Abstract

The Relationship Between Fitness and Motivation to Learn Among College Students

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Abstract: This paper examines the relationship between fitness habits of college students and their motivation to learn. In the K-12 setting, the literature review regarding this topic demonstrates mixed results, with most studies indicating a strong relationship between the two. In this study, data from 256 college students were collected to determine if the students' scores on the motivation to learn inventory differed based upon the hours of fitness that they engaged in per week. The self-reporting method of data collection from the participants in this study produced a statistically significant (P= .03) but weak correlation between fitness habits and motivation to learn (Pearson R= .14). Thus, raising questions about the relative weakness of the relationship between the variables themselves for college students when compared to the stronger relationship between the variables for students in high school. Secondly, from a wellness practitioner perspective, questions about what additional curricular content or wellness opportunities might be needed to increase intrinsic motivation for fitness participation, to match, generally speaking, a college students' known desire to learn in the classroom.

The Relationship Between Fitness and Motivation to Learn Among College Students

The relationship between Physical Fitness and Motivation to Learn has been discussed since the 1980's. While most research has been conducted in the K-12 setting, there is a growing interest in trying to understand the decreased levels of physical activity among college students. In high school, 91% of students report regular vigorous or moderate physical activity. In college, that number decreases to 58% (Douglass). In American high schools, since budgetary considerations have caused school districts to cut physical education program hours in K-12 education, certain research professionals in the field have questioned the value of such cuts, and have researched the link between physical education, academic achievement, and motivation to learn. Such researchers have reasoned that if there is a strong relationship between the level of physical fitness and academic achievement, then it does not make sense to cut such programs, as academic achievement and motivation to learn would be negatively affected. What this group of researchers discovered (Grissom, 2005) was a positive relationship between the level of physical fitness and academic achievement at the K-12 level.

In this study, we will investigate whether a relationship exists between motivation to learn and physical fitness among undergraduate college students at a public university in the Southern United States. Generally speaking, the study doesn't intend to prescribe a specific form of exercise, or make a determination regarding the type of exercise that is reported by the students, but, first and foremost, as a research question, to determine whether the students' anticipated decreased fitness activity level can be strongly correlated to a decrease in their motivation to learn as a college student. If the answer to the research question is yes, then, that would inform the researcher to argue in a similar fashion as the proponents of high school physical educators do when making the case for retaining physical education courses. However, if the answer to the research question is no, that is, there is not a strong correlation between motivation to learn and fitness activity level, then, the university level physical educator must still look for ways to engage the college student in wellness activities for their own sake.

Literature Review

To solidify that high school students desire to learn and physical fitness levels are strongly related to each other, Grissom (Grissom, 2005) conducted research with 884,715 fifth, seventh, and ninth graders comparing their fitness standards of aerobic capacity using the Fitnessgram test with their SAT scores on reading and mathematic achievement. Analysis of variance between groups showed that reading and math scores improved significantly as the physical fitness scores increased. In another study, released by the Texas Education Agency in January 2009, the state's 2.4 million students in grades 3-12 were evaluated on the relationship between physical fitness and academic achievement. Fitnessgram tests results were compared to results of the same students on state academic achievement tests across several grades. It was determined that physically fit students were more likely to do well on academic achievement tests, have good attendance, and fewer disciplinary referrals.

With regard to college aged students, researchers estimate (Stevenson, Lochbaum, 2008) that over 50% of the adult population in the United States do not engage in the recommended levels of physical activity. As practitioners look for ways to engage college students in healthy lifelong fitness habits, and lifestyles, Stevenson found that the mastery approach goal orientation significantly mediates sense of competence ($r=.41$, $p<.05$) on leisure time exercise autonomy ($r=.55$, $p<.05$). Just how practitioners create opportunities for college students to be more intrinsically motivated, and have a mastery goal orientation is a matter of discussion. One suggestion (Kilpatrick, 2004) is to expand the focus of curriculum and fitness planners to have lifetime physical activity interventions that include recreational sport activities in their offerings. For example, Kilpatrick's study has shown that female students engage in physical activity for differing reasons. When offerings are limited (students are given exercise program opportunities exclusively) such programs will appeal to women with the desire to participate for reasons of weight management, appearance, and ill health avoidance. However, a large

group of students might be left out who are motivated to participate in programs that offer them a sense of affiliation, enjoyment, challenge, and a sense of revitalization. For these groups of students, lifestyle activities and recreation sport participation can motivate them to participate.

Method

Participants

A total of 386 individuals participated in a series of research questionnaires including the Motivation to Learn Inventory (University of Arkansas, 2010), as well as collection of basic demographic information such as age, gender, marital status, and education level. Of those participants, 168 females and 88 males. The remaining 130 respondents did not identify gender and, therefore, their data were not retained. The participants were students at a mid-western university and were from a variety of academic majors as well as age levels.

