

**“The Relationship Between Exercise and GPA for College Students”**

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## **Introduction**

The University of Illinois is one of the best public schools in America and contains a high number of hard working students. Students choose the University of Illinois for a variety of reasons, but one of the biggest is because of how highly regarded the school is academically. In order to exceed at a top university, students must allocate enough time out of the day to finish their school work and studies. There are many other possible things that could affect a student's grade point average, but we want to focus on one specific factor that could influence GPA, which is exercise. Exercising obviously improves physical health and numerous studies have proven that exercising improves the mental health of individuals, but our main objective for this research proposal is to determine whether there is a correlation between students' cumulative GPAs and their exercising habits.

Everyone has different exercise habits, so we are not only interested in finding out how often each student exercises, but we are also interested in everything else that relates to it. We plan on conducting our research through online surveys, focus groups, and through an interview with the Associate Director of Operations for the Activities and Recreational Center (ARC) at the University of Illinois. Through our online survey, which was sent out to a random selection of UIUC students, we plan to find quantitative data that will help us create a picture for each individuals studying and exercising habits. The survey provided us with information on the student's cumulative GPA and how many hours a week they spend on schoolwork. The information we receive from our online surveys will also tell us how often students do school work through a normal week, as well as give us data on how their habits change when studying and school workloads are increased because of exams. The questions will eventually become

more specific and ask about what types of exercising each student does (cardio, weight-lifting, yoga, other) which allows us to find any other correlations between specific workouts and GPA. Through our online surveys we hope to find statistical data that will tell us how each student balances school work and exercising.

Along with our online surveys we plan to conduct two focus groups to not only give us statistical information on their studying and exercising routines, but also give us the qualitative data needed to help better understand our analyses. During these focus group studies, conductors of the study will pay close attention to the mannerisms and students' explanations to questions we ask to them about their studying and workout habits. The conductors will take notes on participants' studies to find any common trends in answers and reasonings behind certain questions. The main idea here is to answer the question, "is there a correlation between regular exercise and academic performance?" which will be measured by GPA.

## **Hypothesis**

When our group first selected the topic we all instinctively thought that students that work out consistently throughout the week would schedule their time to account for all their responsibilities. This brought us to our main hypothesis of the study that students that work out regularly (3+ times/week) will on average have a higher grade point average than students who do not work out. Going to the gym is extremely difficult for college students and most of the excuses are centered on not having enough time because of school or their job.

Paying for a college is a big investment on yourself and students will at times sacrifice sleeping to allocate more time to study. Some students take academics so seriously that they treat

their academic performance as their job and to succeed means to improve their GPA. The idea and montra that most students have on their academics and exercising brought us to another hypothesis that students will workout less during examination periods and significant deadlines. The students that do not work out generally might not have a schedule or routine that allocates time to study. So when exams and projects arise, these students will be more prone to take time away from exercising to give themselves ample time to study. Students who do work out consistently are more likely to be better at time management and would not have to adjust their exercise routine to give themselves more time to study. From our previous insights, we additionally hypothesized students who work out sleep more than students who do not; more sleep is associated with better academic performance.

## **Literature Review**

In the last couple of years, the importance of exercise and studying in college students has been a trending topic. According to Purdue University in an article titled, *College students working out at campus gyms get better grades*, upwards of 1,820 students who visit Purdue's France A. Córdoba Recreational Sports Center at least 16 times a month have earned a GPA of 3.10 or higher. School Officials traced these numbers through a student's ID number, calculating how many times each student swipes into the recreation center and cross-referencing that number with their overall GPA. Tricia Zelaya who is Purdue's assistant director for student development in the Division of Recreational Sports was one of the College Officials elected to observe and coauthor this study. She went onto say that going to the gym is so much more than going to the gym now-a-days in terms of time management. Students across the country that find themselves

motivated by fitness on a regular basis tend to manage their time more effectively. This time management skill usually transfers into their schoolwork resulting in a more effective work ethic while in college.

Universities are realizing the effect that exercise has on students' academic behavior and are investing in renovating their school's recreation centers. University of Illinois at Urbana-Champaign started the trend with their \$83 million renovation in 2008, followed by upwards of \$1.7 billion in renovations across the country from 2010-2015 as stated through Purdue University. Purdue made a \$98 million investment in a renovation of their recreation facility resulting in 7,000 students utilizing this facility a day. This study emphasizes the impact that the quality of recreation facility has on the amount of students exercising and their increasing GPA that comes along with the renovations.

