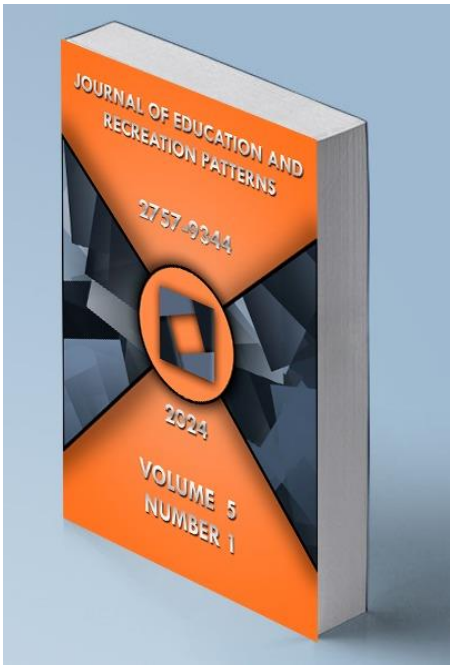

Journal of Education and Recreation Patterns (JERP)

www.jerpatterns.com

Motivations to Engage in Physical Activity Among Non-traditional College Students at a Hispanic-serving Institution

Jacob M. EUBANK[1], Em V. ADAMS[2], Hyangmi KIM[3]

To cite this article:

Eubank, J.M., Adams, E.V., & Kim, H. (2024). Motivations to engage in physical activity among non-traditional college students at a Hispanic-serving institution. *Journal of Education and Recreation Patterns (JERP), 5* (1), 37-51. DOI: https://doi.org/10.53016/jerp.v5i1.209

[1] Lehman College, City University of New York, jacob.eubank@lehman.cuny.edu, https://orcid.org/0000-0003-1806-9308

[2] Clemson University, emiliea@clemson.edu , https://orcid.org/0000-0003-4405-4679

[3] Lehman College, City University of New York, hyangmi.kim@lehman.cuny.edu , https://orcid.org//0000-0002-8507-2366

Journal of Education and Recreation Patterns (JERP)
Volume 5, Issue 1, Year 2024 ISSN: 2757-9344

Motivations to Engage in Physical Activity Among Non-traditional College Students at a Hispanic-serving Institution

Jacob M. Eubank[1], Em V. Adams[2], and Hyangmi Kim[3]

ARTICLE INFORMATION
Original Research Paper

Received 29.01. 2024
Accepted 08.06. 2024

https://jerpatterns.com

June, 2024

Volume: 5, No: 1

Pages: 37-51

ABSTRACT

Exercise motivations for undergraduate college students vary for numerous reasons. Regardless of those reasons, it is important for higher education administrators to understand these motivations to provide opportunities that increase exercise behavior. Undergraduate students attending a Hispanic-serving Institution (HSI) in a metro area in the northeast region of the United States were administered the Exercise Motivations Inventory-2 (EMI-2) (N = 140) to ascertain their motivations to engage in physical activity (PA), particularly to compare the differences between traditional (TS) and non-traditional (NTS) college students. Three variations (i.e., age, children, and employment status) were used to compare the different motivations to engage in PA. NTS over 25 years old or having children scored significantly higher on the physical and psychological health-related motivations (e.g., ill-health avoidance, positive health, stress management, and revitalization). TS scored significantly higher on social-related motivations (e.g., affiliation and competition). There was no significant difference in motivation to engage in PA between students' employment status. Results highlight different motivations to engage in PA between TS and NTS. This article presents tailored interventions for specific student cohorts to promote an increase in PA participation at HSI.

Keywords: Exercise Motivation, Hispanic-Serving Institution, Non-Traditional College Students, Physical Activity, Traditional College Students

INTRODUCTION

The physical, psychological, and social benefits of physical activity (PA) are well documented (Amatriain-Fernandez et al., 2020; Chan et al., 2019; Whitehead & Blaxton, 2017). Despite the numerous benefits of PA, there is an alarming level of physical inactivity among college students in the United States, particularly among minority students (American College Health Association, 2020; Arredondo et al., 2016; Kwan et al., 2012; Ogden et al., 2014). According to the American College Health Association-National College Health Assessment (ACHA-NCHA) III (2020), an annual assessment that measures overall college student health behavior at a national level, 57% of college students do not meet the United States Department of Health and Human Services (2018) recommendations for moderately intense PA (e.g., brisk walk or dancing), 150 to 300 minutes per week, and 63% of college students do not meet the recommendations from the same organization for vigorously intense PA (e.g., running or swimming), 75 to 150 minutes per week. However, among the twenty-two higher education institutions that participated in the ACHA-NCHA III (2020), only two were minority-serving institutions. Furthermore, PA among older college students is also quite low (Leung et al., 2016; Linder et al., 2018;). There is limited research measuring motivations to engage in PA among undergraduate students enrolled at Hispanic-serving institutions (HSIs), which enroll a higher number of Black, Indigenous, and People of Color (BIPOC). Understanding the differing motivations for PA between traditional students (TSs) and non-traditional students (NTSs), particularly at HSIs, will enable higher education administrators to create tailored interventions that effectively address the needs of both groups.

Literature Review

College Student Characteristics

The defining characteristics of NTSs have been a source of discussion for years. However, scholars generally agree that age is the most utilized method in distinguishing between a TS and NTS. A TS is within the age range of 18 years to 24 years old compared to an NTS who is 25 years old and older (Bennett et al., 2007). Other characteristics of a NTS is someone who works 40 hours or more per week and may have children or other dependents (Center for Postsecondary and Economic Success, 2015; National Center for Education Statistics, 2020). There are also differences between HSIs and other colleges and universities in addition to existing health disparities. Students attending an HSI do not fit the profile captured by TSs (Espinosa et al., 2019) and could be largely identified as NTSs. For the purposes of this study, we considered an NTS to meet at least one of these criteria: 25 years old and older; works a full-time job; and/or has children.

