylor, D. S., Martinez, M., McClain, S., Jones, B., . . . Chapman-Hilliard, C. (2015). Beauty and body image concerns among African American college women. *Journal of Black Psychology*, *41*, 540-564. doi:10.1177/0095798414550864
- Bartlett, J. D., Close, G. L., MacLaren, D. P. M., Gregson, W., Drust, B., & Morton, J. P. (2011). High-intensity interval running is perceived to be more enjoyable than moderate-intensity continuous exercise: Implications for exercise adherence. *Journal of Sports Sciences*, *29*, 547-553. doi:10.1080/02640414.2010.545427
- Battista, R. A., Foster, C., Andrew, J., Wright, G., Lucia, A., & Porcari, J. P. (2008). Physiologic responses during indoor cycling. *Journal of Strength and Conditioning Research*, *22*, 1236-1241. doi:10.1519/JSC.0b013e318173dbc4
- Bland, V., & Sharma, M. (2017). Physical activity interventions in African American women: A systematic review. *Health Promotion Perspectives*, *7*, 52-59.
- Burke, S. M., Carron, A. V., Eys, M. A., Ntoumanis, N., & Estabrooks, P. A. (2006). Group versus individual approach? A meta-analysis of the effectiveness of interventions to promote physical activity. *Sport & Exercise Psychology Review*, *2*, 19-35.
- Caria, M. A., Tangianu, F., Concu, A., Crisafulli, A., & Mameli, O. (2007). Quantification of Spinning bike performance during a standard 50-minute class. *Journal of Sports Sciences*, *25*, 421-429. doi:10.1080/02640410600718533
- Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, & Division of Nutrition, Physical Activity, and Obesity. (2017). *Nutrition, physical activity, and obesity data, trend and maps*. Retrieved from <https://www.cdc.gov/nccdphp/dnpao/data-trends-maps/index.html>
- Duncan, L. R., Hall, C. R., Wilson, P. M., & Jenny, O. (2010). Exercise motivation: A cross-sectional analysis examining its relationships with frequency, intensity, and duration of exercise. *International Journal of Behavioral Nutrition and Physical Activity*, *7*(1), Article 7.
- Dyson, M. E. (2004). The culture of hip-hop. In M. Forman & M. A. Neal (Eds.), *That's the joint!: The hip-hop studies reader* (pp. 61-68). New York, NY: Psychology Press.
- Ekkekakakis, P. (2003). Pleasure and displeasure from the body: Perspectives from exercise. *Cognition & Emotion*, *17*, 213-239.
- Ekkekakakis, P., Hall, E. E., & Petruzzello, S. J. (2005). Some like it vigorous: Measuring individual differences in the preference for and tolerance of exercise intensity. *Journal of Sport and Exercise Psychology*, *27*, 350-374.
- Ekkekakakis, P., Parfitt, G., & Petruzzello, S. J. (2011). The pleasure and displeasure people feel when they exercise at different intensities. *Sports Medicine*, *41*, 641-671.
- Flegal, K. M., Kruszon-Moran, D., Carroll, M. D., Fryar, C. D., & Ogden, C. L. (2016). Trends in obesity among adults in the United States, 2005 to 2014. *Journal of the American Medical Association*, *315*, 2284-2291.
- Fox, L. D., Rejeski, W. J., & Gauvin, L. (2000). Effects of leadership style and group dynamics on enjoyment of physical activity. *American Journal of Health Promotion*, *14*, 277-283.
- Gavarkovs, A. G., Burke, S. M., & Petrella, R. J. (2017). The physical activity-related barriers and facilitators perceived by men living in rural communities. *American Journal of Men's Health*, *11*, 1130-1132. doi:10.1177/1557988315598368
- Gothe, N. P., & Kendall, B. J. (2016). Barriers, motivations, and preferences for physical activity among female African American older adults. *Gerontology and Geriatric Medicine*, *2*. doi:10.1177/2333721416677399
- Hagberg, L., Lindahl, B., Nyberg, L., & Hellénus, M. L. (2009). Importance of enjoyment when promoting physical exercise. *Scandinavian Journal of Medicine & Science in Sports*, *19*, 740-747.
- Herazo-Beltran, Y., Pinillos, Y., Vidarte, J., Crissien, E., Suarez, D., & Garcia, R. (2017). Predictors of perceived barriers to physical activity in the general adult population: A cross-sectional study. *The Brazilian Journal of Physical Therapy*, *21*, 44-50. doi:10.1016/j.bjpt.2016.04.003
- Hill, C. E., Thompson, B. J., & Williams, E. N. (1997). A guide to conducting consensual qualitative research. *The Counseling Psychologist*, *25*, 517-572.
- Huey, S. J. (2013). Black/white differences in perceived weight and attractiveness among overweight women. *Journal of Obesity*, *2013*, Article 320326. doi:10.1155/2013/320326
- Karageorghis, C. I., & Priest, D.-L. (2012). Music in the exercise domain: A review and synthesis (Part I). *International Review of Sport and Exercise Psychology*, *5*, 44-66.
- Lee, H. H., Emerson, J. A., & Williams, D. M. (2016). The exercise-affect-adherence pathway: An evolutionary perspective. *Frontiers in Psychology*, *7*, Article 1285. doi:10.3389/fpsyg.2016.01285

