

Construct Measurement Document: Mental

Health in Retired Collegiate Athletes

Sidney Wentland

April 29, 2022

Springfield College

Table of Contents

Mental Health in Retired Collegiate Athletes 3

Mental Health and Retired Collegiate Athletes Defined 5

Mental Health Measures 8

The Depression, Anxiety, and Stress Scale (DASS) 11

Critique & Future Research 14

References 17

Appendix A: Demographics Questionnaire 22

Appendix B: Depression, Anxiety, Stress Scale-21 25

Appendix C: Analysis of Administration and DASS-21 27

Mental Health in Retired Collegiate Athletes

Transitioning out of competitive sport is something that all athletes must go through at one point or another. Much of one's identity is shaped by the years of participation in sport (Weigand et al., 2013). Coming to terms with the lifestyle changes in retirement from sport can be very difficult. Teammates and coaches are no longer seen daily. Physical activity is no longer required and structure is lost. Unfortunately, there is a lack of education on how to successfully transition into a life without competing in sports. Jordyn Clark played Division II soccer for the Concordia University, St. Paul Golden Bears from 2016 to 2020. She was the starting goalie, won player of the year, and led her team to a conference title. She was a leader on and off the field and put everything she had into her final season of playing. Once she graduated she stopped playing soccer altogether and on January 12th, 2021 Jordyn took her own life. On a more elite level, Junior Seau, a former linebacker for the San Diego Chargers, Miami Dolphins, and New England Patriots finished his NFL career in 2009, and in 2012 passed away due to suicide (Geier, 2016).

Whether Jordyn or Junior had any sort of mental health assessment is unknown. A mental health assessment would have given valuable information about how the athlete was feeling and functioning throughout daily life without sports. There is a lack of education and research on athletes once their career is over. Oftentimes colleges and universities lack sport psychology resources to help college athletes transition from full-time student-athlete to adult pursuing a career. Former athletes are forced to navigate all areas of life on their own for the first time. Loss of social support, identity, and peak physical condition are all factors in the transitional process that can lead to mental health changes including depression (Weigand et al., 2013). In a study conducted on retired high-performance athletes, the timeframe in which participants had taken to

adjust to retirement ranged from immediately (1 or 2 months) to more than 2 years (Sinclair & Orlick, 1993). The difficulties participants encountered included missing the social aspect of the sport, job/school pressures, and finances (Sinclair & Orlick, 1993). Coping strategies throughout retirement were also assessed and results showed a portion of participants turning to drinking alcohol and drug use as well as ignoring difficulties (Sinclair & Orlick, 1993). Without guidance and resources from sport psychology professionals, former athletes may develop physically harming habits such as unhealthy diet, exercise, and drug use. As well as mentally harming habits such as depression, anxiety, stress, and inability to cope.

The most common age range for the onset of depression is between 20 and 30 years old, which is exactly the time when collegiate athletes finish the final season of eligibility, graduate college, and end their sports career (Weigand et al., 2013). Collegiate athletes are at a vulnerable time in their life when exiting college. Not only is there a loss of a team and a sport, but also a loss of the college experience in general. Many things come to an abrupt end or change. Including time structure, living situation, and finances. Many students when exiting college may not have coverage under their parent's insurance anymore and cannot afford to pay for mental health services.

In a qualitative study examining university sport retirement and athlete mental health, Jewett et. al (2018) found that the participant developed an adjustment disorder with symptoms of anxiety and depression after retiring from sport and graduating college. The participant was a female athlete that gained self-confidence from her success as an elite performer and developed a strong athletic identity. When she graduated and access to resources was no longer available to her she had significant difficulty. Threats to her mental health arose as she felt isolated and left with no support network or resources for her mental health. During her time as an athlete, she

had gone through a traumatic emotional breakup and turned to her sport as a way to cope and make herself feel better. She performed the fastest time of her life during this emotional time and found she felt so much better during practice and competitions. Instead of seeking counseling services, she turned to her sport as a form of therapy and that worked for her until she could no longer compete in her sport. As a star athlete, she had free access and even special treatment within health-related services including sports medicine, physiotherapy, sport psychology, and counseling services and these services were contingent on her membership on her sports team. When she retired all of that was gone. She lost self-confidence, and motivation, and felt anonymous. She lost all sense of self and because of financial cost she could not seek treatment nor did she know where to even start (Jewett et al., 2018).