In addition to the lack of assessment measuring PA among students attending HSIs, significant health disparities exist among BIPOC adults. BIPOC individuals over the age of 18 years and older have a high likelihood of being obese, developing type II diabetes, having low levels of PA, and having high levels of sedentary behaviors (Coleman & Gonzalez, 2001; Ryan et al., 2011; Webb & Smith, 2011). PA has been found to play a crucial role in reducing the impact of health disparities, therefore, understanding the different motivations to PA would increase interest in healthy behaviors.

Exercise Motivations

Promoting PA on college campuses begins with understanding motivations behind it (Buckworth et al., 2007). There exists a considerable body of literature on PA motivations among TS (Egli et al., 2011; Kilpatrick et al., 2005; Lauderdale et al., 2015; Pauline, 2013), but PA motivations identified among TSs may not be applicable across wider age ranges, as past studies have reported differences in motivations between age groups. Kilpatrick et al. (2005)

found that undergraduate students with a mean age of 22 years, are motivated by body health-related and body-related motivations such as appearance, weight management, and strength and endurance to engage in PA. Although Kilpatrick et al., 2005 measured exercise motivations among college students, the researchers compared exercise motivations to sport participation, only investigating the differences by gender, as opposed to the differences in exercise motivations between TSs and NTSs at an HSI, and a majority of their participants identified as Caucasian. Bastos et al. (2006) also found that younger participants rated motivations such as health and fitness as of lower importance than older adults, however, their study was based in Brazil rather than the United States. Younger individuals tend to engage in PA for more extrinsic reasons (e.g., body image and impressing others), while intrinsic reasons (e.g., flexibility and feeling rejuvenated), tend to be the motivating factor later in life (Bastos et al., 2006; Beck et al., 2010; Strong et al., 2006). Brunet and Sabiston (2011) explored the differences in motivation to engage in PA among three age groups: (1) 18-24 years old, (2) 25-44 years old, and (3) 45-64 years old. They found that both intrinsic and extrinsic motivations to engage in PA tended to decrease with age, conversely leading to a decline in PA throughout the span of adulthood (Brunet & Sabiston, 2011). Although motivation to engage in PA decreased with age in Brunet & Sabiston (2011), the 25-44 age group and 45-64 age group indicated intrinsic motivations rather than the extrinsic motivations observed in the 18-24 age group. The researchers also did not conduct their study at an HSI and only investigated exercise motivation among age groups. Similarly, researchers found that TSs are motivated by challenge, social recognition, affiliation, competition, appearance, and nimbleness (Kulavic et al., 2013). These studies investigated motivations to engage in PA among undergraduate college students, but none of them were conducted at an HSI. Although motivation to engage in PA can vary by age, other variations exist such as motivations to engage in PA for parents. The results indicate that motivation to engage in PA can vary throughout adulthood due to aging, changing lifestyles, goals, and health concerns (Miller & Iris, 2002).

Dozier et al. (2020) investigated the frequency of PA of individuals with children. The researchers have found that only 57% of the parents in the study met the PA guidelines for Americans (Dozier et al., 2020; U.S. Department of Health and Human Services, 2018). Only 42% of the participants in the study conducted by Dozier et al. (2020) were from racial/ethnic minority groups (Dozier et al., 2020). Another study investigated the relationship in PA among Hispanic parents and their children and found that the parents experienced a significant lack of vigorous PA (Ruiz et al., 2011). Finally, a sample of parents (N = 458) in a study conducted by Hamilton et al. (2012) averaged only 30 minutes of at least moderate-intensity PA for 3 days per week, which is much lower than the current PA guidelines (Hamilton et al., 2012). Further research is needed that investigates motivations to engage in PA in Hispanic parents, particularly those who are also attending college.

Vandelanotte et al. (2015) investigated the influence of occupational indicators, such as full-time and part-time work, on PA levels, with full-time being more than 35 hours per week and part-time being less than 35 hours per week. The researchers found that part-time employees were more likely to report low PA compared to full-time employees (Vandelanotte et al., 2015). Van Domelen et al. (2011) analyzed cross-sectional data from the National Health and Nutrition Examination Survey (NHANES), which is a national survey that collects data on individual health behaviors such as nutrition and PA. They found that full-time, male workers were more likely to report higher PA than part-time and unemployed, male workers. In contrast, full-time, female workers were more likely to report lower PA that part-time and unemployed, female workers (Van Domelen et al., 2011). Unfortunately, Vandelanotte et al. (2015) did not specify if the participants in their study were currently enrolled as students at a higher education institution nor did they provide the ethnic and racial background of their sample. Furthermore, Van Domelen et al. (2011) also did not indicate if any participants in their study were currently

enrolled as students at a higher education institution, and 70% of their sample reported that they were Caucasian.

