STRESS LEVELS IN CAL POLY STUDENT-ATHLETES VERSUS NON-STUDENT-ATHLETES

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Fall, 2020
Introduction

As we all know, going away to college is a transformative experience for young adults. For many students it will be their first time in life where they are left completely to their own devices and must be completely independent. Some may have traveled hundreds, or even thousands of miles from home to pursue a degree in their prospective field. It is a place of learning, growth, new experiences, and meeting new people. It is also a place where students experience new levels of stress. It is a well-documented fact that college can consist of some of the most stressful years in a person's life. A surprisingly high number of college students struggle with their mental health in some form. A 2013 survey conducted by The Association for University and College Counseling Center Directors found that 41.6% of college students surveyed reported having anxiety, 36.4% were experiencing depression, and 24.5% reported taking psychotropic medications as treatment for various mental health issues (Mistler et al. 2013). With that said, it is generally agreed that students of all backgrounds may be more prone to certain stressors and experience increased stress and mental health issues during their time at college. However, many psychologists believe that some groups, like student-athletes, may be more prone to this stress increase. (Hudd et al 2000).

The purpose of this study is to examine how Cal Poly student-athletes (students who are part of NCAA recognized athletics team) internalize stress and deal with specific stressors in comparison to Cal Poly students who are not part of a school athletics team. My aim to determine if there are any specific links between involvement on a college athletics team and total levels of perceived stress. I will also be examining how prevalent the stressors of money,
schoolwork, family, future success, extracurricular (sports, clubs, jobs, etc.) and time management are among student-athletes in comparison to their non-athlete counterparts.

Stress is defined as a feeling of emotional or physical tension that can cause feelings of frustration, anger, nervousness, and more. It is caused by an existing factor known as a “stressor” (U.S. National Library of Medicine). Different stressors will affect different people in unlike ways. Because everyone has a unique response to stressors, there is no physical way to measure stress. Instead, the most prominent way that psychologists, scientists, and researchers measure stress is by measuring perceived stress. Perceived stress is a person's perception of how much stress they currently have. It is measured using the Perceived Stress Scale, the most widely used psychological instrument for measuring how people perceive stress. The scale consists of 10 questions relating to the survey taker’s feelings and thoughts on stress in the last month and how often they felt a certain way on a scale of 0-4 (0 being never and 4 being very often).

Student athletes were chosen to be compared to regular students because athletes are unique in the fact that they participate in an activity that can relieve stress, but also create it. Researchers have acknowledged that participation in athletics can act as a buffer to stress (Hudd et al 2000). However, studies shown that participation in athletics can become a unique stressor itself, one that traditional college students do not experience (Kimball & Freysinger 2003).

Athletes are constantly involved in physical activity which stimulates the release of the endorphins dopamine and serotonin. These are your brain’s “feel good” neurotransmitters and have been directly linked to reducing the negative effects of stress (American Psychology Association 2020). Knowing this, it is reasonable to believe that athletes may have lower levels
of perceived stress than non-athletes and be better equipped to deal with this stress. A 2014 study published by the *Research Journal of the American Society of Exercise Physiologists* had subjects take a survey measuring their physical activity levels and their perceived stress levels. The study found that subjects who were identified as sedentary were 3.018 times more likely to have a higher perceived stress level in comparison to the physically active subjects (de Sousa et al. 2014). In addition to this, a 2011 study published by SAGE Publishing looked at whether participation in elite adolescent athletics (athletes in “Swiss Olympic Sport Classes) increased or decreased symptoms of depression and anxiety among adolescents, and further, whether the interaction between participation in high-performance sports and stress is related to the perceived quality of sleep. This study found that participants who reported higher levels of stress were more likely to have depressive symptoms and that those who were classified as having poor sleep also reported higher levels of depressive symptoms. Although the study found links between high stress and depressive symptoms as well as poor sleep and depressive symptoms, it found that participation in high-performance sports was not a source of these problems for the adolescents (Gerber et al. 2011).

There have not been nearly as many studies comparing perceived stress in student athletes to non-student athletes as there have been with other groups of college students. However, studies show that although perceived stress levels may be lower or unaffected for high level adolescent athletes and everyday people who exercise moderately, it is not the case for college student athletes. Because of the intensity of training that student athletes participate in daily and the huge amount of time committed, student athletes often have higher levels of perceived stress. Of the few studies that have been done comparing perceived stress levels between college
athletes and non-athletes, nearly all have found that the student athlete group had higher levels of perceived stress. A past study published by the *African Association for Health, Physical Education, Recreation, Sport and Dance* found that student athletes perceived stress slightly higher than the traditional non-athlete college student (Surujlal et al. 2013). Another study published by *The Online Journal of Sport Psychology* found that student athletes and non-student athletes gave vastly different answers when ranking common stressors from most prevalent to least prevalent. (Wilson and Pritchard 2005).