The previous cases mentioned are just a small few of the numerous former athletes that experience mental health difficulties while transitioning out of sport (Geier, 2016; Jewett et al., 2018; Sinclair & Orlick, 1993; Weigang et al., 2013). It is important to assess mental health in the transition out of sport and even years after retirement because of the mental and physical toll the transitional process takes on individuals. With early assessment, sport psychology resources can be given to athletes to avoid harmful behaviors and promote overall health in life after sport. Without assessing mental health, former athletes that are struggling will go unknown and hurt in silence. Mental health assessment could save lives.

Mental Health and Retired Collegiate Athletes Defined

Mental health is defined by the condition of three areas of life (Centers for Disease Control and Prevention, 2021). Mental health is the social, emotional, and psychological well-being of an individual. Mental health affects all areas of life in how humans think, feel, and act along with how individuals respond to situations, relate to others, and make choices. Just as

physical health must be maintained through diet and exercise, mental health must be nurtured through self-care, therapy, relaxation, and sleep. Mental health is just as important as physical health. Both physical and mental health relate to each other and are a part of the overall health of humans. Exercising benefits physical health but can also relieve stress and release endorphins in the brain to boost mood. Poor mental health can lead to poor physical health as well. Depression increases the risk for fatigue, restlessness, stroke, diabetes, and heart disease (Centers for Disease Control and Prevention, 2021).

Mental health is complex and different for every individual, and every individual has unique thoughts, feelings, and self-care techniques that lead to healthy mental health (Prince et al., 2007). Good mental health is characterized more by the functioning of an individual in daily life and the ability to have positive healthy functioning. Some key functions are learning, managing emotions and feelings, forming and maintaining relationships, and coping with change or uncertainty. Oftentimes disruptions in these daily functions lead individuals to seek out therapy or resources to improve their mental health. Poor mental health has a severe impact on everyday functioning and individuals could be experiencing a mental health condition including depression and anxiety disorders (Prince et al., 2007).

Mental health is a continuum and is not just one static state. Individuals can move along the continuum and at some stages of life may be in good mental health then may move toward poor mental health. It is important to practice care for both mental and physical health to live a longer, healthier, and happier life.

What was once known as mental hygiene has now transformed into the construct of mental health (Bertolote, 2008). Mental health has come a long way from its origin in the mental hygiene movement of 1908 by professionals in the field of psychiatry. Clifford Beers (1908) is

attributed to the start of the mental hygiene movement through the publication of his book, *A Mind That Found Itself*. This movement was centered around improving conditions for patients with mental disorders and promoting human rights. Clinical psychiatry and public health are two fields that heavily contributed to the development of emotional, social, and psychological well-being. In 1909, the National Commission of Mental Hygiene was created to humanize the care of the mentally sick, and by 1919 associations across the world began to form all centered around mental hygiene. During World War I the National Commission of Mental Hygiene focused on the mental health of soldiers and was able to treat soldiers coming home from war. In 1948, the World Health Organization was created with a section dedicated to mental health and that is when the shift began to slowly happen from mental hygiene to mental health (Bertolote, 2008).

The National Commission of Mental Hygiene was later changed to Mental Health America and has since shifted to overall mental health for all, but still advocates for individuals living with mental illnesses (Bertolote, 2008). Throughout the development of mental health, the definition has been continually changed and mended. Today, the definition is emotional, psychological, and social well-being that influences cognition, perception, and behavior (Centers for Disease Control and Prevention, 2021). Mental health has grown from specific concern for the mentally ill to concern for the human race as a whole to live the healthiest life possible. As well as a shift from diagnosis of being mentally insane and being thrown into an insane asylum to now proper treatment and function within society for individuals with mental health disorders.

Retired college athletes are operationally defined as any person that participated in sports at a college or university level and has since ended all competitive organized sports participation. Retired college athletes have terminated their sports careers and graduated college. In the last 5

years, mental health awareness in athletics has made huge strides but has fallen short in awareness of the transition out of sport. Elite athletes such as Michael Phelps, Simone Biles, Victoria Garrick, and Naomi Osaka have all raised awareness about the stigma that exists around mental health in athletics. Mental health in specifically retired athletes is of interest because of the lack of research, lack of resources available, and lack of interventions offered in the transition process. The immense amount of changes that occur all at once when a collegiate career ends peaks interest in how individuals can maintain proper mental health with the loss of social support, and mental health resources. For some athletes, an entire life was devoted to sport, and in an instant that is all over. A complete lifestyle change occurs at a time when the risk for depression and anxiety disorders is at the highest (Weigand et al., 2013). Retired athletes are at risk of loss of identity and ultimately loss of self (Giannone et al., 2017).