To our knowledge, the only research that investigates the various motives to engage in PA among NTSs investigates those differences between TSs and NTSs (Kulavic et al., 2013). They found that there are significant differences in motivations between the two groups, including challenge, social recognition, affiliation, competition, health pressure, ill health avoidance, appearance, and nimbleness. However, the criterion used to distinguish TSs from NTSs was based solely on age, which may not be sufficient to reflect the NTS, and their study was not conducted at an HSI. Additionally, 58% of participants in the Kulavic et al. (2013) study was Caucasian, whereas this study focuses on NTSs enrolled at an HSI. Therefore, to overcome this gap, this research incorporates three criteria to describe a NTS: (1) 25 years of age and older, (2) work 40 hours or more per week, and (3) have children. Although we describe three criteria to describe NTSs, participants were considered an NTS if they met at least one of those criteria.

The purpose of this study is to investigate the different motivations to engage in PA between TSs and NTSs attending an HSI to better understand and recommend interventions to address the lack of PA among these groups. To achieve the above goals, our research questions (RQ) and alternative hypotheses (H) are proposed: (RQ1) Are there differences in motivations to engage in PA between college students enrolled at an HSI who meet all three criteria for being a TS, and students who meet at least one criteria of being a NTS, (H1) There will be a difference in PA motivations between students enrolled at an HSI who meet criteria for being a TS, and students who meet at least one criteria of being a NTS; (RQ2) Are there differences in motivations to engage in PA between college students enrolled at an HSI under 25 years old and those 25 years and over? (H2) There will be a difference in PA motivations between students enrolled at an HSI under 25, and students 25 years and older; (RQ3) Are there differences in motivations to engage in PA between college students enrolled at an HSI who work 39 hours or less per week and those who work 40 hours or more per week? (H3) There will be a difference in PA motivations between students enrolled at an HSI who work 39 hours or less per week, and students who work 40 hours or more per week; and (RQ 4) Are there differences in motivations to engage in PA between students enrolled at an HSI that have children and those that do not have children? (H4) There will be a difference in PA motivations between students enrolled at an HSI who have children, and students who do not have children.

METHOD

This study used a cross-sectional design to assess differences between current TSs and NTSs at a single campus. The research study took place at a public, four-year degree-awarding institution in a metro area in the Northeastern region of the United States in February 2020. The college is an HSI with a population of approximately 14,000 undergraduate students with approximately 93% of students identifying as a student of color (Hispanic=55.07%, Black or African American=27.21%; White=7.24%, Asian=6.32%; other international=2.73%; multi-ethnic=1.04%; and Native Hawaiian or Pacific Islander=0.20%).

Participants

An estimated 44% of the undergraduate students at the college are considered NTSs according to their age. Upon approval from the institutional review board, participants were recruited through the college's undergraduate student listserv, in which the principal investigator is the administrator of. The listserv included the entirety of the undergraduate student population. One email was sent through the listserv. In the recruitment email, participants received a link to the online survey and were informed that participation was voluntary and confidential. There were 172 (1%) responses to the survey. After eliminating

incomplete responses along with those participants who did not meet the research criteria, the sample consisted of 140 participants. A simple random sampling technique was used in order to reduce selection bias and to ensure that every undergraduate student had an equal chance to be selected for the study (Blankenship, 2010). Inclusion criteria were as follows: (a) undergraduate students, (b) enrolled full-time, (c) self-report regularly participating in PA at least once per week.

Measures

Participants were asked to complete a researcher developed demographic questionnaire to capture information (categorically) on age, sex, race, employment status, family status, and self-perceived health. Although this study focused on age, children, and employment (the most common demographic differences between a TS and NTS), the other demographic variables provide a complete picture of the sample. Participants were asked if they were 18-24 years old or if they were 25 years old or older. Participants were asked which gender they most identify choosing from female, male, transgender female, transgender male, gender-variant/non-comforming, or prefer not to answer. Employment status included being employed full-time (40+ hours per week), employed part-time (39 hours per week or less), unemployed, retired, or disabled (cannot work). Participants were asked if they were married, widowed, divorced, separated, or never married; and whether or not they had children. The self-perceived health question asked, "In general, would you say that your health is…" in which participants selected "Excellent," "Very Good," "Good," "Fair," or "Poor."

The Exercise Motivations Inventory-2 (EMI-2) was used to measure motivation to engagement in PA (Markland & Ingledew, 1997). The EMI-2 instrument was validated by Markland and Ingledew (1997) and showed support for the factor structure by gender. Markland and Ingledew (1997) concluded that the EMI-2 is factorially valid for assessing exercise motivations in adult males and females. The EMI-2 has also been used to assess exercise motivations among other populations, including undergraduate college students. Kilpatrick et al. (2005) administered the EMI-2 to investigate motivations to engage in PA in a sample of 233 undergraduate students, of which 81% of the sample was Caucasian, 12% was African American, and 3% was Hispanic. Additionally, Kim and Cho (2022) validated the EMI-2 among a similar population of 325 college students, however, data regarding race and ethnicity was not collected. The EMI-2 contains 51 statements related to exercise motivation. Participants were asked to rank how true each statement was for them personally on a six-point Likert scale ranging from 0 (not true for me) to 5 (very true for me). The inventory contains 14 subscales: affiliation, appearance, challenge, competition, enjoyment, health pressures, ill-health avoidance, nimbleness, positive health, revitalization, social recognition, strength and endurance, stress management, and weight management. Three to four of the 51 items are included in each subscale and averaged to find the score of each. The subscales can also be categorized into themes: Body-related Motives (appearance and weight management), Health Motives (health pressures, ill-health avoidance, and positive health), Interpersonal Motives (affiliation, competition, and social recognition), Fitness Motives (nimbleness and strength/endurance), and Psychological Motives (enjoyment, challenge, revitalization, and stress management). See Markland and Ingledew (1997) for further information regarding the EMI-2 and its subscales.

