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Examining the Relationship of Exercise and Sleep in Students  
Across Multiple Academic Disciplines

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HONORS PROJECT

Submitted to the Honors College  
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## **Examining the Relationship of Exercise and Sleep in Students Across Multiple Academic Disciplines**

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**ABSTRACT:** Students in college learn the importance of balancing their academic studies with their sleep and exercise habits. The amount of sleep and exercise a student receives has been examined in previous research studies. In these studies it was found that exercise had a positive affect on the amount of sleep received. However, there is little research on the affect academic discipline has on sleep habits and/or exercise habits of students in college.

**PURPOSE:** The purpose of this study is to examine the sleep and exercise habits among students in multiple academic majors at Bowling Green State University.

**METHODS:** 263 students were surveyed and were asked questions regarding age, gender, academic discipline, sleep habits, and exercise habits. The investigator distributed the survey to students in a classroom setting. After the surveys were collected, data from the surveys was analyzed through independent t-tests and one-way ANOVA. Students were also categorized into health or non-health groups dependent on their academic discipline.

**RESULTS:** Students who participated were assigned to a group dependent on their academic discipline. Of the students who participated, 20 were in the Allied Health academic discipline, 32 in Communications, 30 in Dietetics, 24 in Education, 31 in Exercise Science, 18 in Graphic Design, 27 in Human Services, 10 in Natural Science, 32 in Social Science, and 27 in Sports Management. When categorized into the broader groups of Health versus Non-health related academic disciplines, there were 111 students in a Non-health academic discipline and 140 students in a Health related academic discipline. From all the classes combined, 12 students chose not to partake in the study. It was found academic discipline did not have a significant effect on the reported amount of sleep. However, it was found that students in the Health related disciplines such as Exercise Science and Dietetics exercised one to two more days per week than the Non-health discipline of Graphic design and health-related discipline of Social Sciences (Psychology and Gerontology). It was also found that Exercise Science and Dietetics students completed more minutes of resistance exercise per week than Graphic Design,

and Social Science students. Students from both the Health and Non-health disciplines reported they felt as if they slept better when they exercised regularly.

**CONCLUSIONS:** The type of exercise and amount of exercise a student completes may be dependent upon academic discipline. Based on these results, students who were educated in their classes about the importance of exercise had healthier exercise habits than their peers. Further research is necessary to confirm these findings in other majors and at other universities.

**KEYWORDS:** Academic Discipline, Exercise, Sleep

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## Introduction

College students face the issue of time prioritization within their academics, sleep, and exercise habits. Lack of sleep and/or exercise leads to health consequences, and this is a concern for universities in regards to their students. Students should be aware of their exercise and sleep habits and the effect of sleep and exercise on health. Recently, there have been several publications on sleep and exercise habits of college-aged individuals (Brittain, Dinger, et al., 2014). There have also been studies on the effects of these factors of sleep and exercise on lifestyle and health (Gathman, Grabowski, et.al, 2017). For example, a study conducted at the University of Basel in Switzerland in 2014 concluded that vigorous activity had health benefits including decreasing stress, less pain, and fewer sleep complaints. Therefore, the study revealed the importance for students to exercise while in college. Another study written by professors at James Madison University in 2017 found that students in

Health-related disciplines had higher recreation use than students in Non-health related disciplines. The students with higher recreation use were Health Science and Physical Education students. This study indicates that being educated about exercising may influence a student to exercise more, therefore increasing overall health benefits. Even with all the research conducted, there have been few studies completed that observe both the factors of sleep and exercise and the effect academic discipline may have on them.

The purpose of the present study was to explore the factor of academic discipline on sleep and exercise habits. Students who are educated on sleep and exercise may pay more attention to these factors than those who do not. Observing academic discipline is important so universities may see what population of students need encouragement to exercise more, therefore hopefully decreasing student's stress levels. Another benefit

of observing academic discipline is the university may establish which population may not achieve as much sleep as recommended possibly due to the requirements of the major and the workload of courses. Overall, academic discipline may influence the schedule of a student and the time they have for sleep and exercise. Based on former evidence, a hypothesis was constructed that students in Health-related majors such as Exercise Science, Dietetics,

Allied Health, Human Services, and Social Science would have higher participation in exercise and higher sleep satisfaction than students in Non-health related fields such as Communications, Graphic Design, Sports Management, Education, and Natural Sciences. However, it was also hypothesized that students in Non-health related fields would have better sleep habits than those of students in Health-related academic disciplines.

