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Relationship of Athletic Identity to Selected Health Behaviors Among College Students: Implications Beyond Formal Sport Participation

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Abstract Organized team sport is a popular activity for American youth. While sport participation is associated with many positive health outcomes, the opportunity to continue participating in organized, structured sports declines with age. Sport participation is also associated with athletic identity, an aspect of personal identity that is the extent to which individuals identify with the athlete role. While athletic identity is often studied in the context of negative consequences that can occur when the athlete role is disrupted or discontinued, there are also positive associations with continued identification as an athlete, particularly regarding health behaviors such as exercise. Lifestyle sports are a way that individuals can continue participating in sport-related activities throughout life, potentially continuing the beneficial elements of athletic identity. The current study seeks to explore the relationship between athletic identity and health behaviors. More specifically, it examines this relationship in lifestyle sport contexts independent of formal organized sports such as high school or college athletics. Results showed that athletic identity is positively related to exercise frequency, recreational sport participation, and health behaviors. Moreover, these associations were found regardless of past experience in a formal athlete role. Results have implications in identifying the potential for athletic identity to positively influence health, particularly in activity settings that are more inclusive and lifestyle-oriented than formal, organized team sports.

Keywords: *athletic identity, sports, exercise, recreation, health*

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1. Introduction

Sport is a popular activity among youth, with over 69% of children aged 6-12 having participated in a team or individual sport during the year [1], and over half of American high school students participating in sports as well [2,3]. In these contexts, sports can result in health benefits for participants, including increased physical activity levels and healthy weight [4,5]. Youth sport participation is also associated with healthier nutrition, as well as lower smoking and drug use rates [6,7].

While the relationship between sport participation and positive health behaviors is well-established among youth, it should be noted that participation in structured team sports declines during adolescence [8]. A decline in opportunities for organized sport participation after childhood is one of the culprits of this trend, with available opportunities occurring primarily at the more elite and competitive levels [9]. This age-related decline in opportunity to play organized team sports is particularly evident when considering the rates of high school athletes who go on to play NCAA sports. While 54% of high school seniors expect to play sports in college, only 6% will actually secure roster spots on a college team [10,11]. This dissonance between the expectation to continue playing organized team sports and the declining opportunities available can create individual identity disruption associated with exit from the athlete role, resulting in negative health consequences [12].

Considering the emphasis of sport participation among youth, it might be expected that children can conceptualize themselves as "athletes" even at young ages [13]. Termed "athletic identity", this recognition of one's self as an athlete can develop a high importance for many sports participants, to the extent that it can be considered a distinct aspect of individual identity [12]. Much research regarding athletic identity has focused on negative consequences that can follow athlete role disruption in the case of discontinued sport participation, such as grief, anxiety, or loss of confidence [14]. However, there are also positive implications associated with athletic identity. In adults, athletic identity is related to improved exercise

frequency, injury rehabilitation, and expanded social networks [15,16,17].

Considering these positive associations with athletic identity, expanding the contexts for identification as an athlete beyond organized team sports participation may have important implications for public health. For example, could the concept of athletic identity be applicable for those who may not have participated in high school or college athletics, or no longer have the opportunity to do so? If so, might positive behaviors associated with athletic identity also have applications with these populations, even without current or past formal team sport participation? Athletic identity has been found to be more predictive of physical activity rates of both adults and college students than actual high school or college sport participation [18,19]. Therefore, examining athletic identity as a healthy element of lifestyle sport might give additional insights regarding the potential for associated health benefits for adults throughout the lifespan, not just during times of organized sport participation. Additional consideration should be given to examining athletic identity as a healthy element of lifestyle sport participation for those who haven't participated in organized competitive team sports or no longer have the opportunity.

Lifestyle sport activities may be a way for those who consider themselves "athletes" to continue participating in sport-related roles throughout life. Lifestyle sports are sports and activities that are not anchored in developmental periods, enabling participants to be able to participate in life stages beyond youth and school. They might be considered as individual endurance-related activities such as running, cycling, hiking, swimming, skiing, climbing, or paddling; or may also include recreational sport leagues in both traditional sports and emerging sports such as pickle ball or ultimate Frisbee. Lifestyle sports can be considered as an alternative to more traditional sport formats, and have gained popularity in both academic research and in popular participation [20]. Wheaton [20] particularly notes an expansion in lifestyle sport activities in non-traditional sport populations such as older men, women, and girls. Lifestyle sport activities provide continued opportunities for self-chosen, self-paced activity, allowing the participant to decide their own purpose or level of challenge. Such activities have higher participation rates into adulthood than organized competitive team sports, as well as comparable health benefits [21,22]. These types of activities may be helpful in fostering athletic identity in adults, thereby facilitating other healthy behaviors.