Data Analysis

Statistical analyses were performed using IBM SPSS Statistics (Version 25). Descriptive statistics were calculated for age, gender, race, relationship status, employment status, and self-perceived health. Demographics were compared between students ages 18-24, and students 25 and older using a chi squared goodness of fit test. Using the age variable for TS (n=86) and NTS (n=54), a G*Power analysis (0.82) indicated the commonly desired threshold of 0.80 was

achieved for the desired sample size (n=140) (Faul et al., 2007). Cronback's alpha coefficient (α) was high for the EMI-2 (0.79) and its subscales (0.81), indicating high internal consistency. Hypothesis testing was completed using a Mann-Whitney U Test to compare each of the 14 motivation subscales between groups of students (i.e. TS vs NTS, age, employment status, children). Additionally, a Mann-Whitney U test was subsequently conducted to compare PA motivation for various demographic factors (i.e., gender and race). The Mann-Whitney U test was chosen because we were assessing distribution of motivation subscales between two independent groups and our data showed significant skewness and kurtosis (Agresti & Finlay, 2014).

FINDINGS

Demographic Profile

The current study sampled 140 participants. The ratio of TSs and NTSs closely reflected the make-up of the institution where the study took place, with 86 students 18-24 years old, (61%) and 54 students ages 25 years old or older, (39%). The sample consisted of 41 male students (29.3%), 99 female students (70.7%), and zero transgender or gender non-conforming students (0%). Participant characteristics including race, relationship status, and perceived health are further summarized in Table 1.0 below. Overall, 77(55%) participants met the criteria for being TS, and 63(45%) met at least one criterion for being a NTS. It is worth noting that only four participants met all three criteria (25 years or older, employed full-time, and having a child) for being a NTS.

When comparing demographic data between the TS and NTS groups, apart from the demographic criteria used to define the groups, not surprisingly, the only significant difference in demographics was marital status ($p = .025$), indicating that the younger group was more likely to be single.

Table 1.
Participant Demographics and Characteristics **(n=140)**

Variables	Factor	Total Sample (%)	TS (%)	NTS (%)
*Age	18-24 years old	86 (61.4)	77 (100)	9 (14.3)
	25 years old and older	54 (38.6)	0 (0.0)	54 (85.7)
Gender	Male	41 (29.3)	21 (27.3)	20 (31.7)
	Female	99 (70.7)	56 (72.7)	43 (68.3)
Race	Hispanic or Latino or Spanish Origin	67 (47.9)	38 (49.4)	29 (46.0)
	American Indian or Alaskan Native	1 (0.7)	0 (0.0)	1 (1.6)
	Asian	15 (10.7)	10 (13.0)	5 (7.9)
	Native Hawaiian or other Pacific Islander	1 (0.7)	0 (0.0)	1 (1.6)
	Black or African American	31 (22.1)	13 (16.9)	18 (28.6)
	White	15 (10.7)	11 (14.3)	4 (6.3)

	Two or more races	6 (4.3)	3 (3.9)	3 (4.8)
	Non-resident alien (of any race or ethnicity)	1 (0.8)	0 (0.0)	1 (1.6)
	Race and Ethnicity Unknown	3 (2.1)	2 (2.6)	1 (1.6)
*Relationship Status	Married	14 (10.0)	3 (3.9)	11 (17.5)
	Divorced	1 (0.7)	0 (0.0)	1 (1.6)
	Separated	3 (2.1)	1 (1.3)	2 (3.2)
	Never Married	122 (87.1)	73 (94.8)	49 (77.8)
*Child Status	Have Children	25 (17.9)	0 (0.0)	25 (39.7)
	Do not have Children	115 (82.1)	77 (100)	38 (60.3)
*Employment Status	Employed Full-time	21 (15)	0 (0.0)	21 (33.3)
	Employed Part-time	55 (39.3)	37 (48.1)	18 (28.6)
	Unemployed	62 (44.3)	40 (51.9)	22 (34.9)
	Disabled, cannot work	2 (1.4)	0 (0.0)	2 (3.2)
Ability Status	Individuals with a disability	8 (5.7)	4 (5.2)	4 (6.3)
	Individuals without a disability	132 (94.3)	73 (94.8)	59 (93.7)
Health Status	Excellent	20 (14.3)	10 (13.0)	10 (15.9)
	Very Good	55 (39.3)	35 (45.5)	20 (31.7)
	Good	50 (35.7)	23 (29.9)	27 (42.9)
	Fair	12 (8.6)	8 (10.4)	4 (6.3)
	Poor	3 (2.1)	2 (3.2)	1 (1.3)

*Indicates significant difference between TS and NTS groups

Variations in Motivation Between TS and NTS

H1 predicts there will be a difference in PA motivations between students enrolled at an HSI who meet criteria for being a TS, and students who meet at least one criterion of being a NTS. A Mann-Whitney U Test was conducted to examine the differences in PA motivations between participants who met criteria for being a TS (n=77) and those who did not (n=63). NTS were significantly more likely to be motivated by *health pressure* (p = .013), *ill health avoidance* (p = .004), *nimbleness* (p = .031), and *revitalization* (p = .030) than their TS peers.

Variations in Motivation Between Ages

H2 states there will be a difference in PA motivations between students enrolled at an HSI under 25, and students 25 years and older. A Mann-Whitney *U* test was conducted comparing the motivations for PA between students ages 18-24, and students 25 and older. A significant difference between the groups was found for several subscales indicating that older students were more likely than younger students to be motivated by stress management (p =

.006), *health pressure* (p = .011), *ill-health avoidance* (p = .001), *positive health* (p = .039), and *revitalization* (p = .005). Older students were also more likely to be motivated to engage in PA because of *nimbleness* than younger students.