## Methods

Before any research activities took place, the investigator obtained IRB approval. In order to observe the effect of academic discipline on exercise and sleep habits, a total of 251 students from a wide variety of majors were given a survey. The pool of students was provided to the investigator by permission of the professor for each class. The investigator emailed professors asking to come in to classes to give a survey, and if permission was granted, then the investigator would go to each class. The survey consisted of a consent form, the survey, and a word search for those students who did not wish to participate in the study. Participation in the study was completely voluntary. The survey asked the questions as listed below:

- What is your age?
- Are you male or female?
- What is your academic major?

- What is your academic year?  
First, Second, Third, Fourth, or Nontraditional
- How many hours of sleep do you get each weeknight on average?
- How many hours of sleep do you get each weekend- night on average?
- Are you frequently tired the next day after a night of sleep?
- Do you take any medications or supplements to help you sleep?
- What is the number of days you exercise per week?
- How many minutes of aerobic exercise (cardio) per week do you partake in?
- How many minutes of resistance training (weights, bands, etc.) per week do you partake in?
- Do you feel like you sleep better when you exercise regularly?

Students answered these questions and then dropped their completed survey into a box located at the front of the room provided by the investigator. The

investigator then analyzed the results from the survey in SPSS and used independent t-tests, one-way ANOVA, and Chi-square Goodness of Fit tests to obtain conclusions on the data.

Independent t- tests were used to compare the answers for the groups of Health-related disciplines and Non-health disciplines. Disciplines placed in the Non- health related group included Communications, Graphic Design, Sports Management, Education, and Natural Science (Chemistry and Biology). Disciplines placed into the Health-related group included Dietetics,

Exercise Science, Human Services (Criminal Justice and Social Work), Allied Health (Nursing and Allied Health Science), and Social Science (Psychology and Gerontology). Each individual discipline was then compared to one another using One- way ANOVA to determine differences in the answers to the questions stated above. A Chi-square Goodness of Fit test was used to determine the difference between the observed and expected frequency (50% yes; 50% no) of students who reported sleeping better with exercise.

## Results

Out of 263 possible students, 251 students participated in the study while 12 chose not to participate. Therefore, 95.43% of students in the sample size participated in the study. Between the two broad groups of Non-Health academic disciplines (111 students) and Health-related academic disciplines (140 students), there was no statistically significant difference in the amount of sleep, tiredness, or medications taken between the groups. There was also no statistically significant difference in the amount of exercise or days of exercise between these two groups. However, when the two groups were broken down into each individual academic discipline, there were a few statistically significant findings. One finding was Graphic Design majors exercised fewer days per week than Dietetics majors ( $p=.024$ ) and Exercise Science majors ( $p=.003$ ) (See Figure 1 and Table 1). Graphic Design majors exercised on average 1.78 days per week, while Dietetics majors

exercised 3.65 days per week. Exercise Science majors exercised on average 3.97 days per week. There were also significant findings for students in the Social Science discipline (Psychology and Gerontology) compared to Dietetics students ( $p=.023$ ) and Exercise Science students ( $p=.002$ ) (See Figure 1 and Table 1). Social Science students exercised about 2.05 days per week.

The amount of resistance training completed per week by Graphic Design majors was also significant when compared to Dietetics ( $p=.020$ ) and Exercise Science majors (.009) (See Figure 2 and Table 2). When comparing Graphic Design majors to Dietetics majors, Graphic Design majors completed 21.53 minutes per week of resistance training on average and Dietetics majors completed 148.03 minutes per week on average ( $p=.020$ ). Exercise Science majors completed 157.17 minutes of resistance training per week on average. There were also

statistically significant findings when comparing Social Science majors to Dietetics ( $p=.001$ ) and Exercise Science majors ( $p=.000$ ) (See Figure 2 and Table 2). When comparing Social Science majors to Dietetics majors, Social Science majors completed, on average, 19.25 minutes of resistance training per week. Exercise Science majors performed resistance training more than social science majors as well. Out of the ten groups studied, these were the only four that had any statistically significant findings. One last significant finding was that out of all the students who completed the survey, 87% said they felt as if they slept better when exercising on a regular basis ( $p<.001$ ; See Table 3).