Mental Health Measures

Mental health is a construct commonly measured using subscales involving depression and anxiety symptom levels. Depression symptoms include loss of interest, sadness, difficulty eating, and sleeping, difficulty getting through the day, and suicidal ideation (Weigang et al., 2013). Symptoms of anxiety include deep feelings of worry with an inability to let the feelings go, a constant state of nervousness, and overthinking (Mayo Clinic, 2017). High levels of depression and anxiety symptoms are related to unhealthy or bad mental health. Several measurements have been published in an effort to quantify unhealthy and healthy mental health. In 1970, the General Health Questionnaire (GHQ) was developed to detect mental disorders. The GHQ was adopted by the World Health Organization to study psychological disorders (Kim et al., 2013). Shortly after, the Center for Epidemiological Studies-Depression Inventory (CES-D) was developed to aid in assessing individuals at risk of clinical depression (Radloff, 1977).

Next, the Satisfaction With Life Scale (SWLS) was developed as a more holistic measure to evaluate overall life satisfaction (Diener et al, 1985). In 1994, the Kessler Psychological Distress Scale (K10) included depression and anxiety-centered items to measure symptoms over the past 4 weeks (Kessler, 2002). The items included were very straightforward in asking if the individual was depressed. A year later, The Depression, Anxiety, Stress Scale (DASS) was developed by Lovibond and Lovibond (1995) in an effort to measure depression, anxiety, and stress symptoms and ultimately gauge an individual’s mental health. Lastly, the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS) is an assessment developed to measure mental well-being but is centered entirely around positive mental health statements (Tennant et al., 2007). Originally, many mental health assessments were developed to determine the prevalence of mental illness and disorders. Over the years unique assessments have been published to try to quantify good and bad mental health. Mental health is a construct that is constantly changing as research continues to grow in the mental health field. Table 1 summarizes the predominant measures used to assess mental health to date.

Table 1

List of mental health measures

Measure	Date	Authors	Items	Subscales	Response Format
General Health Questionnaire (GHQ)	1970	Goldberg, D. P.	Original 60 Current 12	4 subscales Somatic Symptoms Anxiety and Insomnia Social Dysfunction Severe	4 point Likert scale (0-3)

				Depression	
Center for Epidemiological Studies- Depression Inventory (CES-D)	1977	Radloff, L.	20	4 subscales Depressed Affect Positive Affect Somatic Complaints Interpersonal Problems	4 point Likert scale (Rarely-Most or all of the time)
Satisfaction With Life Scale (SWLS)	1985	Diener, E., Emmons, R. A., Larson, R. J., & Griffin, S.	5	NA	7 point Likert scale (1-7)
Kessler Psychological Distress Scale (K10)	1994	Kessler, R., & Mroczek, D.	10	2 subscales Depression Anxiety	5 point Likert scale (1-5)
Depression, Anxiety, Stress Scale (DASS)	1995	Lovibond, S. H., & Lovibond, P. F.	21	3 subscales Depression Anxiety Stress	4 point Likert scale (0-3)
Warwick-Edinburgh Mental Well-Being Scale (WEMWBS)	2007	Stewart-Brown S., Platt S., Parkinson J., Joseph S., Weich, S., Secker, J., Stansfield, S., & Lewis, G.	14 Short version 7	2 subscales Eudemonic and hedonic well being Psychological functioning and subjective well being	5 point Likert (1-5)

Note: Measures from Taggart, F. & Brown, S. S., n.d.

The Depression, Anxiety, and Stress Scale (DASS)

The Depression, Anxiety, and Stress Scale (DASS) was developed in 1995 by Sydney Lovibond and Peter Lovibond at the University of New South Wales, Australia. Sydney Lovibond is known to be one of the founding fathers of modern Australian psychology (Lovibond & Lovibond, 1995). Originally, the DASS included 42 items and was first used on a sample of first-year psychology students at the University of New South Wales. After this test run, the DASS was condensed to 21 items to reduce the time to answer the questions and smaller interfactor correlations. The assessment has since stayed to the same 21 items used today and can be referred to as DASS-21. A 4-point Likert scale from 0 (did not apply to me) to 3 (applied to me very much or most of the time) is the rating scale to indicate over the past week how much each statement (item) applies. DASS-21 has been used in both clinical and non-clinical settings but was originally developed to assess adults (Lovibond & Lovibond, 1995).