Variations in Motivations Based on Employment Status

H3 states there will be a difference in PA motivations between students enrolled at an HSI who work 39 hours or less per week, and students who work 40 hours or more per week. A Mann-Whitney *U* test was conducted comparing the motivations for PA between students who worked 40 hours or more and students who worked 39 hours or less. There were no significant differences between these groups and the null hypothesis was retained.

Variations Between Students With and Without Children

H4 states there will be a difference in PA motivations between students enrolled at an HSI who have children, and students who do not have children. A Mann-Whitney *U* test was conducted comparing the motivations for PA between students with children and students without children. Significant differences were found between students with children and those without children in relation to *affiliation* (p = .027), *ill-health avoidance* (p = .030), *positive health* (p = .005), and *stress management* (p = .024) and *strength* (p = .040). These results indicate that students without children were motivated to engage in PA because of *affiliation* more so than those students with children. Conversely, students with children were more likely to be motivated to engage in PA because of *ill-health avoidance, positive health, strength,* and *stress management.*

Additional Findings

Overall, the motivations common to NTS (apart from employment) were health-related outcomes (i.e. *ill-health avoidance* and *positive health*). Interestingly, those with children identified specific physical abilities (i.e. *nimbleness* and *strength*) as motivations. Lastly, while the purpose of this study was to evaluate differences between TS and NTS enrolled at an HSI, it is worth noting that there were significant differences based on gender indicating that females were more likely to be motivated to engage in PA by *positive health* (p = .024) and *weight management* (p = .020). There were no significant differences in motivation between race/ethnic groups.

DISCUSSION

This study fills a significant gap in the literature by investigating PA motivations among NTSs at an HSI, a context that has been largely overlooked in previous research. Additionally, it expands the understanding of how different NTS criteria, such as age, employment status, and parenthood, impact PA motivations. Results from this study revealed different motivations to engage in PA between TSs and NTSs enrolled at an HSI. These findings confirm previous research that investigated the motivations to engage in PA in TSs (Egli et al., 2011; Kilpatrick et al., 2005; Lauderdale et al., 2015; Pauline, 2013). However, several significant differences of the 14 subscales were found in this study for NTSs. The first research question and hypothesis was: (RQ1) Are there differences in motivations to engage in PA between college students enrolled at an HSI who meet all three criteria for being a TS, and students who meet at least one criteria of being a NTS, (H1) There will be a difference in PA motivations between students enrolled at an HSI who meet criteria for being a TS, and students who meet at least one criteria of being a NTS. There were also differences found based on how a NTS was defined. For example, NTSs who were over the age of 25 were found to have significant differences from TSs in motivation subscales, but there was not a significant difference in those same subscales for those with children compared to those without. Those undergraduate

students who met at least one of the research criteria as an NTS were generally motivated for health-related reasons compared to undergraduate students compared to a TS. This study further fills in gaps in the research that exist among both NTSs and at HSIs by the following variables (i.e., age, employment, children).

Age

The second research question and hypothesis was: (RQ2) Are there differences in motivations to engage in PA between college students enrolled at an HSI under 25 years old and those 25 years and over? (H2) There will be a difference in PA motivations between students enrolled at an HSI under 25, and students 25 years and older. There was a significant difference in the exercise motivations subscales of ill-health avoidance, stress management, health pressures revitalization, positive health, and nimbleness between undergraduate students enrolled at an HSI that were under 25 years old and those that were over 25 years of age. The significant differences in health-related motivations between students over 25 and those under 25 align with Bastos et al. (2006), who found similar trends in health concerns increasing with age. However, our findings extend these results by showing that NTSs at an HSI are also more motivated by psychological factors such as stress management and revitalization, which were not emphasized in Bastos et al. (2006). Kilpatrick et al. (2005) found that TSs that were under the age of 25 were also motivated by the body health-related and body-related subscales of appearance, weight management, and strength and endurance. However, students that reported they were 25 years old and older in this study scored significantly higher on health motives such as ill-health avoidance, health pressures, positive health, and stress management subscales than TSs at the HSI. Both the ill-health avoidance and the health pressures subscales refer to motivating factors such as reducing the risks of heart disease, diabetes, obesity, cancer, and depression. The health pressures subscale involves a motivation to engage in PA to mitigate an existing injury, illness, or other health condition of which they are at risk. NTSs in this study appeared to be motivated to engage in PA for other health-related reasons. Although these findings are consistent with those of Kulavic et al. (2013) who also found that NTSs scored significantly higher on the health pressure and ill-health avoidance subscales, this study also found that NTSs that were over the age of 25 at an HSI scored higher on the psychological subscales.

NTSs in this study who attend an HSI scored significantly higher on the psychological motives subscales of stress management and revitalization. Those students that were older recognized that PA served as an avenue to manage their stress, which occurs frequently in college students due to the rigors of balancing academic life, work, family, relationships, and finances. Not only did NTSs engage in PA as a way to alleviate stress, but they were also more motivated than TSs on the revitalization subscale. NTSs tended to engage in PA as a way to feel more energetic. The findings in this study are consistent with previous research that indicated motivations to engage in PA decrease as someone ages and they also shift to focus on health-related reasons due to aging and changing lifestyles (Beck et al., 2010; Brunet & Sabiston, 2011; Strong et al., 2006).