An article written for *The Journal for American Health* by Janet Buckworth and Claudio Nigg examined the distribution between physical activity and sedentary activity in college students. According to the article, out of 475 participants from one university, on average a college student will engage in roughly 30 hours per week in sedentary behavior. Buckworth and Nigg split up the sedentary behavior into three different sections, TV, study and computer use. Their statistics display that just over 13 hours on average per week are directed towards studying. Comparing to our online survey a majority of our respondents said that they focused 11-15 hours per week towards schoolwork outside of class. This is a very reasonable amount to study per week, therefore, we see many college students across the country falling in that particular category. This article goes on to talk about the frequency and duration that these college students exercise in a typical week. Buckworth and Nigg found that on average students exercise 3.41

days per week for 48 minutes. This equates out to roughly 2.73 hours per week. In contrast, our group's survey found that students on the University of Illinois campus work out on average 3.35 hours per week. We think that the discrepancy between those two figures are a result of students that overestimate their workout habits. Developing routines and habits like this have direct benefits for sleeping more, working out, and higher grades.

In a study conducted by Paul Loprinzi, the goal was to measure the relationship between physical activity and sleeping. Their survey data, provided by the National Health and Nutrition Examination Survey (NHANES), included 3,081 subjects ranging from 18-85. It was determined that there was a strong correlation that showed that people feeling overly sleepy during the day compared to never feeling overly sleepy during the day, decreased by a factor of 0.65 for participants meeting physical activity guidelines compared to those not meeting guidelines. This means people are less tired and more likely to go to the gym and work out if they sleep well. Working out is the action that causes the increase in sleep and establishing a routine. These people who slept more and would work out more and working out more has a correlation associated with a higher GPA.

According to a study conducted in a group of professors from University of North Texas and Brown university led by Daniel J. Taylor. In this document, they show the relationships in sleeping behavior patterns and students academic patterns in the classroom. Their study of 867 undergraduate provides a strong correlation between the two through questionnaires that were sent out to students. It was determined that the higher a student's' average GPA was, the higher their average hours spent sleeping was. Colleges are starting to see these trends and it shows in how they are investing to create more interest in their institutions. More colleges than ever are

now investing in their infrastructure and can find a commonality in one particular item, recreational centers. In a study released by NIRSA and conducted by PhD Scott Forrester shows that investments in recreational facilities can drive recruitment for students. According to this study, 68% of students said that campus recreation facilities influenced their decision of which college they will attend and another 62% stated that the programs these recreation centers offered influenced their choice of where they got to school.

### **Background/Context**

As before mentioned, UIUC is considered a top public university. For them to remain in that standing, it is in the University's interest to provide a healthy atmosphere, in both a mental and physical sense. The University currently has two indoor recreational facilities, multiple outdoor basketball courts, baseball/softball field, tennis courts, et cetera, that are open to all students. The two indoor recreational facilities (ARC and CRCE) are the most consistently used facilities, their locations are convenient to most students since one is on the east side of campus and the other is on the west. These facilities house the weightlifting (2nd most popular method of exercise among students surveyed) equipment that is open to all students; they contain both free weights and exercise machines. The facilities both have indoor tracks as well, and studios for alternative exercises such as yoga. Both facilities are open at least by 6:30am and stay open until 12am on weekdays. This provides a large time window for students to get in their exercise regimen at their convenience. With all this in mind, it seems apparent the University wants to provide an adequate atmosphere for students who wish to use exercise as a means of staying fit.

By giving so many resources to students they are promoting this healthy lifestyle and evidently want students to take advantage of the opportunity.

This message was at the core of what we interpreted from a University of Illinois employee who is an ARC Official who preferred to remain anonymous. He talked about how the University of Illinois puts a huge emphasis on budgeting money to ensure that the campus recreation centers stay up to date and readied for what is to come in the future. To keep facilities fully functional year round, our interviewee explained that they have a 19 million dollar a year operational budget for all their campus recreation centers. In fact, he said that they are currently working on a 15-year plan to set aside money for operational wear and tear of equipment and to ensure the campus recreation centers can keep up with the rising student population.

With everything that the ARC has to offer, the official said he has noticed the exercise routines of the general population of students on campus. He says that in the morning he sees students taking more advantage of the indoor pool and using cardio and weight machines. While during the afternoon and evening time, he notices that more students are playing basketball, using free weights, and taking cardio and aerobic classes. The ARC prides itself on having the outstanding facility that it has now and that it can cater to any students wants and needs, but they are constantly looking for ways to improve their facilities on a daily basis so that all students can take advantage of anything the ARC has to offer.

