The Relationship between Competitive State Anxiety and Agility Performance among Rugby Players

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Abstract
A record number of people are playing rugby worldwide as the sport continues to grow and prosper in Asia and across the globe. Rugby sevens players' success is primarily due to their outstanding physical fitness and tactical ability. The aim of this study is to investigate the relationship between competitive state anxiety and agility performance among rugby players. This study included 250 male and female rugby athletes from higher education institutions who represented Beast Rugby Club, Vioba Blues Rugby Club, and Smookies Rugby Club. A cross-sectional survey was carried out through this research. The Competitive State Anxiety Inventory-2 and agility t-test instruments were adapted for this research. Both descriptive and inferential statistical methods were used to analyze the data. The competitive state anxiety and agility performance among rugby players were examined using the Pearson correlation. According to descriptive analysis, cognitive anxiety was very high, somatic anxiety was moderate, and self-confidence and agility were high at a similar level. While, inferential analysis results revealed a moderate negative relationship between cognitive anxiety and agility (r =-.644), a low negative correlation between somatic anxiety and agility (r =-.310), and a moderate positive relationship between self-confidence and agility (r =.543). As the findings of this study show, athletes at this level are more easily distracted by a sense of fear as well as cognitive anxiety. A variety of approaches or programs can be utilized in the future to improve the quality of rugby athletes in order to achieve a high ranking among the best in the world.
Keywords: Education, Anxiety, Agility, Rugby

Introduction
A record number of people are playing rugby worldwide as the sport continues to grow and prosper in Asia and across the globe, according to the World Rugby Year in Review 2018. Rugby, with a staggering 475 million followers globally, is a powerhouse among contact sports (Zahidi et al., 2018). Rugby is a type of team ball game. Played by two teams, players from

each team will try to score by kicking, throwing, or carrying the ball until they can kick it pass the opponent's goal or touch it behind the opponent's line. The team that collects the most points will be declared the winner of this match.

Sports are important at the level of Higher Education Institutions because they can help produce a holistic and professional generation that can contribute to the development of the nation's personality, and produce a generation that has a mature mind and strong physical and mental resilience. The Ministry of Higher Education, through higher education institutions across the country, strongly encourages its students to get involved in extracurricular activities, including sports, with rugby being one of the sports that is contested at the Higher Education Institution Sports (SUKIPT). The sport of rugby requires the dexterity and physical strength of its players because, basically, this sport requires physical collisions that easily cause injuries to the players. However, this sport applies self-discipline and a strong team spirit through the elements and laws of the game based on high sportsmanship. All athletes are subject to feeling different levels of anxiety in a competitive environment. And since rugby is a contact sport with a lot of body impact, this possibility is quite evident. Increasingly, there is an awareness that the body and mind are inseparable in pursuit of sporting success. Sport is at least 50% mental, and an athlete's success results from the combination of physical and psychological skills (Malm et al., 2019)

In a sports competition, the level of anxiety can be an obstacle for an athlete to show the best performance and thus fail to help the team achieve the desired success. Athletes with high levels of anxiety will be more likely to fail to make accurate decisions in competition. This affects the planning and training that have been done throughout the year, simply because of the athlete's failure to control their anxiety levels. From the point of view of sports psychology, the anxiety of this sports competition is considered to be a decisive aspect in the long-term development of an athlete. An athlete can have almost the same talent but the level of sports anxiety will be the benchmark of how successful the athlete will be in the sport they are engaged in.

This study can help the management and coaching of rugby teams at higher education institutions find the best way to motivate their players, as well as reduce the level of anxiety of the rugby players who represent their respective IPT teams, as evidenced by Myall et al. (2021) in their study, which states that motivation is important in determining the success of a team. This study, which focuses on rugby athletes, is also expected to be able to prove the link between the athletes' motivation at the best possible level to help them reduce the level of anxiety in sports competitions, as well as allowing them to exhibit the best performance in every competition they participate in.