College is a time when students develop health and physical activity habits that carry into adulthood [23]. However, it is also a time when there is a significant shift from organized, competitive team sport opportunities to more self-initiated, self-sustained lifestyle sports. Considering the positive health benefits of athletic identity, conceptualizing only those who participate in organized competitive team sports as "athletes" is limiting, particularly as these types of activities decline. The current study seeks to examine the relationship between athletic identity and various health behaviors among college students who may not have played or are facing the cessation of organized competitive team sports. Further, we seek to examine the connection between athletic identity and health behaviors independent of participants' status as a high school or college athlete. Examining these variables while controlling for past formal athlete roles has important implications. Specifically, it allows us to expand the healthy associations with athletic identity outside of traditional, organized competitive team sport roles to include broader populations and lifestyle sport activities that are more common as individuals progress through life.

2. Methods

2.1. Procedure

Students at two different public institutions within the same state were invited to participate in a web-based survey administered through a link provided in their university email accounts. Prior to beginning the study, we obtained human subjects research approval through the institutional review board for both of the institutions. Each researcher distributed the survey through their respective institutions by contacting faculty in various departments and inviting them to ask their students to participate in the study. Data were collected in both fall and spring semesters in order to vary the context of the time of year in which students responded.

2.2. Instrument

We utilized a two-part electronic questionnaire through Qualtrics Survey Software. Part one included 35 questions related to demographics, high school and college sport participation, recreational sport involvement, exercise frequency, and general health and well-being. The questions concerning level of recreational sport involvement, exercise frequency, health behavior attitudes, and general well-being were adapted from the 2019 Behavior Risk Factor Surveillance System (BRFSS) [24]. The BRFSS questionnaire is a telephone-based survey designed to collect data on U.S. residents about their health-related risk behaviors, chronic conditions and reported use of preventive services. Each year, the BRFSS is used to collect data on more than 400,000 adults. Reliability and validity of prevalence estimates from the BRFSS has been well-established, and is similar to other national surveys that rely on self-reporting data [25].

There were four demographic questions which included age, gender identification, ethnicity, and grade classification. Four questions covered high school and college sport participation. We asked participants to self-report (yes or no) on whether or not they participated in high school or college sports. Indicating yes, we provided an additional question to identify in which sports they participated. If they indicated no, they moved directly to questions related to lifestyle sports participation. This included questions regarding participation in both recreational sports and exercise/endurance activities. Five questions addressed level of involvement in various recreational sports, such as intramural sports, community sports, and individual endurance sports. Participants self-reported level of recreational sports involvement using a 5-point Likert scale, with 1 (not involved) to 5 (extremely involved).

Eight items addressed the frequency of participation in exercise/endurance activities, such as running, swimming, cycling, strength training, and fitness classes. Participants self-reported frequency of participation in these activities using an 8-point Likert scale where 1 (no participation) to 8 (participation six times per week or more). Seven items addressed health behavior and attitudes such as satisfaction with weight, confidence in ability to be active, healthy nutrition behaviors, and attitudes regarding healthy eating. Participants self-reported their level of agreement with statements related to health behavior and attitudes using a 5-point Likert scale, where 1 (strongly disagree) to 5 (strongly agree). The remaining seven items addressed general well-being, such as level of energy, mood, appearance, physical mobility/activity, confidence, self-esteem, and overall quality of life. Participants self-reported their general well-being using a 5-point Likert scale where 1 (extremely dissatisfied) to 5 (extremely satisfied).

Part two of the questionnaire included the Athletic Identity Measurement Scale. Brewer [12] developed the Athletic Identity Measurement Scale to assess the strength and exclusivity with an individual's identification with the athlete role. It consists of 10 items answered on a Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree). Sample items on the AIMS include statements such as "I consider myself an athlete" and "I have many goals related to sports." Scores can range from 10-70, with higher scores representing stronger identification. Brewer et al. [12] report a test-retest reliability of .89 and an internal consistency with alpha coefficients ranging from .81 to .93. The AIMS also demonstrated appropriate internal consistency in the current study, with an alpha coefficient of .93.

