

Power Ten:

The Demands of the Student-Athlete and the Dynamics of the Collegiate Rower

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Honors Capstone

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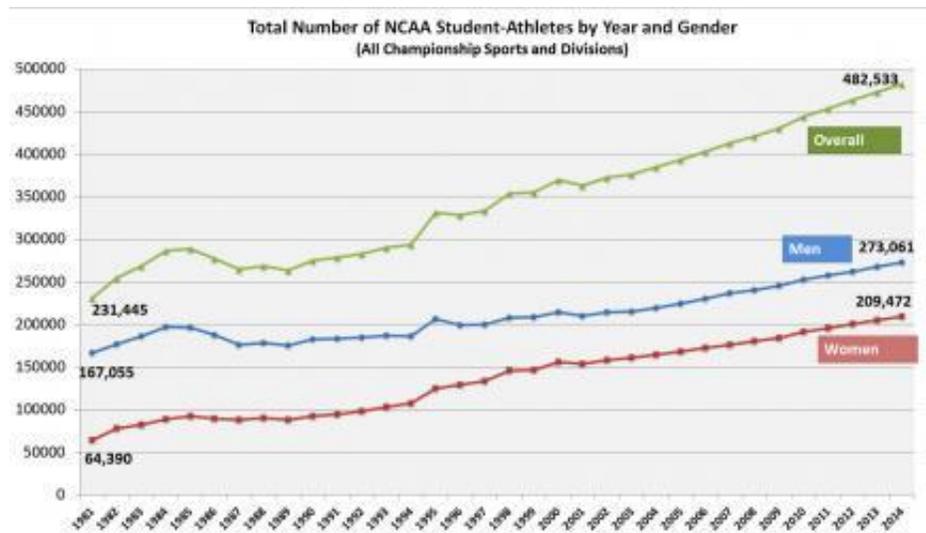
In today's society, collegiate athletics have become as popular as professional sports. Students commit to varsity athletics and agree to immerse themselves into years of physical and mental stress. The love of the sport drives collegiate athletes to make these sacrifices.

This paper aims to explore the physical, mental, academic, and social facets of a collegiate athlete. Additionally, this paper will delve into the world of college rowing. It will explore the biomechanical physiological, and collaborative efforts that college rowers experience in their quest for greatness.

The Student Athlete

As parents see many benefits in signing their children up to be part of a team, such as Little League, there has been an increase of participation in organized sport over the past few years. This participation fosters a love for the sport that many people carry into their college careers. According to the National Collegiate Athletic Association (NCAA) "numbers of teams completing in the NCAA championship sports has reached an all-time high."¹ The latest statistics show that there were 472,625 student athletes participating in the 23 sports NCAA sponsors.¹ These elite students who have the honor of representing their college feel a sense of pride and commitment towards their school.

This varsity athletic commitment has starkly increased since the inception of organized collegiate sports. The following graph² displays the yearly increase of student athletes beginning from 1984 up to the latest statistics in 2015:



One can see that there has been nearly a doubling of participation in collegiate athletics in both men and women's teams. As college sports are becoming more popular, they are also becoming more competitive. This competition breeds an ambitious nature, sourcing from athletes, teammates, parents, coaches, and athletic department heads, which can put stress on the student athlete and place them in the national spotlight.

This continuous rise in collegiate athlete participation is no surprise. Guy Lewis' article, "The Beginning of Organized Collegiate Sport," tracks the growth of the popularity of sports at colleges. He explains that since the introduction of athletics on college campuses, "collegiate sports revolutionized campus life, turned institutions of higher education into athletic agencies, brought changes in the curriculum, and influenced administrative policies. Having athletic teams on campus sets forth a sense of community, overcoming adversity, and has now become an extremely important part of the educational experience."³

The goal of college is to prepare student in a well-rounded and dynamic environment, giving each student the skills needed to succeed in the work force post-graduation Employers

crave unique candidates who offer fresh perspectives and the student athlete experience is an invaluable asset to a corporate team. As Lewis wrote, “Participating in collegiate athletics allows more than intellectual development and moral improvement.”³

Living an active lifestyle has been proven to be beneficial for individuals because it shows a “direct correlation between physical activity and academic performance.”⁴ Increasing activity leads to increased academic performance. One’s social life is also positively impacted by being an athlete. Studies have shown that there is an “increased cognitive ability that comes from playing a sport... [including] help with emotional development” as well as fostering other skills like communication, decisive action, teamwork, time management, self-esteem, and a sense of community.⁴ These factors indicate that the presence of athletics on campuses leads to “the destruction of the isolated academic world”³ as student athletes develop skills on the field that translate to the classroom.