The main purpose of the DASS-21 is to assess perceived severity of symptoms of depression, anxiety, and stress (Lovibond & Lovibond, 1995). The DASS-21 is not used to diagnose any mental illness but is used to gain more information on the specific type of symptom or area of concern for the individual. This assessment is also used as a form of monitoring and tracking progress (Beaufort, 2017). Prior assessments before DASS, including Hamilton Scales for Anxiety (Hamilton, 1959) and Depression (Hamilton, 1960), State-Trait Anxiety Inventory (Spielberger, 1983), and Beck Anxiety Inventory (Beck & Steer, 1990), all failed to distinguish and separate between depression, anxiety, and stress as these are all very similar in symptoms and experiences. Factor analytic research was conducted with clinical (Brown et al., 1997) and non-clinical (Lovibond & Lovibond, 1995) samples to reliably group items into 3 subscales. The subscales include depression, anxiety, and stress and each has 7 items and is in a randomized

order (Antony et al., 1998). All items are a measurement of symptoms over the past week. The stress subscale includes items addressing tension, tendency to overreact, and irritability. The anxiety subscale is mostly related to fear, panic, and physical arousal (somatic anxiety). The depression subscale focuses on worthlessness, sadness, and dysphoric mood (Antony et al., 1998). With the DASS-21 a single scale can be used to measure multiple constructs instead of using several different scales.

The DASS-21 can be scored as a whole but is more commonly scored by subscales (Lovibond & Lovibond, 1995). In order to score the DASS-21, the responses from each subscale item are summed and then multiplied by 2 and scores can range from normal to extremely severe. Score categorization varies depending on the subscale. The DASS-21 has been used worldwide to assess substance use disorder (SUD) patients, psychology students, adults in the Netherlands, patients with chronic pain, children, large non-clinical samples (general public), different racial groups, depressed clinical samples, care providers, and in postpartum (Beaufort, 2017; Crawford et al., 2011; Cunningham et al., 2013; Gloster et al., 2008; Henry & Crawford, 2005; Norton, 2007; Page et al., 2007; Szabo & Lovibond, 2006; Taylor et al., 2005). In the Netherlands, the DASS-21 is used to record and monitor treatment in SUD patients (Beaufort, 2017). Throughout the years of research on the reliability and validity of the assessment, the DASS-21 has proved to be consistently both reliable and valid.

Antony et al. (1998) found Cronbach alpha levels for each subscale to be .94 for depression, .87 for anxiety, and .91 for stress when assessing clinical groups and a community sample. Antony et al. (1998) examined concurrent validity and found the DASS-21 to be valid with correlation to the Beck Depression Inventory and State-Trait Anxiety Inventory. Antony et al. (1998) classified the DASS-21 as an excellent assessment for measuring depression, anxiety,

and stress in clinical and non-clinical groups. Brown et al. (1997) recorded internal consistencies of .96, .89, and .93 for depression, anxiety, and stress subscales for the entire sample ($N = 437$). Brown et al. (1997) also found the three subscales differentiate various Diagnostic and Statistical Manual of Mental Disorders (DSM) anxiety and mood disorders. Both Antony et al. (1998) and Brown et al. (1997) among many other studies have reported the DASS-21 with acceptable reliability and validity. The consistent reliability and validity sets the DASS-21 apart from other measures as well as the clean, clear, and concise content of the assessment. The DASS-21 is easily accessible and distributable.

The DASS-21 is most appropriate for retired collegiate athletes because the assessment is a general mental health measure and not-sport related. Due to the fact the population has ceased all participation in a competitive sport it is best to use an assessment that does not refer to sports. DASS-21 has been found to be most reliable among adults and all retired collegiate athletes are classified within the age range of an adult (Crawford et al., 2011). Both reliability and validity of the assessment have been demonstrated in adults (Henry & Crawford, 2005). Within recent mental health research the DASS-21 has been used to assess both current collegiate and retired collegiate athletes and has proven to be valid and reliable (Caillouet et al., 2021; Derimel, 2016; Drew & Matthews, 2019).

No measure is perfect and the DASS-21 still has some existing issues. Ali et al. (2021) examined several shortened versions of the DASS including DASS-13, DASS-12, DASS-9 (two versions), and DASS-8 in Saudi Arabia during COVID-19 lockdown period. Ali et al. (2021) found the DASS-8 to be the best fit and had internal consistency very comparable to the other versions ($\alpha = 0.94$). Therefore, with more research, a smaller version of the DASS-21 should become more commonly used. The scale is also only set up to recall experiences from the past

week which does not encompass the whole experience of an individual. Rephrasing to fit this population, in particular, might include recalling experiences since the competitive sport career was terminated.

Critique & Future Research

The DASS-21 does lack context, especially with this population and does not take a holistic view. The DASS-21 is more of a snapshot supposedly over the past week, but participants may even respond in how they are currently feeling at that moment. To incorporate this holistic view the DASS-21 should include items evaluating an individual's support system. Over the past week someone may be experiencing high levels of depression, anxiety, and stress but the severity can differ based on the support system around the individual. Someone with no support system would be more severe than someone with a support system. Also, some weeks might just be a bad week, maybe it is finals week for example and the stress levels are a severe category. The time frame in which items are oriented is too short and does not accurately encompass an individual's total mental health.