As an official at the ARC since 2007, the interviewee has had the opportunity to see the positive effects for students that visit the ARC frequently. He says that on average he thinks students stay at the ARC from anywhere between 30 minutes to 2 hours a day that it takes time management skills for students to do this because of the busy schedules students have.



Furthermore, towards the end of the interview, he told us that he thinks that not only are you making your body healthier when you exercise but that “if you set aside time for exercise, you are gaining some type of time management skills.” He knows that students have more important responsibilities than working out on some days, so being able to manage your time is a great skill to have and could be directly translated into how you allocate time to your academics.

If our hypothesis is proven correct, we think that universities need to implement policies that will allow their students to have the available resources to fulfill their exercise needs. These policies should be centered around creating a budget that will allow schools to constantly update facilities and roads/sidewalks and make any improvements needed as time goes on. These ideas will be expanded upon in the “Policy Implications” section.

### **Methods: Focus Group (A)**

We conducted two separate focus groups and was able to interview 18 people combined, Each subject interviewed took turns speaking so that we could obtain original answers from them for both focus groups. Over the course of the interviews we held in the first focus group, group members would alternate conducting these interviews and facilitating them. Being able to trade responsibilities in the focus group process helped with running efficient interviews and helped us better understand our subjects responses. Our second focus group was conducted in the same way as was the first. Each subject was interviewed separately from one another and group members traded responsibilities throughout the process. When it came to evaluating our focus groups, we wanted to find trends between both that we could create statistics for our research and translate that into direct context to display a specific correlation in our research. We generated

our questions as such so we would be able to get numerical answers that we can compare and contrast, as well as asking yes or no questions that required simple answers. We wanted to make sure that the questions asked were open for interpretation and would give our focus group members the ability to elaborate more on their responses, so we made it a goal to refrain as much as we could from asking yes or no questions asked so that we could get the most out of the time we had with our focus groups.

The open ended questions we did ask as moderators in our focus groups were able to help us significantly understand the impact school has on a student. An open ended question we asked in our focus group was how exercising affected their sleep schedule. Subjects elaborated on this question by majority saying they in fact do get more sleep when they work out. Knowing this and knowing students also get less sleep around exams would suggest that students wouldn't have the time to participate in activities that encourage sleep. This is an example of how a different type of question was able to yield more useful results for our research.

### **Methods: Online Survey (B)**

Before our group was ready to publish our questions from the focus group to the online survey, we needed to restructure certain questions and add questions that will explain trends that we saw. An example of a question that needed more detail was "How many days a week do you work out?" We understood the general concept of how much time they spent working out, but did not see how this impacted their grades. Our group made the decision to then add a question regarding the subjects overall GPA to get a quantifiable understanding of a student's academic track record and workout schedule. With this new data, we were able to draw more comparisons

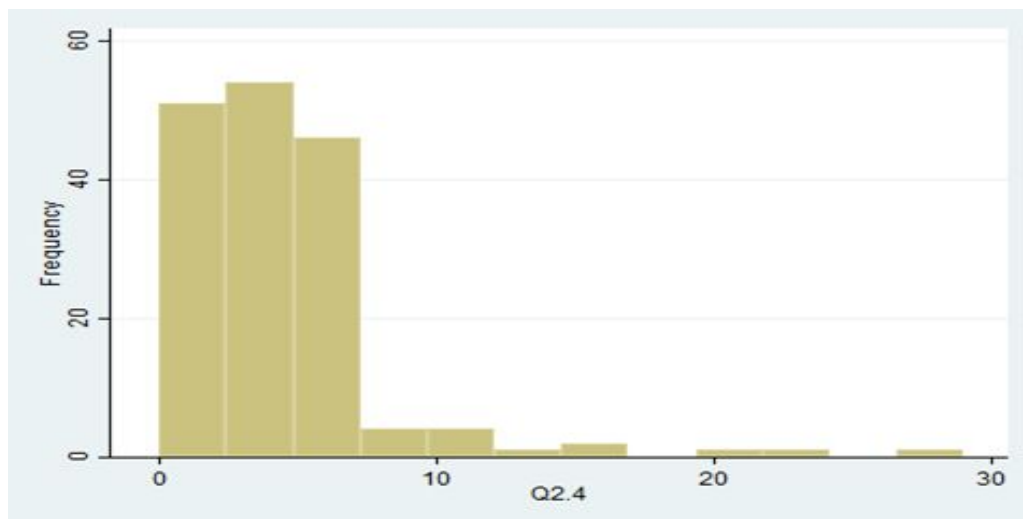
among different variables that impacted each subject's time constraint between school and exercise. Additionally to adding new questions we had to restructure old questions to work on a different platform.