The findings in this study show that undergraduate students over the age of 25 years old are motivated to engage in PA for both health-related reasons and psychological reasons. These students are not only concerned with their physical and mental health; they are aware that PA has a positive effect on them both. These findings may be vital to higher education administrators that are responsible for developing health promotion, mental health, PA, and recreation interventions to their students, particularly at an HSI with a high number of students over the age of 25. This study sheds light on motivation to PA among college students (both TS and NTS) at an HIS as the other studies that the findings were compared to were either not conducted at an HSI or a majority of their sample was Caucasian. The findings also demonstrate the need for higher education administrators and departments to collaborate in implementing

their services by taking a holistic approach to promoting mental and physical health to students of all ages on their campus.

Employment

The third research question and hypothesis was: (RQ3) Are there differences in motivations to engage in PA between college students enrolled at an HSI who work 39 hours or less per week and those who work 40 hours or more per week? (H3) There will be a difference in PA motivations between students enrolled at an HSI who work 39 hours or less per week, and students who work 40 hours or more per week. While Kavetsos (2011) and Van Domelen et al. (2011) suggested that employment status influences PA levels, our study found no significant difference in PA motivation between students working less than 40 hours and those working more. This discrepancy might be due to the unique stressors and time constraints faced by college students, particularly those at an HSI. However, the previous research studies conducted by Kavetsos (2011) and Van Domelen et al. (2011) also did not indicate a difference in the amount of hours worked per week and how it impacts motivation to engage in PA in undergraduate students, particularly at an HSI.

Children

The fourth research question and hypothesis was: (RQ 4) Are there differences in motivations to engage in PA between students enrolled at an HSI that have children and those that do not have children? (H4) There will be a difference in PA motivations between students enrolled at an HSI who have children, and students who do not have children.Health motives such as *ill-health avoidance* and *positive health* in this study tended to be more important to undergraduate students that had children, compared to those that did not. It appears that the motivation to avoid illness and injury and to stay healthy, is important to those college students who are parents. Consistent with findings in previous research (Naisseh et al., 2015), individuals with children in this study tended to be motivated to PA due to health concerns. NTSs', those with children, motivation to engage in PA also differed significantly in the interpersonal motives of the *competition* and *affiliation* subscales. *Competition* and *affiliation* were less important to those students with children. Findings in this study were inconsistent with the previous research by Emm-Collison et al. (2019) and Solomon-Moore et al. (2017) who found parents who put personal value on PA (i.e., *socialization* and *challenge*) are highly motivated and also engaged in higher levels of the activity. However, the previous research did not identify those parents as college students, and they may have less time to engage in PA due to balancing school, work, and parenting. These findings would be beneficial to health, fitness, recreation, and sports professionals in developing and implementing group sport-related activities to undergraduate students who attend an HSI and have children to provide them a social outlet.

Those students with children in this study also reported higher scores in the psychological subscale of *stress management*. Again, PA may serve as a mitigator of stress for those students who were parents. These findings are consistent with previous studies investigating motivational factors to PA in individuals with children (Emm-Collison et al., 2019; Naisseh et al., 2015; Solomon-Moore et al., 2017); however, participants in these studies were not identified as undergraduate college students. The findings in this study will help health and fitness professionals in understanding the psychological motivations of undergraduate students at an HSI with children to engage in PA. These students understand that PA serves as a stress reliever and should have access to these opportunities that meet their needs. The findings also point to the need for further research to compare motivations to engage in PA in undergraduate college students with children.

Health promotion on college campuses may be especially important for institutions that serve underrepresented populations, such as HSIs (Yoon et al., 2020). Departments that are responsible for health promotion and PA on their campuses would benefit from understanding the differences in motivations to engage in PA between TSs and NTSs. However, there is also limited research regarding the impact of health promotion at HSIs, particularly to address physical inactivity. It has been suggested that higher education institutions have the responsibility to address the increasing rates of physical inactivity among students in order to reduce their correlated health risks (Pauline, 2013).

Conclusion

Physical inactivity continues to rise in the United States, especially on college campuses, with detrimental health consequences. The current findings suggest that undergraduate students have various motivations to engage in PA that can better inform administrators in higher education when making policy decisions pertaining to the health and well-being opportunities on their campus, especially at an HSI. Understanding that motivations to engage in PA are different between TSs and NTSs can help them to increase the level of PA and to provide opportunities specific to the needs of all their students.

Limitations

Some limitations existed in this study that could be addressed in the future. The first limitation is the low response rate that was received. A significantly higher sample would provide greater power in the statistical analysis. The amount of PA was not assessed in this study, therefore, future research measuring if specific motivational factors contribute to an increase in PA would provide additional insight for the adoption of specific interventions to address physical inactivity in NTS. Also, this study was conducted at a single institution as there are a lack of studies that investigate PA at HSIs, therefore, conducting a more comprehensive study, including various HSIs across the United States would provide more generalizable data. Lastly, data collection for this study occurred in February 2020, prior to the COVID-19 pandemic. Future investigations into the motivations and barriers to PA would inform this line of research, particularly among BIPOC undergraduate students attending a HSI.

Acknowledgements

This work was supported by the Professional Staff Congress-City University of New York (PSC-CUNY) Cycle 50 Grant Program under Grant Award # 62254-00-50. There is no potential conflict of interest to report by the authors.

REFERENCES

Agresti, A., & Finlay, B. (2014). *Statistical methods for the social sciences* (4th ed.). Pearson Education Limited.