The DASS-21 items are pretty vague, especially item 18. Item 18 states “I felt that I was rather touchy” (Lovibond & Lovibond, 1995). “Touchy” can be interpreted in different ways and has different meanings with different cultures. “Touchy” can have a literal meaning, for instance physically touching something, or an abstract meaning of being sensitive or delicate. The context of the individual’s lifestyle is not incorporated within the DASS-21. If an individual has a high-stress job such as a brain surgeon, where every mistake may cost a life, having a high DASS-S score would be normal but will be flagged as extremely severe because context is not taken into account. This means when applying this assessment, the population is very important to consider, and the lifestyle of participants.

A potential avenue for future research using the DASS-21 and retired collegiate athletes is monitoring change with intervention use. Further research is needed to understand the effects of transitional programs for collegiate athletes in life without competitive sport. There is a need for longitudinal research examining the lasting effects of transitional programs and resources. As well as assessing retired athletes on a year-to-year basis because each individual has a different coping process and timeline. More use of the DASS-21 as a monitoring tool to track progress upon treatment for depression, anxiety disorders, and stress management is needed. Previously mentioned, in the Netherlands, the DASS-21 is used to monitor treatment progress in SUD patients and in the future should be used for progress assessment in the mental health field in the United States (Beaufort, 2017). An area for growth would be for collegiate institutions to start assessing collegiate athletes before they leave, once they leave, and then continue until either proper resources are given or the retired athletes have continually indicated normal symptom levels. A very small critique is that in order to calculate the final score, the initial scores must be multiplied by 2, so adjusting that would make the assessment easier and faster to score.

As mentioned, more research needs to be done on the transition out of sport and how to foster a healthy transition. Research already conducted shows that retired collegiate athletes need help (Jewett et al., 2018). More importantly, this research needs to be put into application. Transitional programs or retirement planning programs need to be put in place at every institution as well as a continuation of resources. Mental health resources are cut off for collegiate athletes once they graduate and many students right out of college cannot afford to pay for mental health care. There is a need to help this population find correct and affordable care. All colleges and universities must require athletes to go through training to prepare for life after sport to support a healthy transition but also give individuals goals outside of sport. Focus areas

would include but are not limited to career planning, support system evaluation, financial planning, goal-setting outside of sport, transfer of sports skills to life skills, coping techniques, and identity outside of sport (Barzca-Renner et al., 2020).

The DASS-21 ultimately has faults that can be improved upon and is also a well-known and widely used assessment to address depression, anxiety, and stress symptoms. Mental health is an ever-changing construct that society is continually reframing and as research advances with time, assessments need to adapt as well to be more holistic, especially when examining retired collegiate athletes. The DASS-21 is a sufficient, valid and reliable measure that assesses possible mental health concerns discreetly and allows participants to reflect and receive help if scores express levels of severe symptoms.

References

- Ali, A. M., Alkamees, A. A., Hori, H., Kim, Y., & Kunugi, H. (2021). The Depression Anxiety Stress Scale 21: Development and validation of the Depression Anxiety Stress Scale 8-Item in psychiatric patients and the general public for easier mental health measurement in a post COVID-19 world. *International Journal of Environmental Research and Public Health*, 18(19), 10142. <https://doi.org/10.3390/ijerph181910142>
- Antony, M. M., Bieling, P. J., Cox, B. J., Enns, M. W., & Swinson, R. P. (1998). Psychometric properties of the 42-item and 21-item versions of the depression anxiety stress scales in clinical groups and a community sample. *Psychological Assessment*, 10(2), 176–181.
- Barcza-Renner, K., Shipherd, A.M., & Basevitch, I. (2020). A qualitative examination of sport retirement in former NCAA division I athletes. *Journal of Athlete Development and Experience*, 2(1), 1-13. <https://doi.org/10.25035/jade.02.01.01>
- Beaufort, I. N., De Weert-Van Oene, G. H., Buwalda, V. A., De Leeuw, J. R., & Goudriaan, A. E. (2017). The Depression, Anxiety and Stress Scale (DASS-21) as a screener for depression in substance use disorder inpatients: A pilot study. *European Addiction Research*, 23(5), 260-268. <https://doi.org/10.1159/000485182>
- Beers, C. W. (1908). *A mind that found itself*. New York: Doubleday, Draw & Co.
- Bertolote, J. (2008). The roots of the concept of mental health. *World psychiatry: Official Journal of the World Psychiatric Association (WPA)*, 7(2), 113–116. <https://doi.org/10.1002/j.2051-5545.2008.tb00172.x>
- Caillouet, K. A., Abad, E. M., Williams, J., & Routon, P. W. (2021). Depression, anxiety, and stress among NAIA student-athletes. *Medicine & Science in Sports & Exercise*, 53, 305. <https://doi.org/10.1249/01.mss.0000762692.71366.e5>