Division 1 athletes are different from their peers because they are held to certain standards put out by the NCAA. These rules and regulations are issued in order to level a fair playing field across the country and across various sports. Student athletes are rigidly held these eligibility, academic, and ethical standards.⁵ Failure to comply by these rules can lead to loss eligibility, expulsion from the game, retraction of monetary scholarship, and damage of personal reputation in hopes of continuing playing on a professional level.

There is ongoing debate is if college athletes should be referred to as a student athlete or an athlete student. This may seem trite, but it holds a major implication about the role these students have on campus. One emphasizes athletics over academics while the other stresses the importance of academics first. In reality, the student athlete has to be on top on is his or her

academics and athletics. It is an extremely difficult task to balance but one that student athletes nationwide must do.

There are varying views on the effect that athletic participation has on one's academic performance. While being active enhances cognitive function and produces endorphins that cause an analgesic effect, it can put an enormous amount of stress on a student athlete that can be seen to have negative effects on one's academic performance. Some student athletes are able to dominate on the field and in the classroom, while others struggle to keep the grades in line with NCAA academic standards that allows them to make play the court.

Several people perceive that student athletes receive benefits and preferential treatment compared to non-student athletes and that their athletics take precedent over their academics. This "special treatment" student athletes might receive includes: lower academic admissions standards, receiving extra points to class grades to meet the minimum GPA to continue playing, priority registration, being excused from classes for practices or games, and being awarded athletic scholarships to play.⁶ It is argued that they receive these benefits because these students are overexposed as athletes and become a source of revenue for collegiate institutions. However, the success of college "programs have become bigger than the school itself; without the program's success schools would not be as attractive"⁶ to prospective students.

It is seen that these benefits are "in clear violation of the spirit of NCAA rules and regulations."⁶ However student athletes, are held to a higher standard with their academics as eligibility for competition includes being a full time undergraduate student who is in good academic standing. Nicole Gruit conducted a study where she surveyed sixty-seven student athletes at San Diego State University (SDSU). A series of fourteen different questions was asked and those questions regarded their time management skills, commitments and academics,

beliefs about their grades, academic support services, and motivation level towards their school work and athletic training.⁷ She concluded that “athletes performed better in the classroom, developed impressive time management skills, felt motivated to complete their degree, were motivated to attend classes, and experienced a smoother transition into the college lifestyle.”⁷

Overall, Gritmit’s study concluded that a majority of the student athletes indicated that their athletic involvement was considered the “best choice of your life” since their athletic involvement made their college transition easier. Athletes answered that athletic involvement motivated them to attend classes regularly and that it has helped them develop better time management skills. Even in this small isolated study, it holds true to the idea that participating in athletics positively enhances the experience of a student in his or her college career.

Nevertheless, since “the hours of practice and preparation for game day undoubtedly take athletes away from their studies”⁷ there was an increased concern amongst students regarding their academic success. Many universities, such as SDSU, have athlete career centers and services. These services include athlete study rooms where athletes must complete mandatory study hours, athlete centered career services and workshops, and personal athlete tutoring.

These extra benefits are available only to athletes and can be seen as exclusive privilege not available to non-athletes. Yet, it is the student athlete that is giving up their time for practices and strength and conditioning training, which necessitates the requirement of dedicated study time and career planning. It can be argued that the alleged extra benefits that a collegiate athlete receives are only due to the arduous nature of their athletic program..

In order to succeed in sport, athletes have to mentally prepare him or herself. One has to ignore all outside distractions and focus in on their competition. There have been studies and direct proof that “when athletes achieve superior performances, they commonly refer to the

importance of their psychological state.”⁸ In a participant-selection study, Jackman, Swann, and Crust use several different assessments to identify individuals with high or low mental toughness (MT) and dispositional flow (DF) and explore the relationship between MT and DF through different psychological variables.

Mental toughness is “related to success and progression in sport and is described as a personal capacity to consistently produce good performances despite varying situational demand levels.”⁸ Mental toughness is akin to muscle mass or speed on the field. It must be worked on and built up. It is developed through having an undying passion, a clear mindset, confidence, and self-awareness. Mental toughness has been linked to dispositional flow, which is described as being “in the zone” and a mental state of operation where someone is fully immersed in what he/she is doing.