3. Results

Table 1. Demographic Characteristics of Participants

Variable	N	%	Cum%
Gender			
Male	126	31.3	31
Female	277	68.7	100
Race			
White	241	59.8	59.8
Black	86	21.3	81.1
Asian	30	7.4	88.5
Hispanic/Latino	28	6.9	95.4
Native American	3	.7	96.1
Multiple Races	15	3.7	100
Classification			
Freshman	68	16.9	16.9
Sophomore	59	14.6	31.5
Junior	77	19.1	50.6
Senior	95	23.6	74.2
Graduate/Law	104	25.8	100

Four hundred thirty-three participants completed the questionnaire. We excluded 11 questionnaires from the analysis that were largely incomplete. In addition, we omitted another 19 questionnaires due to the identification of outliers in the age variable, which we identified as values more than 3 inter quartile ranges from the 75th or 25th percentile [26]. The final analysis consisted of 403 participants. Sixty-nine percent were female, and 31% were male, with a mean age of 22.2 (Table 1). Among the racial composition, 59.8% reported as White/Caucasian, 21.3% reported as Black/African-American, 7.4% were Asian, 6.9% were Hispanic/Latino, .7% were Native American, and 3.7% identified with more than one race. Seventeen percent of the participants self-reported as freshmen, 14.6% self-reported as sophomores, 19% self-reported as juniors, 23.6% self-reported as seniors, and 26% self-reported as graduate/law students.

We calculated measures of central tendency and variability, as well as differences among gender, grade classification, and race, on four test variables. These included: 1) quantity of recreational sports involvement, 2) fitness/endurance activity frequency, 3) health behavior, and 4) athletic identity. Table 2 outlines means and standard deviations by gender for the four test variables. We also analyzed differences between means for the various levels of grade classification and race. The only significant finding was a difference in health behavior reported among grade classification ($p = .045$), with graduate/law students reporting healthier behavior than freshmen and sophomores. There were no significant findings among all of the other race and grade classification categories.

Table 2. Means and Standard Deviations for Test Variables

Variable	Range	Mean	SD
Recreational Sports Involvement	5-25		
Overall		8.81	4.16
Males		9.82	4.46
Females		8.35	3.94
Exercise Frequency	0-45		
Overall		18.21	9.64
Males		19.39	10.13
Females		17.69	9.38
Health Behavior	7-35		
Overall		25.80	5.09
Males		26.74	5.40
Females		25.39	4.89
Athletic Identity	10-70		
Overall		31.24	15.07
Males		37.09	15.20
Females		28.63	14.28

3.1. Recreational Sports Involvement

We utilized t-tests to examine differences between gender regarding amount of recreational sports involvement. Males reported more recreational sports involvement than women, $t(394) = 3.14$, $p = .002$. We then performed a one-way analysis of variance to explore differences in recreational sports involvement related to grade classification and ethnicity. Results from the one-way analysis of variance did not demonstrate a statistically significant difference ($p < .05$) in amount of recreational sports participation for grade classification or ethnicity.

3.2. Exercise Frequency

We also utilized t-tests to examine differences between gender and exercise/endurance activity frequency. Results of the t-test did not reveal any significant differences

between males or females and exercise frequency. In addition, results of the one-way analysis of variance also did not reveal any significant differences between grade classifications or race and exercise frequency.

3.3. Health Behavior

To determine if differences existed among gender and self-reported health behavior, we employed a paired samples t-test. Results of the t-test demonstrated a statistically significant difference among gender and self-reported health behavior, with males reporting higher levels of health behaviors than women, $t(397) = 2.46$, $p=.019$. The one-way analysis of variance also revealed statistically significant differences between grade classification and health behavior, $F(4, 392) = 2.465$, $p=.045$. Post-hoc analysis further identified graduate/law students reporting more healthy behavior than freshmen and sophomore students. The one-way analysis of variance did not reveal any significant differences in healthy behavior according to race.

3.4. Athletic Identity

We utilized t-tests to examine differences between gender and athletic identity. Results of the analysis demonstrated that males self-reported higher levels of athletic identity than women, $t(393) = 5.31$, $p=.000$. We used one-way analysis of variance to examine differences among the various categories of grade classification and race. Results of this analysis did not find any significant differences between grade classification, race, and athletic identity.