When you interview somebody you are face to face and you get a better understanding for their answers through body language, diction, and other indicators. When giving out a survey to a large random sample of people you do not get a lot of the same interaction and feedback as you do in person. Our open ended question from our focus groups would not have been as effective online. This is because students are most likely to be less engaged in the survey because they are answering these questions at their home, online, and at their own convenience. To combat this, we tried to make our questions easy to answer for the subject and easy to interpret for our group.

## **Findings**

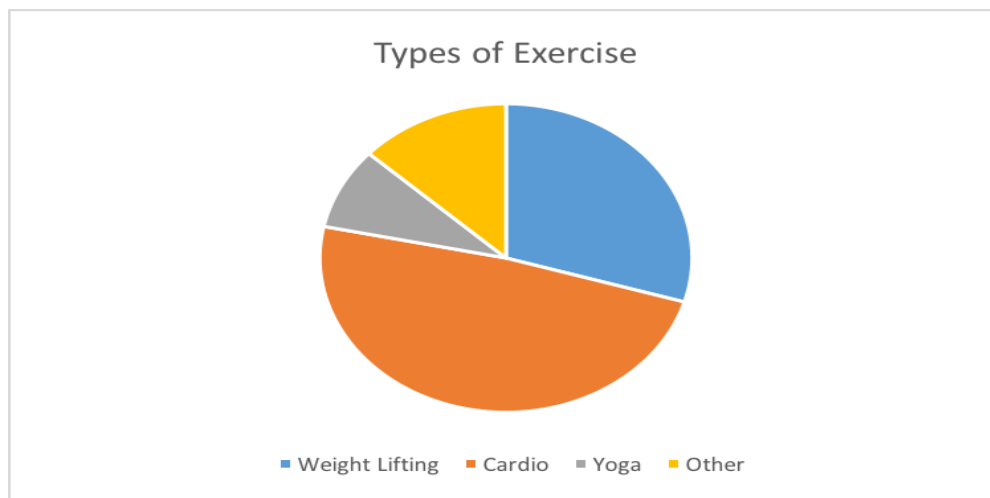
To explain our findings, we compiled our data from the online survey and focus groups then analyzed the patterns. We also estimated with different models. Starting off with the online survey, we, for the most part, received the responses we were expecting as a group. Looking at question 2.4, it asks “How many hours a week do you work out?” For this question, we asked the respondents to give an exact number, therefore we essentially got everyone’s average for hours spent exercising during a week. This question had an interesting result, as you can see by the drop-off in the figure. The stark contrast is an illustration into the amount of exercise a typical University of Illinois student is willing to incorporate into his or her weekly schedule. As you can see by the graph, students find that 6 hours a week for working out is sufficient, and they are

not willing to give up time studying to work out for more hours. This could be explained by students thinking the trade-off between studying or exercising more favors towards studying after a certain amount of working out.



In question 2.6 we asked about the kinds of exercise or exercises the respondents were putting themselves through. For options to give, we considered our focus group results and used the popular answers in the survey. We let students pick multiple forms of exercise, hence why the percentages together add up to more than 100%. As represented by the pie chart, cardio (75.94%) was most popular response for this online survey question, followed by weightlifting (45.45%), “other” (18.72%) and yoga (12.30%). Some of the other popular answers for “other” were karate, walking, and basketball. Before the online survey, and even the focus session, we as a group predicted that cardio would be the overwhelming response to this question. Our reasoning for this was mainly drawn from our own experience of finding running to be the form of exercise with the easiest access. Access in this context refers to accessibility to the facilities to perform running (the outdoors and campus recreation centers) and the equipment required (a pair

of running shoes). Objectively, this is much less than the other sports and activities like weightlifting and basketball.



Another question we asked was concerning the respondent's overall grade point average. To illustrate their responses, we used a boxplot. UIUC being the high-achieving institution that it is, we expected the average to be relatively high. Our expectations were confirmed when the average GPA of the students polled was found to be 3.43, and the standard deviation was .61. Initially, we had trouble with holding these numbers valid when it was discovered there were several “joke responses” among those surveyed, but we adjusted our data to remove those outliers to keep the integrity of our data. The graphs below reflect these adjustments in our data. The major take-away from analyzing the survey data was that our hypothesis was essentially confirmed: the average GPA for students who work out 3 or more times per week is 3.61, whereas the overall average is 3.43. This difference is striking because an average of 3.43 is already very high, relatively speaking. This difference shows that regular exercise (3+

times/week) may be the catalyst for better academic performance, even at high achieving institutions such as UIUC.