Amatriain-Fernández, S., Gronwald, T., Murillo-Rodríguez, E.S., Machado, S., & Budde, H (2020). Benefits of physical activity and physical exercise in the time of pandemic. *Psychological Trauma: Theory, Research, Practice, and Policy, 12*(1), S264-S266. http://dx.doi.org/10.1037/tra0000643

American College Health Association. (2020). American College Health Association-National College Health Assessment III: Undergraduate Student Reference Group Data Report Fall 2019. American College Health Association.

Arredondo, E. M., Sotres-Alvarez, D., Stoutenberg, M., Davis, S. M., Crespo, N. C., Carnethon, M. R., Castañeda, S. F., Isasi, C. R., Espinoza, R. A., Daviglus, M. L., Perez, L. G., & Evenson, K. R. (2016). Physical activity levels in U.S. Latino/Hispanic adults. *American Journal of Preventive Medicine, 50*(4), 500–508. https://doi.org/10.1016/j.amepre.2015.08.029

Bastos, A. de A., Salguero, A., González-Boto, R., & Marquez, S. (2006). Motives for participation in physical activity by Brazilian adults. *Perceptual and Motor Skills, 102*(2), 358–367. https://doi.org/10.2466/pms.102.2.358-367

Beck, F., Gillison, F., & Standage, M. (2010). A theoretical investigation of the development of physical activity habits in retirement. *British Journal of Health Psychology, 15*(3), 663–679. https://doi.org/10.1348/135910709X479096

Bennett, S., Evans, T., & Riedle, J. (2007). Comparing academic motivation and accomplishments among traditional, nontraditional, and distance education college students. *Psi Chi Journal of Psychological Research, 12*(4), 154–161. https://doi.org/10.24839/1089-4136.JN12.4.154

Blankenship, D. (2010). *Applied research and evaluation methods in recreation.* Human Kinetics, Inc.

Brunet, J., & Sabiston, C. M. (2011). Exploring motivation for physical activity across the adult lifespan. *Psychology of Sport and Exercise, 12*(2), 99–105. https://doi.org/10.1016/j.psychsport.2010.09.006

Buckworth, J., Lee, R. E., Regan, G., Schneider, L. K., & DiClemente, C. C. (2007). Decomposing intrinsic and extrinsic motivation for exercise: Application to stages of motivational readiness. *Psychology of Sport and Exercise, 8*(4), 441–461. https://doi.org/10.1016/j.psychsport.2006.06.007

Center for Postsecondary and Economic Success. (2015). *Yesterday's non-traditional student is today's traditional student.* The Center for Law and Social Policy.

Chan, J.S.Y., Liu, G., Liang, D., Deng, K., Wu, J., & Yan, J.H. (2019). Special issue – Therapeutic benefits of physical activity for mood: A systematic review on the effects of exercise intensity, duration, and modality. *Journal of Psychology, 153*(1), 102-125. https://doi.org/10.1080/00223980.2018.1470487

Coleman, K. J., & Gonzalez, E. C. (2001). Promoting stair use in a US–Mexico border community. *American Journal of Public Health, 91*(12), 2007–2009. https://doi.org/10.2105/AJPH.91.12.2007

Dozier, S. G. H., Schroeder, K., Lee, J., Fulkerson, J. A., & Kubik, M. Y. (2020). The association between parents and children meeting physical activity guidelines. *Journal of Pediatric Nursing, 52*, 70–75. https://doi.org/10.1016/j.pedn.2020.03.007

Egli, T., Bland, H. W., Melton, B. F., & Czech, D. R. (2011). Influence of age, sex, and race on college students' exercise motivation of physical activity. *Journal of American College Health, 59*(5), 399–406. https://doi.org/10.1080/07448481.2010.513074

Emm-Collison, L. G., Jago, R., Salway, R., Thompson, J. L., & Sebire, S. J. (2019). Longitudinal associations between parents' motivations to exercise and their moderate-to-vigorous physical activity. *Psychology of Sport and Exercise, 43*, 343–349. https://doi.org/10.1016/j.psychsport.2019.04.007

Espinosa, L. L., Turk, J. M., Taylor, M., & Chessman, H.M. (2019). *Race and ethnicity in higher education: A status report.* American Council on Education.

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*(2), 175-191. https://doi.org/10.3758/BF03193146

Hamilton, K., White, K. M., & Cuddihy, T. (2012). Using a single-item physical activity measure to describe and validate parents' physical activity patterns. *Research Quarterly for Exercise and Sport, 83*(2), 340-345. https://doi.org/10.1080/02701367.2012.10599865

Kavetsos, G. (2011). The impact of physical activity on employment. *The Journal of Socio-Economics, 40*(6), 775–779. https://doi.org/10.1016/j.socec.2011.08.011

Kilpatrick, M., Hebert, E., & Bartholomew, J. (2005). College students' motivation for physical activity: Differentiating men's and women's motives for sport participation and

exercise. *Journal of American College Health, 54*(2), 87–94. https://doi.org/10.3200/JACH.54.2.87-94

Kim, S. & Cho, D. (2022). Validation of Exercise Motivations Inventory-2 (EMI-2) Scale for college students. *Journal of American College Health, 70*(1), 114-121. http://dx.doi.org/10.1080/07448481.2020.1726929

Kulavic, K., Hultquist, C. N., & McLester, J. R. (2013). A comparison of motivational factors and barriers to physical activity among traditional versus nontraditional college students. *Journal of American College Health, 61*(2), 60–66. https://doi.org/10.1080/07448481.2012.753890

Kwan, M.Y, Cairney, J., Faulkner, G.E., & Pullenayegum, E.E. (2012). Physical activity and other health-risk behaviors during the transition into early adulthood: A longitudinal cohort study. *Am J Prev Med, 42*(1), 14–20. https://doi.org/10.1016/j.amepre.2011.08.026