Instrumentation

Motivation to Learn Inventory

Gender and marital status were measured through self-identification. Participants selected either "male" or "female" as a gender designation. Participants also completed the Motivation to Learn Inventory. A total of 25 questions were presented with responses indicated on a 5 point Likert scale. Responses were coded using Latin alphabet characters (N = Never, S = Sometimes, A = Always, etc.) and transformed into continuous data points 1 through 5. Questions included statements such as "I feel frustrated with learning new things." Identified in the Motivation to Learn Inventory is a sub-scale measuring Motivation to Learn when challenged and despite fatigue. Questions 5, and 19-24 of the Motivation to Learn Inventory make up the sub-scale. No transformations were required to calculate the sub-scale. Instead of averaging the items, a total score was calculated to perform the Pearson R correlation and determine the relationship between the variables. The total score instead of the average of the sub-scale was used to not minimize the differences between the scores on those inventory items as answered by the participants.

In the analysis of the motivation to learn inventory, the higher scores represent higher levels of motivation to learn when challenged and despite fatigue. This particular subsection of the inventory best reflects classroom and grade related eustress that would lead to academic success. The second important data collected in the Motivation to Learn (MTL) Inventory was the minutes of exercise per week that each participant engaged in. This data was used to compare the participant's physical activity with their score on the motivation to learn subscale.

Procedure

Data were collected via convenience sampling. Graduate students were tasked with collecting completed survey data from friends, neighbors, family, and work colleagues. Additional participants were identified as well in public locations and various higher learning campuses. The surveys contained additional demographic information, as well as aggression and cultural opinion data, not used in this research. A total of 386 individuals completed the survey, and of those 256 identified their gender as either male (n = 88) or female (n = 168). The remaining 130 surveys in which participants did not identify a gender were not utilized in this study. A Pearson R, for all participants, for males, and for females, was calculated to determine if there was a significant relationship between the participants' motivation to learn (academic achievement related variable) compared to the number of hours per week that they exercised (physical fitness variable). An alpha level of .05 was used for all calculations to test for statistical significance. Because data was analyzed using SAS, the P value was used to indicate statistical significance. The P Value was determined significant below .05 as well.

Results

Preliminary Analyses

Detailed results are presented in Table 1 for the Motivation to Learn (MTL) subscale (when challenged and despite fatigue) and the hours of reported minutes of exercise per week. The recommended weekly exercise for adults is 30 minutes per day for five days a week. (150 minutes). The males' mean average of reported exercise per week was 27.87 minutes above the recommended average, and the women's' mean

average was 38.87 below the recommended average. The females' motivation to learn (MTL) mean score was slightly higher (24.78 vs. 24.31) than the men's.

Table 1

Exercise and Motivation to Learn (MTL) Data for all participants, and male and female participants. Descriptive Statistics.

Source	*N*	*Exercise Mean*	Exercise SD	*MTL Mean*	*MTL SD*
All participants	256	134.94	159.22	24.66	3.69
Males	88	177.87	191.65	24.31	4.00
Females	168	111.13	134.53	24.78	4.00

*α = .05

In Table 2 below, we note the Pearson R and P values when we compare (1) the reported Minutes of Exercise per week data with (2) the Motivation to Learn (MTL) sub-scale data for all participants, and for male and female participants.

Table 2

Exercise and Motivation to Learn (MTL) Data for all participants, male and female participants. Correlation Data .between MTL and Exercise.

Source	Pearson R Value	*P*, α
All Participants	.14	.03*
Males	.14	.20
Females	.09	.25

* .03 is statistically significant

Discussion/Conclusions

The results from this study reveal that there is a statistically significant but weak

correlation (R= .14) between the variables of exercise and motivation to learn among college students. The lack of a strong relationship between the variables investigated here means that the high school students (where R=.41) did show a stronger relationship between these two variables than among the college students (R= .14). Students in college stay motivated to learn, but, as expected, they either become less motivated to exercise or the relationship between their exercise and their motivation to learn further widens. One way, perhaps, to increase student motivation to exercise is to broaden opportunities to students that will appeal to a mastery goal orientation and offer lifestyle fitness opportunities and recreational sport opportunities that is more appealing to those with differing goals from the traditional exercise offerings at a college. Although motivation to learn can be both intrinsic and extrinsic, future research in the form of a longitudinal study should be conducted to determine if intrinsic motivation can narrow the gap between motivation to learn and exercise by viewing exercise as motivation to live a healthy life and meet a broad range of needs that people have through college and into adulthood. In this study, we did not investigate the scope or type of exercise offerings that the students were offered at the specific school where the survey was conducted. Had more offerings been available, the results could have been different. Further research identifying the "ideal" environment for fitness activities could produce differing results.

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