Centers for Disease Control and Prevention. (2021, June 28). *About mental health*. Centers for Disease Control and Prevention. <https://www.cdc.gov/mentalhealth/learn/index.htm>

Crawford, J. R., Cayley, C., Lovibond, P. F. Wilson, P. H., & Hartley, C. (2011). Percentile norms and accompanying interval estimates from an Australian general adult population sample for self-report mood scales (BAI, BDI, CRS-D, CES-D, DASS, DASS-21, STAI-X, STAI-Y, SRDS, and SRAS). *Australian Psychologist*, *46*, 3-14.

Cunningham, N. K., Brown, P. M., Brooks J. & Page, A. C. (2013). The structure of emotional symptoms in the postpartum period: Is it unique? *Journal of Affective Disorders*, *151*, 686-694.

Demirel, H. (2016). Have university sport students higher scores in depression, anxiety, and psychological stress?. *International Journal of Environment & Science Education*, *11*(16), 9422-9425.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, *49*, 71-75.

Drew, B. & Matthews, J. (2019). The prevalence of depressive and anxiety symptoms in student-athletes and the relationship with resilience and help-seeking behavior. *Journal of Clinical Sport Psychology*, *13*(3), 421-439. <https://doi.org/10.1123/jcsp.2017-0043>

Geier, D. (2016, May 24). *How common is suicide among retired NFL players?* The Post and Courier. https://www.postandcourier.com/sports/how-common-is-suicide-among-retired-nfl-players/article_49e5108a-809c-59d7-97ef-2df445d18d97.html

Giannone, Z. A., Haney, C. J., Kealy, D., & Ogrodniczuk, J. S. (2017). Athletic identity and psychiatric symptoms following retirement. *International Journal of Social Psychiatry*, *63*(7), 598-601. <https://doi.org/10.1177/0020764017724184>

- Gloster, A. T., Rhoades, H. M., Novy, D., Klotsche, J., Senior, A., Kunik, M., Wilson, N. & Stanley, M.A. (2008). Psychometric properties of the Depression Anxiety and Stress Scale-21 in older primary care patients. *Journal of Affective Disorders, 110*, 248-259.
- Goldberg, D. P., & Blackwell, B. (1970). Psychiatric illness in general practice. A detailed study using a new method of case identification. *British Medical Journal, 1*(5707), 439–443.
<https://doi.org/10.1136/bmj.2.5707.439>
- Henry, J. D., & Crawford, J. R. (2005). The 21-item version of the Depression Anxiety Stress Scales (DASS–21): Normative data and psychometric evaluation in a large non-clinical sample. *British Journal of Clinical Psychology, 44*, 227–239.
- Jewett, R., Kerr, G., & Tamminen, K. (2018). University sport retirement and athlete mental health: a narrative analysis. *Qualitative Research in Sport, Exercise and Health, 1*-18.
<https://doi.org/10.1080/2159676X.2018.1506497>
- Kessler, R. C., & Andrews, G. (2002). Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine, 32*, 959-956.
- Kim, Y. J., Cho, M. J., Park, S., Hong, J. P., Sohn, J. H., Bae, J. N., Jeon, H. J., Chang, S. M., Lee, H. W., & Park, J. I. (2013). The 12-item general health questionnaire as an effective mental health screening tool for general Korean adult population. *Psychiatry Investigation, 10*(4), 352–358. <https://doi.org/10.4306/pi.2013.10.4.352>
- Lovibond, S. H., & Lovibond, P. F. (1995). *Manual for the depression anxiety & stress scales (DASS-21)*, (2nd ed). Sydney: Psychology Foundation.
<https://maic.qld.gov.au/wp-content/uploads/2016/07/DASS-21.pdf>
- Mayo Clinic. (2017, October 13). *Generalized anxiety disorder*. Mayo Foundation for Medical Education and Research.

<https://www.mayoclinic.org/diseases-conditions/generalized-anxiety-disorder/symptoms-causes/syc-20360803>

Ng, F., Trauer, T., Dodd, S., Callaly, T., Campbell, S., & Berk, M. (2007). The validity of the 21-item version of the Depression Anxiety Stress Scales as a routine clinical outcome measure. *Acta neuropsychiatrica*, *19*(5), 304–310.