Lauderdale, M. E., Yli-Piipari, S., Irwin, C. C., & Layne, T. E. (2015). Gender differences regarding motivation for physical activity among college students: A self-determination approach. *The Physical Educator, 72*(5), 153-172. https://doi.org/10.18666/TPE-2015-V72-I5-4682

Leung, K.M., Ransdell, L.B., Gao, Y., Shimon, J., Lucas, S., & Pak-Kwong, C. (2016). Predictors of physical activity on a college campus with a high proportion of non-traditional students. *California Journal of Health Promotion, 14*(1), 44-56. https://doi.org/10.32398/cjhp.v14i1.1864

Linder, A.D., Liu, H., Woodson-Smith, A., & Jung, J. (2018). Physical activity behaviors among non-traditional and traditional college students: An application of Ajzen's theory of planned behavior. *Negro Educational Review, 69*(1-4), 33-50.

Markland, D., & Ingledew, D. K. (1997). The measurement of exercise motives: Factorial validity and invariance across gender of a revised Exercise Motivations Inventory. *British Journal of Health Psychology, 2*(4), 361–376. https://doi.org/10.1111/j.2044-8287.1997.tb00549.x

Miller, A. M., & Iris, M. (2002). Health promotion attitudes and strategies in older adults. *Health Education & Behavior, 29*(2), 249–267. https://doi.org/10.1177/109019810202900209

Naisseh, M., Martinent, G., Ferrand, C., & Hautier, C. (2015). Relationship between parents' motivation for physical activity and their beliefs, and support of their children's physical activity: A cluster analysis. *Psychological Reports, 117*(1), 230–243. https://doi.org/10.2466/06.21.PR0.117c17z0

National Center for Education Statistics. (2020). *Definitions and data: Who is nontraditional?* Fast Facts; National Center for Education Statistics. https://nces.ed.gov/pubs/web/97578e.asp

Ogden, C. L., Carroll, M. D., Kit, B. K., & Flegal, K. M. (2014). Prevalence of childhood and adult obesity in the United States, 2011-2012. *JAMA, 311*(8), 806. https://doi.org/10.1001/jama.2014.732

Pauline, J. S. (2013). Physical activity behaviors, motivation, and self-efficacy among college students. *College Student Journal, 47*(1), 64-74.

Ruiz, R., Gesell, S. B., Buchowski, M. S., Lambert, W., & Barkin, S. L. (2011). The relationship between Hispanic parents and their preschool-aged children's physical activity. *PEDIATRICS, 127*(5), 888–895. https://doi.org/10.1542/peds.2010-1712

Ryan, J., Lyon, K., Webb, O. J., Eves, F. F., & Ryan, C. G. (2011). Promoting physical activity in a low socioeconomic area: Results from an intervention targeting stair climbing. *Preventive Medicine, 52*(5), 352–354. https://doi.org/10.1016/j.ypmed.2011.03.004

Solomon-Moore, E., Sebire, S. J., Thompson, J. L., Zahra, J., Lawlor, D. A., & Jago, R. (2017). Are parents' motivations to exercise and intention to engage in regular family-based

activity associated with both adult and child physical activity? *BMJ Open Sport & Exercise Medicine, 2*(1), e000137. https://doi.org/10.1136/bmjsem-2016-000137

Strong, H. A., Ginis, K. A. M., Mack, D. E., & Wilson, P. M. (2006). Examining self-presentational exercise motives and social physique anxiety in men and women. *Journal of Applied Biobehavioral Research, 11*(3–4), 209–225. https://doi.org/10.1111/j.1751-9861.2007.00006.x

U.S. Department of Health and Human Services. (2018). *Physical activity guidelines for Americans (2nd ed.)*. U.S. Department of Health and Human Services.

Van Domelen, D. R., Koster, A., Caserotti, P., Brychta, R. J., Chen, K. Y., McClain, J. J., Troiano, R. P., Berrigan, D., & Harris, T. B. (2011). Employment and physical activity in the U.S. *American Journal of Preventive Medicine, 41*(2), 136–145. https://doi.org/10.1016/j.amepre.2011.03.019

Vandelanotte, C., Short, C., Rockloff, M., Di Millia, L., Ronan, K., Happell, B., & Duncan, M.J. (2015). How do different occupational factors influence total, occupational, and leisure-time physical activity? *Journal of Physical Activity & Health, 12*, 200-207. http://dx.doi.org/10.1123/jpah.2013-0098

Webb, O. J., & Smith, L. (2011). Promoting stair climbing in public-access settings: An audit of intervention opportunities in England. *Preventive Medicine, 53*(4–5), 321–324. https://doi.org/10.1016/j.ypmed.2011.08.024

Whitehead, B.R. & Blaxton, J.M. (2017). Daily well-being benefits of physical activity in older adults: Does time or type matter?. *The Gerentologist, 57*(6), 1062-1071. https://doi.org/10.1093/geront/gnw250

Yoon, A., Choi, S., Mun, J., Hong, J., Hahn, D., Kang, M., & Lee, S. (2020). Motivational signage increases stair usage on a Hispanic serving institution. *Journal of American College Health, 68*(3), 236–241. https://doi.org/10.1080/07448481.2018.1539000

Author(s)' statements on ethics and conflict of interest

Ethics statement: We hereby declare that research/publication ethics and citing principles have been considered in all the stages of the study. We take full responsibility for the content of the paper in case of dispute.

Conflicts of Interest: There are no conflicts of interest declared by the authors.