- Lee, I., Djousse, L., Sesso, H., Wang, L., & Buring, J. (2010). Physical activity and weight gain prevention. *The Journal of the American Medical Association*, *303*, 1173-1179. doi:10.1001/jama.2010.312
- Levesque, C. S., Williams, G. C., Elliot, D., Pickering, M. A., Bodenhamer, B., & Finley, P. J. (2006). Validating the theoretical structure of the Treatment Self-Regulation Questionnaire (TSRQ) across three different health behaviors. *Health Education Research*, *22*, 691-702.
- Levine, R. S., Foster, J. E., Fullilove, R. E., Fullilove, M. T., Briggs, N. C., Hull, P. C., . . . Hennekens, C. H. (2016). Black-white inequalities in mortality and life expectancy, 1933-1999: Implications for healthy people 2010. *Public Health Reports*, *116*, 474-483.
- Marcus, B. H., & Forsyth, L. H. (2018). *Motivating people to be physically active*. Champaign, IL: Human Kinetics.
- Marshall, S. J., & Biddle, S. J. (2001). The transtheoretical model of behavior change: A meta-analysis of applications to physical activity and exercise. *Annals of Behavioral Medicine*, *23*, 229-246.
- Mozaffarian, D., Benjamin, E. J., Go, A. S., Arnett, D. K., Blaha, M. J., Cushman, M., . . . Fullerton, H. J. (2016). Heart disease and stroke statistics—2016 update: A report from the American Heart Association. *Circulation*, *133*, e38-e360.
- National Center for Health Statistics. (2016). *Health, United States, 2015: With special feature on racial and ethnic health disparities*. Hyattsville, MD. Retrieved from <https://www.cdc.gov/nchs/data/health/2015.pdf>
- Norvell, N., Martin, D., & Salamon, A. (1991). Psychological and physiological benefits of passive and aerobic exercise in sedentary middle-aged women. *The Journal of Nervous and Mental Disease*, *179*, 573-574.
- Ntoumanis, N., Thøgersen-Ntoumani, C., Quested, E., & Hancox, J. (2017). The effects of training group exercise class instructors to adopt a motivationally adaptive communication style. *Scandinavian Journal of Medicine & Science in Sports*, *27*, 1026-1034. doi:10.1111/sms.12713
- Perri, M. G., Anton, S. D., Durning, P. E., Ketterson, T. U., Sydeman, S. J., Berlant, N. E., . . . Martin, A. D. (2002). Adherence to exercise prescriptions: Effects of prescribing moderate versus higher levels of intensity and frequency. *Health Psychology*, *21*, 452-458.
- Physical Activity Guidelines Advisory Committee. (2008). *Physical Activity Guidelines Advisory Committee Report, 2008* (0029-6643). Washington, DC. Retrieved from <https://health.gov/paguidelines/2008/report/pdf/committeereport.pdf>
- Powell, A. D., & Kahn, A. S. (1995). Racial differences in women's desires to be thin. *International Journal of Eating Disorders*, *17*, 191-195.
- Prochaska, J. O., & Velicer, W. F. (1997). The transtheoretical model of health behavior change. *American Journal of Health Promotion*, *12*, 38-48.
- Reichert, F. F., Barros, A. J., Domingues, M. R., & Hallal, P. C. (2007). The role of perceived personal barriers to engagement in leisure-time physical activity. *American Journal of Public Health*, *97*, 515-519. doi:10.2105/AJPH.2005.070144
- Shaulov, N., & Lufi, D. (2009). Music and light during indoor cycling. *Perceptual and Motor Skills*, *108*, 597-607.