<https://doi.org/10.1111/j.1601-5215.2007.00217.x>

Norton, P. J. (2007). Depression Anxiety and Stress Scales (DASS): Psychometric analysis across four racial groups. *Anxiety, Stress, and Coping: An International Journal*, *20*, 253-265.

Page, A. C. Hooke, G. R., & Morrison, D. L. (2007). Psychometric properties of the Depression Anxiety Stress Scales (DASS) in depressed clinical samples. *British Journal of Clinical Psychology*. *46*, 283-297.

Prince, M., Patel, V., Saxena, S., Maj, M., Maserko, J., Phillips, M. R., & Rahman, A. (2007). No health without mental health. *Lancet*, *370*, 859-877.

Radloff, L. S. (1977). The CES-D scale: A self report depression scale for research in the general population. *Applied Psychological Measurements*, *1*, 385-401.

Sinclair, D. A., & Orlick, T. (1993). Positive transitions from high-performance sport. *The Sport Psychologist*, *7*(2), 138-150. <https://doi.org/10.1123/tsp.7.2.138>

Szabó, M., & Lovibond, P. F. (2006). Anxiety, depression and tension/stress in children. *Journal of Psychopathology and Behavioral Assessment*, *28* 3, 195-205.

Taggart, F., & Brown, S. S. (N.d). A review of questionnaires designed to measure mental wellbeing.

https://warwick.ac.uk/fac/sci/med/research/platform/wemwbs/research/validation/frances_taggart_research.pdf

Taylor, R., Lovibond, P. F., Nicholas, M. K., Cayley, C & Wilson, P. H. (2005). The utility of somatic items in the assessment of depression in chronic pain patients: A comparison of the Zung Self-rating Depression Scale (SDS) and the Depression Anxiety Stress Scales (DASS) in chronic pain and clinical and community samples. *Clinical Journal of Pain*, 21, 91-100.

Tennant, R., Hiller, L., Fishwick, R. (2007). The Warwick-Edinburgh Mental Well-being Scale (WEMWBS): Development and UK validation. *Health Qual Life Outcomes*, 5(63).
<https://doi.org/10.1186/1477-7525-5-63>

Weigang, S., Cohen, J., & Merenstein, D. (2013). Susceptibility for depression in current and retired student athletes. *Sports Health: A Multidisciplinary Approach*, 5(3), 263-266.
<https://doi.org/10.1177/1941738113480464>

Appendix A: Demographics Questionnaire

Instructions: Please read each statement carefully and answer honestly.

1. What is your age? _____
2. How long did you play competitive sports? (in years) _____
3. When did your sports career end? (Month, year) _____
4. Why did your sports career end?
 - a. Injury
 - b. Collegiate eligibility ran out
 - c. Cut from professional organization
 - d. No longer wanted to play
 - e. Financial
 - f. Other: _____
5. What NCAA Division level did you play at?
 - a. Division I
 - b. Division II
 - c. Division III
6. What sport did you play?
 - a. Basketball
 - b. Baseball
 - c. Ice Hockey
 - d. Field Hockey
 - e. Lacrosse
 - f. Swim & Dive

- g. Track & Field
- h. Cross Country
- i. Soccer
- j. Volleyball
- k. Softball
- l. Tennis
- m. Gymnastics
- n. Football
- o. Wrestling
- p. Other:_____

7. What best represents your gender identity?

- a. Female
- b. Male
- c. Trans Female
- d. Trans Male
- e. Non-binary
- f. Other:_____

8. What is your ethnicity?

- a. Hispanic or Latino
- b. NOT Hispanic or Latino
- c. Prefer not to say

9. What is your race?

- a. American Indian or Alaska Native

- b. Black or African American
- c. Asian
- d. Native Hawaiian or Other Pacific Islander
- e. White
- f. More than one race
- g. Prefer not to say
- h. Other

Appendix B: Depression, Anxiety, Stress Scale-21

Instructions: Please read each statement carefully and answer honestly. Circle a number 0, 1, 2, or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement. The answers are confidential. You are free to withdraw at any time.