The study used quantitative and qualitative approaches to identify individuals that displayed either high or low mental toughness and explored the relationship with dispositional flow. Results showed that there were a total of seven dimensions that related to dispositional flow in athletes with higher or lower mental toughness. “While all athletes experienced flow, there was differenced in dispositional flow and the processed entering, maintaining and restoring flow between higher or lower mental toughness subgroups.”⁸ This substantiates that every athlete goes through similar experiences that shape individual external and internal factors..

The seven general dimensions describing the psychological attributes are: confidence, perfectionism, goal orientation, coping mechanism selection, locus of control, optimism, and concentration.⁸ The athletes who participated in the study gave firsthand accounts of how these dimensions have affected their performance and their own “experiences of flow, the lack of flow, or the regain of flow.”⁸ The participants were first interviewed and then it was concluded which

ones displayed high and low mental toughness. This difference between high and low mental toughness is imperative to determine as the degree of mental toughness one possesses depends on how fast he or she can "bounce back" in to the rhythm of the game.

Overall the study found that the athletes that displayed high mental toughness showed more success in training and in competition as opposed to those who exhibited low mental toughness. It is important that athletes build up these dimensions of confidence, optimism, and concentration, because they will have a more success in their sport. For student athletes, being mentally tough on the court will translate positively to their academic coursework. In turn, their academic success will lead to success in the workforce. By developing a constructive and open environment with accessible resources, athletes can reach a point of high mental toughness.

In conclusion, student athletes make sacrifices in order to pursue their love of sport. The athlete takes advantage of the resources available at their institution in order to balance focusing on academic and athletic aspirations.

The Collegiate Rower

Rowing has a very long and detailed history that has developed and grown in recent years. Dating all the way back to the ancient world, oared vessels were used as means for transportation, war, commerce, fishing, and occasional sport. Rowing as a competitive sport was first referenced in Venetian documents dating back to 1274. Since then, competitive rowing has increased in popularity and intensity. Rowing began in the United States in the 1700s with the first regatta being held in 1756 in New York and the first boat club, The Knickerbocker Club, being established in 1823. In 1843, the first United States collegiate boat club was formed at

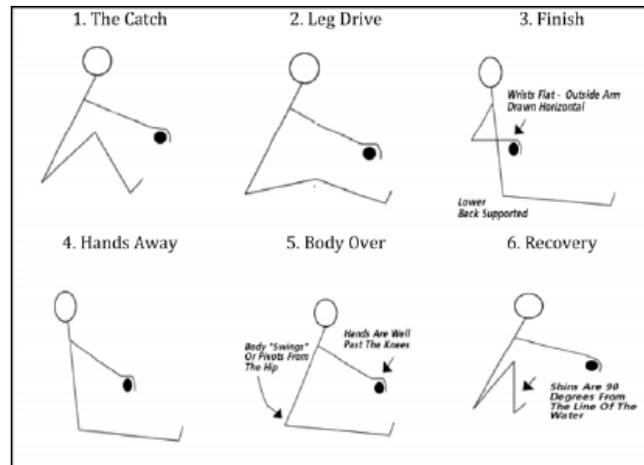
Yale. The first intercollegiate athletic contest in the United States was held between Harvard and Yale eights on Lake Winnepesaukee in August on 1852.⁹

Today, there are approximately 100 college programs that offer rowing as a collegiate sport within the NCAA. There are several different conferences and divisions of rowing and the races typically are measured in kilometers or meters. The two most common distances are 2km (2,000m) or 5km (5,000m).

Rowing is a continuous, repetitive, cyclic motion. One of the most intriguing parts of rowing is the adaptability of the sport due to its simple nature. There are many different sectors of rowing, ranging from men's, women's, and mixed boats, to youth, collegiate, and masters levels. However, as simple and straightforward as rowing may seem, achieving the perfect stroke takes a lot of work, persistence, patience, and strength.

Contrary to public opinion, rowing is primarily driven by the legs followed by swinging the back and pulling in the arms. This complex motion illustrates the meticulous role the biomechanical and physiological aspects have in training for rowing.