I predict that in my study, Cal Poly student-athletes and Cal Poly non-student-athletes will have slight differences in perceived stress, with the student athletes averaging a higher score on the perceived stress scale due to the unique stressors in their life. I also predict that the two groups will have a different ranking of how prominent certain stressors are. I believe the athlete group will rank extracurricular activities and time management as their most prominent stressors due to the amount of time they devote to training. I presume that the non-athlete group will rank money and grades higher than the athlete group since they don’t have access to scholarship money and because their college experience revolves more around academics than the athlete group.

**Methods**

To complete this study, Cal Poly students were sought out to participate in a survey. Posts were created and distributed throughout different social media platforms to bring attention to the study and to bring in participants. The survey was promoted through the Cal Poly strength and conditioning Instagram page, my personal Instagram page, the Cal Poly Reddit community
Reddit page, and multiple Cal Poly community Facebook pages. The advertisement simply stated that help was wanted for a survey looking at perceived stress levels in Cal Poly students and provided a direct link to the survey through SurveyMonkey.com. Before answering survey questions relating to the study, participants had to answer yes to the informed consent agreement, yes to being at least 18 years of age, and yes to being a current Cal Poly student. Those who answered no were automatically disqualified from the rest of the survey.

A total of 91 people responded to the survey; however, 11 participants were not used since they failed to meet certain prerequisites such as being under the age of 18 or currently attending Cal Poly, or they failed to complete the whole survey. A total of 80 participant responses met the necessary guidelines and were used in the study. Participants ranged in age from 18 years to 26 years old, and of the athletes 13 different sports were represented. The demographics of the participants were as follows: 35 males to 45 females, 37 student athletes to 43 non-student-athletes, 5 freshmen, 16 sophomores, 24 juniors, and 35 seniors.

Survey questions:

1. What gender do you identify with?
2. Which year of college are you currently in?
3. Are you an athlete on a Cal Poly NCAA sports team?
4. If yes, what sports team? If no, answer N/A
5. How old are you?
6. In the last month, how often have you been upset because of something that happened unexpectedly? (very often, often, sometimes, almost never, never)
7. In the last month, how often have you felt that you were unable to control the important things in your life? (very often, often, sometimes, almost never, never)

8. In the last month, how often have you felt nervous and “stressed”? (very often, often, sometimes, almost never, never)

9. In the last month, how often have you found that you could not cope with all the things that you had to do? (very often, often, sometimes, almost never, never)

10. In the last month, how often have you been angered because of things that were outside of your control? (very often, often, sometimes, almost never, never)

11. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them? (very often, often, sometimes, almost never, never)

12. In the last month, how often have you felt confident about your ability to handle your personal problems? (very often, often, sometimes, almost never, never)

13. In the last month, how often have you felt that things were going your way? (very often, often, sometimes, almost never, never)

14. In the last month, how often have you been able to control irritations in your life? (very often, often, sometimes, almost never, never)

15. In the last month, how often have you felt that you were on top of things? (very often, often, sometimes, almost never, never)

16. Rank the following stressors from most prevalent to least prevalent. 1 being the most prevalent and 6 being the least prevalent: Money, Schoolwork, Family, Extracurricular Activities, Future success, Time management.

The results from the survey were exported directly from SurveyMonkey.com into an SPSS file and were analyzed in SPSS. The first step in analyzing the data was to remove the
participants who did not qualify and correctly label the variable in each column. Next, I had to calculate the perceived stress levels of each participant. In order to do this, each answer for questions 6-15 was given a numerical value. For example, negatively stated questions (6-11) were given scores of 4 for very often, 3 for often, 2 for sometimes, 1 for almost never, and 0 for never. For positively stated questions (12-15) the scoring scale was reversed. The scores were then averaged out giving the perceived stress level of each participant with a higher score indicating more perceived stress and a lower score indicating less. Average perceived stress scores were then averaged for student athletes and non-student athletes and males and females. An independent sample t test was run to check for a statistical significance between participants perceived stress levels and their status as either a student-athlete or non-student athlete. A separate independent t test was also run to check for significance between perceived stress and gender. Finally, the six stressors of money, schoolwork, family, extracurricular activities, future success, and time management were given an average score which ranked them from most to least prevalent. This was done by correlating where a surveyor ranked the stressor to a numerical value (i.e., Most prevalent=1, least prevalent=6) and then averaging each stressor’s total score. Once this was complete a Mann-Whitney U test was run for each stressor checking if there was any statistical significance between status of student-athlete or non-student-athlete and perceived stress levels.

**Results:**

A total of 80 Cal Poly students answered a survey regarding their current stress levels and most prevalent stressors. From the survey the following data was recorded.
Average Perceived Stress Levels:

Group Statistics

<table>
<thead>
<tr>
<th>Are you an athlete on a Cal Poly NCAA sports team?</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived_Avg Yes</td>
<td>37</td>
<td>2.5784</td>
<td>.32071</td>
<td>.05272</td>
</tr>
<tr>
<td>Perceived_Avg No</td>
<td>43</td>
<td>2.6884</td>
<td>.32456</td>
<td>.04949</td>
</tr>
</tbody>
</table>

Group Statistics

<table>
<thead>
<tr>
<th>Which gender do you identify with?</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived_Avg Male</td>
<td>35</td>
<td>2.7114</td>
<td>.35295</td>
<td>.05966</td>
</tr>
<tr>
<td>Perceived_Avg Female</td>
<td>45</td>
<td>2.5800</td>
<td>.29357</td>
<td>.04376</td>
</tr>
</tbody>
</table>

In this study the average perceived stress level among all participants was a score of 2.6375.