Figure 1. Average Days of Exercise Per Week

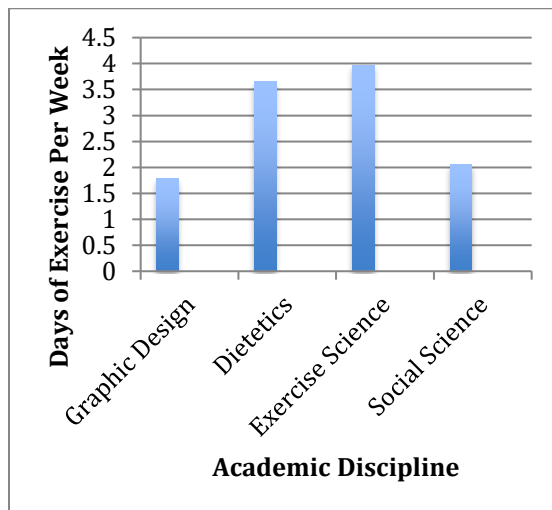


Table 1. Average Days of Exercise Per Week

Academic Discipline	Average Days of Exercise Per Week
Communications	2.89
<b>Graphic Design</b>	<b>1.78</b>
Sport Management	3.19
Education	2.67
Natural Science	2.50
<b>Dietetics</b>	<b>3.65</b>
<b>Exercise Science</b>	<b>3.97</b>
Human Services	2.59
Allied Health	3.00
<b>Social Science</b>	<b>2.05</b>

Table 2. Average Minutes of Resistance Training Per Week

Academic Discipline	Average Minutes of Resistance Training Per Week (minutes)
Communications	112.42
<b>Graphic Design</b>	<b>21.53</b>
Sport Management	81.44
Education	56.58
Natural Science	64.25
<b>Dietetics</b>	<b>148.03</b>
<b>Exercise Science</b>	<b>157.17</b>
Human Services	66.12
Allied Health	100.75
<b>Social Science</b>	<b>19.25</b>

Figure 2. Average Minutes of Resistance Training Per Week

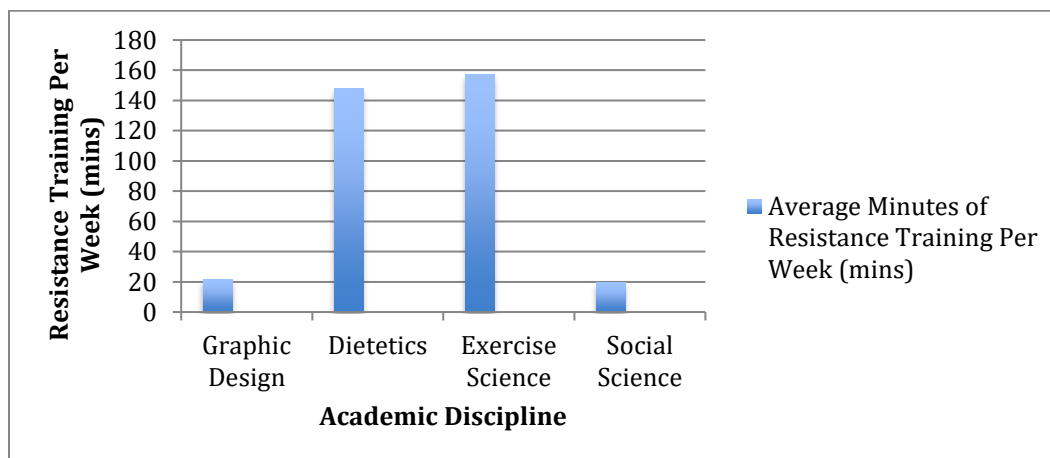




Table 3. Students Reporting if They Sleep Better When Exercising Regularly

Groups	No	Yes	Total
Non- Health	15	87	102
Health	16	119	135
Total	31	206	237

### Conclusion

In conclusion, the hypothesis that students in Non-health related academic disciplines would have better sleeping habits than students in Health-related disciplines was rejected. There were no significant statistical differences between these groups; therefore further research may be done to revise this hypothesis. The original idea behind this hypothesis was that students in Non-health related academic disciplines are speculated to more likely have less rigorous coursework, therefore having more time to sleep. Many Health-related fields also require students to obtain more schooling after completion of undergraduate programs. Therefore, students in these types of disciplines may have additional responsibilities to complete such as shadowing hours and research. These factors would then lead to less time allotted in the day for sleeping or relaxing. The hypothesis that Health-related academic disciplines had healthier exercise habits was accepted, however this was only for

specific majors as well as for only days of exercise and resistance training. The research concluded that students from the Graphic Design and Social Science discipline exercised fewer days per week and completed less resistance training per week than students from Exercise Science and Dietetics disciplines. The reason Exercise Science and Dietetics major have healthier exercise habits may be due to the education they receive in their classes about exercise. Through learning about exercise, students may be influenced to exercise more often due to the awareness of the health risks that may arise when exercise is not part of a daily routine. Exercise Science and Dietetics students may also just have more interest in health and fitness, considering their academic discipline is revolved around these concepts. Therefore, interest in the subject may also be a driving factor for going to the gym more days per week or partaking in more resistance training. On the other hand, students in the Graphic Design and

Social Sciences discipline may spend their allotted time on their artwork or projects, taking away from time of the day to exercise. They also may not have an interest in exercising. Resistance training time may have been higher for Exercise Science and Dietetics majors as well because they are educated on the right way to lift weights through required classes. For example, Exercise Science students are required to take courses such as Sport Conditioning and Physical Education General classes. In these classes students learn how to lift different types of weights properly in

order to avoid injuries. Students in other majors such as Graphic Design and Social Science may not prioritize resistance training due to fear of injury, feeling uncomfortable, and/or less knowledge on the subject. One last conclusion found was that the majority of students felt as they slept better when they exercised regularly. This may be due to overall health benefits that arise from exercise in relation to improved quality sleep. However, additional research should be done to further and confirm these results.