As for the focus groups, we saw some similarities between the groups, but we also saw some variable answers among students. An example of the latter was when we asked the opening question of “how many hours a week do you work out?” Some students are quite active and workout 4-5 hours, but there was a significant dropoff after that. This dropoff was also illustrated in the online survey; perhaps this gets into the idea of commitment to exercise regimens, meaning that either one is committed or he/she is not.

The types of exercises and their popularity were also similar to the online survey. Cardio was the overwhelmingly popular choice among both groups, followed by weightlifting; another restated answer among the participants was basketball. In suit with one of our sub-hypothesis, we asked how the participants approach exercise around the time of exams or large projects; 14/18 responded that they work out less around these times, confirming our hypothesis. This backs up our claim that students for the most part are responsible with allocating time efficiently.

### **Policy Implications**

We think the obvious policy implication is funding towards the recreation department and road/sidewalk upkeep. The former comes from the notion of the ARC and CRCE both being heavily used by the student body, and holding that our hypothesis is correct, exercise should be encouraged directly via funding. This could mean adding better, more efficient exercise machinery and equipment, or expanding on the size of ARC and CRCE, something that will likely happen in coming years if the University keeps expanding their student body at their

current pace. This could also mean opening up a third facility, one that is closer to the main quad than CRCE or ARC.

The latter part about sidewalk and road upkeep is incredibly important because those are the most common mediums for the most popular form of exercise among students at UIUC, cardio. The reasoning for adding additional funding for this is simply student safety; when someone is running, they often are not looking at the ground and are susceptible to stepping into a pothole or tripping over an object and potentially injuring themselves. If the roads and sidewalks were clear of such hazards, and students had knowledge of this, then we would likely see more students doing cardio, since access to this form of exercise is so widespread and open to the public (i.e. you don't need a membership like at the ARC or CRCE).

The last policy implication is the notion that the University should create a symbolic policy for all students to work exercise and physical activity into their lives. The University can only gain from this, as studies have shown that exercise stimulates mental activity, which can lead to higher academic performance; regular exercise in the long run has also been shown to improve time management skills, making students more effective at allocating time for studies. If the University is hesitant to suggest this because they think it would initially draw students away from their studies, they can promote responsible time allocation along with promoting exercise; the two do not have to be mutually exclusive. If students knew their University encouraged them exercising, there is a good chance more academically-inclined students would make time for physical activity.

## Conclusions

After conducting all research and surveys, we concluded that two of our three hypotheses were proven correct. One of our hypothesis that was proven correct was our main hypothesis that students who work out three or more times a week, on average, will achieve a higher GPA and perform better academically, than students who do not work out regularly. This was illustrated by our finding that the average GPA for students who workout 3+ times per is 3.61; when compared to the overall average of students polled in the online survey, 3.43, it becomes clear that consistent exercise has an affect on academic performance. From our data, we were able to formulate and prove through our research that students worked out less around times of exams and projects. In our focus groups, 14/18 respondents said that they do work out less around these times, and in the online survey 86% of 280 students surveyed said they do the same. Our reasoning for hypothesizing this was that through our own experience, but the media and pop culture portrays otherwise, that students are responsible and able to appropriately allocate their time and adjust those allocations when necessary.

Throughout our study we experienced a couple limitations. The main one being a lack of resources, particularly students to survey. This is not to say we are not content and thankful with the University sending our survey to a sizeable pool of students, but it is known that the best way to get the most accurate answer is through increasing sample size. If we had the opportunity, we would have like to survey more students overall, as well ask more questions that could have potentially supported our hypotheses. One more limitation was the scarcity of studies/sources that approached our subject directly; we had to cut snippets from multiple sources in order to effectively show our hypotheses and data have validity.



Overall, our limitations were nothing to complain about, and we're very appreciative for all the help we received setting up the online survey. Taking into account the policy implications, we think that the University should consider allocating more funds to the recreation department as well as focus more on sidewalk and road upkeep. These policies would cover many of the students who partake in physical activity on campus and create a healthier environment on campus overall, particularly in the ARC and CRCE. We also believe that the University should adopt the symbolic policy that students should work out more; this would target those who are more academically-inclined, and if they knew that their school wanted them to exercise more and provided the facilities for them to do so, there may be a larger turnout. Plus, if our hypotheses are correct, it could only be to the University's benefit to endorse this policy, as it will result in higher academic performance.

We suggest that our study be conducted in a similar manner at universities of different scale. UIUC is a relatively large institution, but there may be discrepancies in the data when this study is conducted at small or medium sized schools. These discrepancies may be a result of the culture of the different universities, which in turn could tell us what cultural factors promote a healthy academic environment and which do not.

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