“The rowing stroke is broken into two different main parts: the power stroke [or drive], during which the blades of the oars are in the waters and the rowers pull on the oar handles and straighten their legs [into the finish]...and the recovery phase, during which the blades are clear of the water and rowers move stern-wards by bending their legs and leaning forward [up to the catch].”¹¹ The figure below¹² depicts a picture of the drive and recovery of the stroke as well as the catch, finish, hands away, and body over which are all the parts in between the drive and recovery and are equally crucial parts of the stroke:



While the rower is focusing in on the drive and recovery of the stroke, he or she also needs to be attentive to other details at the same time. The oarsman has to be in time with the rest of the boat, meaning everyone has to catch, or place the oar in the water at the same time to initiate the drive. If this does not occur, the boat will experience drag and therefore not move as efficiently. To maintain timing one also must have good slide control. This means that the oarsman should not shoot up from the finish to the catch because then the boat will experience “rush” from the bow to the stern which will cause the boat to be slower. This is accomplished by controlling one’s slide by keeping a strong core, straight back, steady hands, and controlled legs. These factors highlight how rowing is one of the most team oriented sports that requires an enormous amount of discipline, communication, and focus.

Rowers require large amounts of muscle capacity as “approximately 70% of the muscle mass”¹⁰ is used. Highly trained rowers have a high percentage of slow-twitch (ST) fibers, which contract slowly to provide endurance rather than power, as opposed to fast-twitch (FT) fibers, which contract rapidly to provide power instead of endurance. Rowers also need muscle fiber hypertrophy, which is the enlargement of an organ or tissue from the increase of size in its cell,

and a high density of mitochondria, all of which contribute to the power needed on the drive to propel the boat.

Rowers use maximal aerobic capacity as “during competition a rower depends on his aerobic metabolism because energy stores and glycolysis are limited to cover the energy demand for only approximately 1.5-2minutes.”¹⁰ The intake of maximum volume of oxygen (VO₂ max) is imperative in the success for competition and the necessary endurance capacity. Throughout consistent training and with added strength and conditioning, “trained rower develop more force and power than other endurance athletes at relatively low contraction velocities.”¹⁰ This is achieved by building a strong aerobic base by rowing longer distances at a lower stroke rating. In this way rowers develop the necessary strength and consistency that will be easy to adapt as the pressure and stroke rate increases and the distance decreases.

A rower’s training schedule is vastly different than other athletes. In sports like basketball, football, or tennis where athletes train and continuously compete, rowers race significantly less than their time spent training. Many regattas are set up to have several preliminary stages called heats. Only if you win in your heat do you continue to the finals and compete for the championship. If you lose your heat, there are also repechages, which are set up for those with the slowest heats to have a second chance for redemption and for continuing to finals.

With their extensive training schedule, rowers are prone to injury. The “most frequently injured region is the low back due to excessive hyperflexion and twisting.” Rib stress fractures, shoulder pain, forearm and wrist injuries, and dermatological issues are also very prevalent injuries among rowers.¹³ This is because rowing involves one continuous, repetitive motion controlling up to the catch and pushing off at the drive to the finish in order to move the boat

backwards. If one lacks proper form and technique it is very easy for these bodily issues to arise in oarsmen.

This is why it is important to receive proper recovery time in order to avoid body fatigue. “Optimizing the recovery-stress state is critical” because it can prevent “overtraining, fatigue, injury, illness and burnout” and can help “optimize athlete performance” while preventing athletes from plateauing in their performance.¹⁴

More than often athletes do not receive the proper rest and relaxation during training and competition even though it is proven that “enhanced recovery allows athletes to train more, and thus improves their overall fitness (aerobic, strength, and power), technique, and efficiency.”¹⁴ There are many known negative side effects and symptoms of overtraining which include, “depressed mood, general apathy, decreased self-esteem, weight loss, loss of appetite, increased resting heart rate, increased vulnerability to injuries, hormonal changes, and lack of super compensation.”¹⁴

Overtraining becomes apparent in the event of high intensity workouts and when the volume of those intense workouts increase. Rowing is a “training-intensive sport”¹⁴ whose “intense nature of rowing makes these athletes especially prone to experiencing under recovery.”¹⁴ Rowers train approximately 10-14 hours on the water per week plus additional “gymnastics exercises, strength and power endurance work-outs, endurance, and exercises to improve athlete’s velocity and agility” on land.¹⁴ Due to this training volume, it is common for rowers to experience these aforementioned injuries.

How does rowing now relate to the college student? Collegiate rowers are unique because they keep alive a sport with a rich genesis and history. They fulfill the many demands that a student athlete has to meet while committing many hours a week for one race that will last 7

minutes. The collegiate rower truly is a strong, dynamic, committed, and disciplined individual who is able to accomplish what few dare dream of achieving.

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