## References

1. Arazi, H., & Hosseini, R. (2013). A comparison of physical self-concept between physical education and non-physical education university students. *Timisoara Physical Education and Rehabilitation Journal*, 5(10), 6-13. doi:10.2478/tperj-2013-0001
2. Buboltz, W., Jenkins, S. M., Soper, B., Woller, K., Johnson, P., & Faes, T. (2009). Sleep habits and patterns of college students: An expanded study. *Journal of College Counseling*, 12(2), 113-124. doi:10.1002/j.2161-1882.2009.tb00109.x
3. Dinger, M. K., Brittain, D. R., & Hutchinson, S. R. (2014). Associations between physical activity and health-related factors in a national sample of college students. *Journal of American College Health : J of ACH*, 62(1), 67-74. doi:10.1080/07448481.2013.849710
4. Driver, H. S., & Taylor, S. R. (2000). Exercise and sleep. *Sleep Medicine Reviews*, 4(4), 387-402. doi:10.1053/smr.2000.0110
5. Gathman, P. C., Grabowski, N. R., Carr, J. W., & Todd, M. K. (2017). Campus recreation use and health behaviors among college students in different academic disciplines. *Recreational Sports Journal*, 41(1), 87-99. doi:10.1123/rsj.2016-0011
6. Gerber, M., Brand, S., Herrmann, C., Colledge, F., Holsboer-Trachsler, E., & Pühse, U. (2014). Increased objectively assessed vigorous-intensity exercise is associated with reduced stress, increased mental health and good objective and subjective sleep in young adults. *Physiology & Behavior*, 135, 17-24. doi:10.1016/j.physbeh.2014.05.047
7. Hurdiel, R., Watier, T., Honn, K., Pez , T., Zunquin, G., & Theunynck, D. (2017). Effects of a 12-week physical activities programme on sleep in female

- university students. *Research in Sports Medicine*, 25(2), 191-196.  
doi:10.1080/15438627.2017.1282354
8. Liguori G., Schuna JR., J., & Mozumdar, A. (2011). Semester Long Changes in Sleep Duration for College Students. *College Student Journal*, 45(3), 481–492. Retrieved from:  
<http://search.ebscohost.com.ezproxy.bgsu.edu/login.aspx?direct=true&db=s3h&AN=66893525&site=ehost-live&scope=site>
9. Lowry, R., Galuska, D. A., Fulton, J. E., Wechsler, H., Kann, L., & Collins, J. L. (2000). Physical activity, food choice, and weight management goals and practices among U.S. college students. *American Journal of Preventive Medicine*, 18(1), 18-27.  
doi:10.1016/S0749-3797(99)00107-5
10. Maslowsky, J., Ph.D., & Ozer, E. J., Ph.D. (2014). Developmental trends in sleep duration in adolescence and young adulthood: Evidence from a national united states sample. *Journal of Adolescent Health*, 54(6), 691-697.  
doi:10.1016/j.jadohealth.2013.10.201
11. Mazerat, N. , Bellar, D. , Judge, L. W. , Brignac, A. , Smith, J. & Trosclair, D. (2011). Relationship Between Exercise Habits and Age of College Students. *Journal of Strength and Conditioning Research*, 25,S98-S99. doi: 10.1097/01.JSC.0000395735.34933.4f.
12. Melton, B. F., Langdon, J., & McDaniel, T. (2013). Sleep trends and college students: Does it connect to obesity? *College Student Journal*, 47(3), 429.
13. Peltzer, K., & Pengpid, S. (2016). Sleep duration and health correlates among university students in 26 countries. *Psychology, Health & Medicine*, 21(2), 208-220.  
doi:10.1080/13548506.2014.998687
14. Tsai, L., & Li, S. (2004). Sleep patterns in college students: Gender and grade differences. *Journal of Psychosomatic Research*, 56(2), 231-237. doi:10.1016/S0022-3999(03)00507-5
15. Uchida, S., Shioda, K., Morita, Y., Kubota, C., Ganeko, M., & Takeda, N. (2012). Exercise effects on sleep physiology. *Frontiers in Neurology*, 3, 48. doi:10.3389/fneur.2012.00048