3.5. Past and Present Sport Roles and Athletic Identity

Sixty-two percent of participants played varsity high school sports. Results of the paired-sample t-test demonstrated a significant difference $t(391) = 9.06$, $p = .000$ in athletic identity based on past experience as a high school athlete. Those who had played at least one high school sport self-reported higher levels of athletic identity compared to those who reported not participating in high school sports.

Seventeen percent of the participants reported they had played or currently play college varsity sports. Among former or current college athletes, we found that athletic identity was significantly different from those participants who didn't play college sports, $t(391) = 8.40$, $p = .000$, two-tailed. Those who played or were currently playing at least one college sport self-reported higher levels of athletic identity than those who had not participated in college sports (Table 3).

Table 3. T-test Summary Tables for Athletic Identity by High School and College Sports Participation

Athletic Identity Level	Mean	SD	*t*	*P*
High School Former Athletes	36.11	14.76	9.06	.000
High School Non-Athletes	23.18	11.79		
Athletic Identity Level	Mean	SD	*t*	*P*
College Current/Former Athletes	44.10	14.99	8.40	.000
College Non-Athletes	28.54	13.65		

3.6. Athletic Identity, Health Behavior, Exercise Frequency, and Recreational Sports Participation

We utilized Spearman rank correlations to determine the relationship between athletic identity, recreational sports participation, exercise frequency, and health behavior. Athletic identity was positively associated with all three of these variables. We found a significant positive relationship (Table 4) between athletic identity and the level of involvement in recreational sport activities, $r = .517$, $p = .000$. Those with greater involvement in recreational sports also had higher association with the athlete role.

Table 4. Correlation Summary Table for Athletic Identity and Recreational Sports Involvement

	r	*p*	N
Athletic Identity/Recreational Sports	.507	.000	387

We also discovered a significant positive relationship between athletic identity and exercise frequency, $r = .236$, $p = .000$. Greater exercise frequency was associated with higher levels of athletic identity (Table 5).

Table 5. Correlation Summary Table for Athletic Identity and Exercise Frequency

	r	*p*	N
Athletic Identity/Exercise Frequency	.236	.000	392

We also found a significant positive correlation between athletic identity and attitudes toward positive health behaviors, $r = .279$, $p = .000$. Participants who self-reported higher levels of athletic identity also reported healthier behaviors (Table 6).

Table 6. Correlation Summary Table for Athletic Identity and Health Behavior

	r	*p*	N
Athletic Identity/Health Behavior	.279	.000	391

3.7. Athletic Identity and Recreational Sports Involvement, Controlling for Past Sport Participation

While previous tests confirmed relationships between past/current varsity school sport participation and athletic identity, it is important to investigate the presence and strength of athletic identity independent of past sport participation. The purpose of this analysis was to determine if athletic identity was related to recreational sports participation separate from organized competitive team sport participation. Therefore, we used partial correlation to explore the relationship between recreational sports participation and athletic identity, while controlling for past high school or college organized competitive team sport participation.

Results of this analysis demonstrated a positive partial correlation between athletic identity and recreational sport participation frequency, $r(383) = .406$, $p = .000$, with a higher volume of lifestyle sport participation being associated with higher levels of athletic identity (Table 7). This association was less than the zero-order correlation (.517), but is still considered moderate [27]. Regardless of

whether participants played organized competitive team sports in high school or college, increased participation in recreational sports activities was related to participants self-reporting higher levels of athletic identity.

Table 7. Zero-order and partial correlations for athletic identity and recreational sports participation

	r	*p*	N
Zero-order	.507	.000	390
Partial	.406	.000	388

We also found a significant partial correlation between exercise frequency and athletic identity, when controlling for high school or college organized competitive team sport participation, $r(388) = .134$, $p = .008$ (Table 8). Higher levels of athletic identity were associated with greater exercise frequency, regardless of whether participants self-reported high school or college organized competitive team sport participation.

Table 8. Zero-order and partial correlations for athletic identity and exercise frequency

	r	*p*	N
Zero-order	.237	.000	395
Partial	.134	.008	392

We also found a significant positive correlation between athletic identity and positive health behaviors when controlling for high school or college organized competitive team sport participation, $r(387) = .147$, $p = .004$ (Table 9). Participants who self-reported higher levels of athletic identity also reported higher levels of positive health behaviors.