The rating scale is as follows:

0 - Did not apply to me at all

1 - Applied to me to some degree, or some of the time

2 - Applied to me a considerable degree or a good part of time

3 - Applied to me very much or most of the time

I found it hard to wind down	0	1	2	3
I was aware of dryness of my mouth	0	1	2	3
I couldn't seem to experience any positive feeling at all	0	1	2	3
I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
I found it difficult to work up the initiative to do things	0	1	2	3
I tended to over-react to situations	0	1	2	3
I experienced trembling (e.g. in the hands)	0	1	2	3
I felt that I was using a lot of nervous energy	0	1	2	3
I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
I felt that I had nothing to look forward to	0	1	2	3
I found myself getting agitated	0	1	2	3

I found it difficult to relax	0	1	2	3
I felt down-hearted and blue	0	1	2	3
I was intolerant of anything that kept me from getting on with what I was doing				
I felt I was close to panic	0	1	2	3
I was unable to become enthusiastic about anything	0	1	2	3
I felt I wasn't worth much as a person	0	1	2	3
I felt that I was rather touchy (oversensitive or irritable)	0	1	2	3
I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)	0	1	2	3
I felt scared without any good reason	0	1	2	3
I felt that life was meaningless	0	1	2	3

Appendix C: Analysis of Administration and DASS-21

The administration of the demographics questionnaire and DASS-21 was through Qualtrics, an online survey platform. The survey was given out to participants during graduate class. Participants were surrounded by classmates and all were taking the same survey. Before administration the following script was said to participants:

Thank you all for being here today. You all have access to my survey, please answer as honestly as you can and participation is voluntary. You are free to leave or exit the survey at any time. Read all instructions thoroughly before answering. If you have any questions I am here to help, thank you again.

All participants completed the entirety of the survey and did not have any comments post-administration.

In the future, the administration and completion of the survey will be independent without all participants in one space together. Independently administering the survey through email would help to avoid agreement bias and allow participants to respond on their own time. Another area for improvement is in administering the script and changing the script to include that sensitive material mentioned within the questionnaire. The script will be transferred to an online platform and administered virtually. Additional debriefing because of the sensitive nature of the survey is needed in the future. Overall, the administration and data collection process went smoothly.

Participants included 20 retired collegiate athletes from Division I (N=8), Division II (N=1), and Division III (N=11). The length of a competitive career varied from 7-21 years of experience in participants ($M = 13.05$; $SD = 3.79$). The amount of time since career termination varied between 4 months ago to about 4 years ago ($M = 38.58$ months; $SD = 11.08$). Sports

represented in data collection included baseball, volleyball, gymnastics, lacrosse, track & field, cross country, soccer, softball, field hockey, wrestling, and football. Reasons for termination of career included injury, collegiate eligibility ran out, no longer wanted to play, cut from a professional team, and 4 participants wrote in all with the same response of COVID-19. In total, 7 participants identified as male and 13 identified as female. Two participants identified as Hispanic or Latino, and 18 that identified as not Hispanic or Latino. The race demographics of the sample included 16 participants identifying as White, two Black or African American, one Asian, and one identified as more than one race.

Data collected from the survey was analyzed using both SPSS and Excel. Participants were 20 retired collegiate athletes between the ages of 22 and 30 ($M = 23.55$; $SD = 1.82$). In the comparison of gender identity, females had mean scores of 4.26 (DASS-D), 3.67 (DASS-A), and 5.05 (DASS-S) while males had mean scores of 4.69 (DASS-D), 3.43 (DASS-A), 4.61 (DASS-S). Within the depression subscale, men averaged a higher score than women, although more participants identified as female. This is contrary to past literature that states women are more likely than men to express depressive symptoms (Mayo Clinic, 2017). Analysis of the subscales revealed mean scores of 4.41 (DASS-D), 3.59 (DASS-A), and 4.90 (DASS-S). This shows participants reported more anxiety symptoms than depression or stress. Standard deviations across subscales were relatively small, including 1.83 (DASS-D), 1.41 (DASS-A), and 1.60 (DASS-S). Participants varied most with responses in the depression subscale.

Reliability analysis of the DASS-21 revealed Cronbach's alpha value of 0.96 and therefore displays excellent internal consistency. The Chronbach's alpha subscales scores also proved to be sufficient with DASS-D at 0.93, DASS-A at 0.88, and DASS-S at 0.89. It is important to note with this high alpha level, redundancy or duplication may be a possible flaw.

Overall, the sample group of participants scored at a normal level across all subscales and no predominant concerns arise from scores. Further qualitative research is needed to explore the experience of this sample of retired collegiate athletes.

Table 2

Means, and standard deviation, and Cronbach's alpha

	M	SD	Cronbach's alpha ($p = 0.05$)
1. Age	23.55	1.82	
2. Length of competitive career (years)	13.05	3.79	
3. Time since sport career ended (months)	38.58	11.08	
4. DASS-Depression	4.41	1.83	0.93
5. DASS-Anxiety	3.59	1.41	0.88
6. DASS-Stress	4.90	1.60	0.89
7. DASS-21			0.96