- Sieverdes, J. C., Ray, B. M., Sui, X., Lee, D. C., Hand, G. A., Baruth, M., & Blair, S. N. (2012). Association between leisure time physical activity and depressive symptoms in men. *Medicine & Science in Sports & Exercise*, *44*, 260-265. doi:10.1249/MSS.0b013e31822e00a6
- Sonstroem, R. J. (1997). The psychological benefits of exercise. *Medicine and Health, Rhode Island*, *80*, 295-296.
- Stork, M. J., Kwan, M., Gibala, M. J., & Martin, K. G. (2015). Music enhances performance and perceived enjoyment of sprint interval exercise. *Medicine & Science in Sports & Exercise*, *47*, 1052-1060.
- Szabo, A., Gaspar, Z., Kiss, N., & Radvanyi, A. (2015). Effect of spinning workouts on affect. *Journal of Mental Health*, *24*, 145-149. doi:10.3109/09638237.2015.1019053
- U.S. Department of Health & Human Services. (2018). *Physical activity guidelines for Americans 2nd edition*. Retrieved from https://health.gov/paguidelines/second-edition/pdf/Physical_Activity_Guidelines_2nd_edition.pdf
- Warburton, D., Nicol, C., & Bredin, S. (2006). Health benefits of physical activity: The evidence. *Canadian Medical Association Journal*, *174*, 801-809. doi:10.1503/cmaj.051351
- Webber, K. H., Tate, D. F., Ward, D. S., & Bowling, J. M. (2010). Motivation and its relationship to adherence to self-monitoring and weight loss in a 16-week Internet behavioral weight loss intervention. *Journal of Nutrition Education and Behavior*, *42*, 161-167.
- Whitt-Glover, M. C., Keith, N. R., Ceaser, T. G., Virgil, K., Ledford, L., & Hasson, R. E. (2014). A systematic review of physical activity interventions among African American adults: Evidence from 2009 to 2013. *Obesity Reviews*, *15*(Suppl. 4), 125-145. doi:10.1111/obr.12205
- Whitt-Glover, M. C., & Kumanyika, S. K. (2009). Systematic review of interventions to increase physical activity and physical fitness in African-Americans. *American Journal of Health Promotion*, *23*, S33-S56. doi:10.4278/ajhp.070924101

Author Biographies

Alvin L. Morton, III, MS is a PhD student in the Department of Kinesiology, Recreation, and Sport Studies at The University of Tennessee, Knoxville. His primary research interest is the effects of high-intensity interval training on chronic disease in underrepresented populations.

Lyndsey M. Hornbuckle, PhD, RD, FACSM is an Assistant Professor in the Department of Kinesiology, Recreation, and Sport Studies at The University of Tennessee, Knoxville. Her primary research interest is the effects of exercise and physical activity interventions on body composition and cardiometabolic disease risk in underrepresented populations.

Miguel Aranda is currently an MS student and Graduate Research Assistant in the Department of Health and Human Performance at Texas State University.

Derrick T. Yates, Jr., MS is currently an exercise physiologist at the University of Tennessee Medical Center and an assistant strength and conditioning coach at H3 Sports, both located in Knoxville, TN.

Courtney L. Anderson, JD is an associate professor at the Georgia State University College of Law. One of her main areas of research interest includes eradicating the disparities in low-income and minority communities that exacerbate health issues.