Table 9. Zero-order and partial correlations for athletic identity and health behaviors

	r	*p*	N
Zero-order	.263	.000	394
Partial	.147	.004	392

4. Discussion

This study sought to explore the relationship between athletic identity and health behaviors, particularly in contexts other than formal, organized team sports such as high school or college athletics. The results demonstrated that athletic identity is related to positive health behaviors and attitudes, as well as to lifestyle sport participation in the form of recreational sports activities and exercise/ endurance activities. Furthermore, these relationships were present regardless of past or present participation in high school or college athletics. These findings illustrate that positive behaviors associated with athletic identity can be applied in broader situations beyond organized team sports, and have implications in health promotion efforts throughout the lifetime.

As in previous studies, athletic identity levels were found to be positively related to formal, organized sport participation, particularly high school and college athletics [12]. Athletic identity levels were also found to be positively related to exercise, further supporting previously described associations with this aspect of health behavior [12,15,19]. However, the current study took additional steps to examine these relationships while controlling for past high school or college athletics participation. In finding that athletic identity is related to positive health attitudes and exercise behaviors regardless of status as a former athlete, we are able to expand implications of this relationship to broader populations. These positive associations with athletic identity are not dependent on formal athletics participation, either in high school or college. Thus, individuals who never played formal, organized team sports may still be able to have a degree of identification as an "athlete", potentially increasing the likelihood of associated health behaviors.

The current study also found athletic identity to be positively related to recreational sport participation such as intramurals, pick-up sports, and endurance sport activities. Those who reported higher levels of athletic identity also demonstrated greater frequency in recreational sport activities. Being able to associate athletic identity with recreational sport participation has implications in helping individuals maintain athletic identity as they age out of formal, competitive sports opportunities. Considering that athletic identity is associated with exercise frequency, maintaining athletic identity may be important as age increases. This result supports Reifsteck, Gill, & Brooks's [19] call for the development of lifestyle-oriented sport programs to help maintain physical activity levels after school-based organized sport opportunities are no longer available.

5. Conclusions

Establishing athletic identity as a construct that can be independent of formal, organized sport participation has important implications in considering it as a tool to further public health efforts. While previous research has focused on athletic identity levels as they occur in athletes, the current study expands the applicability of athletic identity to those who may not have played formal, organized sports. Expanding this conceptualization of the self as an "athlete" to those who participate in lifestyle sport activities such as hiking, cycling, climbing, or yoga could enable mindsets of healthier self-care. For example, a casual runner who identifies as an athlete may take care to maintain a healthy weight, moderate alcohol intake, and not smoke because those behaviors are "what runners do" to perform their activity better. Future research might continue to explore ways in which conceptualization of the self as an "athlete" are associated with positive health behaviors that are congruent with that role.

As mentioned, a great deal of research regarding athletic identity concerns negative social and emotional consequences in the event of an athlete role cessation [14]. Relatively little research explores how athletic identity might be maintained after structured sport opportunities are over, and how this might influence health behavior. The current study furthers the idea that maintaining athletic identity beyond formal sport roles may be a beneficial aspect of personal health. Future research might examine implications of fostering and maintaining athletic identity throughout adulthood.

In the current study, those participating more frequently in lifestyle sport activities experienced higher athletic

identity levels than those participating less or not at all. While athletic identity was found to be related to lifestyle sport participation, it is unclear whether this participation facilitates athletic identity, or vice-versa. Additional research that attempts to determine predictive models of athletic identity could provide insight on ways that athletic identity might be established or manipulated as a tool to encourage healthy behaviors.

6. Limitations

One limitation of the current study is that participants were college students, rather than adults in various stages of the lifespan. Athletic identity among college-age athletes declines with age and grade classification, corresponding to declining sport opportunities [12]. However, it is not known the degree to which athletic identity levels continue to fluctuate throughout the stages of life following college. If athletic identity continues to decrease into adulthood, then perhaps the athletic identity levels observed in the current study were inflated when generalizing to an adult population. Additional research regarding the relationship between age and athletic identity might be helpful in clarifying the degree to which findings can be generalized to various age groups in adult populations.

A great deal of previous research regarding athletic identity has been conducted using youth, high school, and college athlete populations. While the current study sought to expand investigation of athletic identity in other sport contexts, we considered intramural sports as one of the activities classified as "lifestyle sports." While intramural sports are not nearly as formal or recognized as varsity intercollegiate sports, they are still university-provided sports. In considering this similarity between varsity and intramural sports, it is possible that some of the perceptions reported by intramural participants may have mimicked those resulting from more formalized sport experience such as varsity sports.

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