Among those in the student-athlete group the average was 2.5784 and in the non-student athlete group the average was slightly higher at 2.6884. This would imply that the quality of being a student-athlete would correlate with lower average perceived stress levels. However, after running an independent sample t test it was shown that there is no statistical significance in the relationship between status as a student-athlete and average perceived stress level. The average perceived stress levels in males (2.7114) were slightly higher than females (2.5800) however, again, the independent sample t test showed no statistical significance between gender and perceived stress levels.

Relating to the six stressors that the survey asked participants to rank from most prevalent to least prevalent there was a difference in the order of stressors between the student-athlete and
non-student athlete group. Below is a ranking of how the athlete's group and non-athlete group ranked the stressors from most prevalent to least along with their average score.

**Stressor rankings:**

The athlete group ranked the stressors from most prevalent to least as follows:

1. Schoolwork-2.2222
2. Extracurricular activities- 2.8611
3. Future success-3.2162
4. Time management-3.7568
5. Money-4.3056
6. Family-4.5676

The non-athlete group ranked the stressors from most prevalent to least as follows:

1. Schoolwork-2.00
2. Future success-3.3023
3. Time management-3.4651
4. Money-3.6429
5. Family-3.7674
6. Extracurricular activities-4.8537

As seen above, other than the number one stressor for both groups being schoolwork, the rankings between the two groups were different for each stressor. The biggest difference between the two is found in where they ranked extracurricular activities as a source of stress, with the student athlete group putting it second while the non-student-athlete group had it ranked last.
Every other stressor had a fairly similar average between the two groups with none having a difference larger than .8 for their averages. However, when comparing the average ranking of extracurricular activities between the two groups there is a prominent difference of 1.99 between the two meaning that the non-athlete group on average ranked extracurricular activities two spots lower in their rankings. A Mann-Whitney U test was run for to determine statistical significance between each of the 6 stressors and status as a student-athlete or non-student-athlete. All stressors were found to have no statistical significance between status except for extracurricular activities which was found to be significant (P<.01), as seen below.

![Graph showing extracurricular activity rankings by athlete status]

### Ranks

<table>
<thead>
<tr>
<th>Extracurricular (Clubs, sports, jobs, etc)</th>
<th>N</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>36</td>
<td>25.15</td>
<td>905.50</td>
</tr>
<tr>
<td>No</td>
<td>41</td>
<td>51.16</td>
<td>2097.50</td>
</tr>
<tr>
<td>Total</td>
<td>77</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Conclusion:

This study was designed to compare perceived stress levels between Cal Poly students who were part of an athletics team and those who weren’t. The 16-question survey was taken by 80 students and provided data on age, gender, status on athletics team, perceived stress levels, and a ranking of 6 prominent stressors. The data was analyzed through SPSS and found that although there were differences in average perceived stress levels among the student-athlete group and non-student-athlete group there was no statistical correlation between athletic status and perceived stress levels. The biggest similarity between the two groups was that both ranked schoolwork as their number one stressor with average scores of 2.222 (athlete group) and 2.000 (non-athlete group) with the most commonly appearing ranking for both groups being 1. The study did however find that the two groups had differences in rankings along the way but were small and insignificant. The only statistically significant difference between the two groups was that they ranked extracurricular activities amongst other stressors, with the athlete group ranking
in second (2.8611) and the non-athlete group ranking it sixth (4.8537). This means that we can confidentially say that a Cal Poly student’s status as an athlete or not will have a significant influence on where they rank extracurricular activities as a stressor. My hypothesis that student-athletes would have slightly higher levels of perceived stress was rejected, however my prediction that student-athletes would rank extracurricular activities higher was supported by the data.

Some possible limitations to this study include having a sample size of only 80 students, which correlates to around a 10% margin of error. A larger sample size would have provided a smaller margin of error and could have possibly added more diversity to the study. Respondents were also heavily skewed towards being later in their college career, with 59 of the 80 respondents (73.7%) being either Juniors or Seniors while only 16 were sophomores (20%), and only 5 were Freshman (6%). The low number of Freshman participants is most likely due to the fact that not many Freshman have become part of the campus community due to COVID-19 restrictions. COVID-19 itself may have also had an impact on how students ranked stressors and how they answered questions which calculated their perceived stress levels. For many students this year has been far from normal and dealing with COVID-19 may have acted as a unique stressor itself which could have differing influences on each participant. Many sports teams are also currently limited to the amount of practice hours they can participate in which may have led to different answers than if they were participating in a regular training schedule.
References