According to Jaafar (2021), past studies that discuss the level of anxiety about sports competition rarely focus specifically on rugby among students of higher education institutions. If seen from the context of the 7-side national rugby team, in particular, the majority of players are made up of students from higher education institutions from all over the country, thus making a study that focuses on student-athletes from higher education institutions very necessary. Physical fitness is considered one of the most important markers of health. In addition, physical fitness also serves as a buffer against anxiety. Anxiety is a stress-related mental health problem, but the relationship between physical fitness (agility) and anxiety remains unclear (Bowers et al., 2018). In the limited literature, agility is summarized as a key input enabling resilience in rugby. Liefeith et al (2018) have also reported that frequent exposure to various agility-type movement challenges can facilitate athletes' movement efficiency against various dimensions of movement pressure.

Apart from that, there are several studies regarding agility in various sports that examine the level of agility among players, the design of agility tools, and the effect of agility training on reaction time and coordination (Turna, 2020). Agility in rugby can improve player performance (Young et al., 2021). This statement is supported by Redman et al (2021), who show that the ability to maintain agility in rugby can consistently improve player performance. While Usher (2019) stated that agility is the main point to increase the physical fitness component, when agility is trained, it can improve components such as power, balance, speed, coordination, and reaction time. However, the percentage increase for each item is not clearly stated (Nazarudin, 2017).

In addition, in terms of the level of anxiety, the closest similar study to the study by the researcher was conducted by Liang et al (2020), where the CSAI-2 only measures the subject's anxiety aspect once instead of involving three measurement phases, which are 4 weeks, a week, and a day before the competition is held. Similarly, the study conducted by Castillo-Rodriguez et al (2022) looked at the comparison of the level of anxiety of athletes before facing a competition using the CSAI-2 which also refers in detail to aspects of self-confidence, somatic and cognitive. However, this study only compares the level of anxiety between yoga athletes and archery athletes instead of the anxiety resulting from the application of certain skills found in archery to reduce the level of anxiety before the competition. So, the researcher concludes that studies regarding the relationship between competitive state anxiety and agility are still less conducted. Thus, this study aims to identify the relationship between competitive state anxiety and agility performance among rugby players. This paper is guided by two research objectives the first is to identify the level of somatic anxiety, cognitive anxiety, self-confidence, and agility among rugby players, and the second is to identify the relationship between somatic anxiety, cognitive anxiety, self-confidence, and agility among rugby players.

Literature Review
Anxiety in sports can be categorized into two subscales, namely cognitive anxiety and somatic anxiety (Martens et al., 1990). According to Dingley (2021), cognitive anxiety is a condition where the mental component of an athlete will feel worried about failing to perform well in a competition, fear of defeat, drowning in the cause when performing, worried about giving a bad performance, not able to concentrate fully, and not confidence in his own abilities. Somatic anxiety is defined as the physiological and affective aspect of the athlete that results from the cognitive anxiety that exists in the athlete (Martens, 1977). Among the signs of somatic anxiety are an increase in pulse rate, a feeling of depression, fear, sweating, stomach upset, muscles becoming stiff, cheap blood, a feeling of tension, blood pressure becoming high, the throat feeling dry, and the hands or body becoming trembling (Talip et al., 2019).

The sport of rugby has great potential to be promoted at an early level, such as school, and then to a higher level. Early exposure to this activity among secondary school students, especially among teenagers under 16 years of age, will allow them to participate in rugby at a higher level. According to Posthumus et al (2020), physical fitness is a very important aspect and must be possessed by rugby athletes. This is because good fitness can help rugby athletes improve their game performance. Physical fitness is divided into two namely physical fitness based on health and physical fitness based on motor actions (Farley et al., 2020). Health-based physical fitness includes aspects related to sociological and physiological functions, namely cardiovascular endurance, muscle strength, muscle endurance, flexibility or relaxation, and body composition (Liuşnea, 2020). Physical fitness based on motor behavior

refers to a person's functions and capabilities, which consist of power, balance, reaction time, speed, agility, and coordination (Doe-Asinyo, 2021). Agility also plays an important role in rugby because changes in movement direction are produced based on reactions to stimuli such as the opponent's actions and the direction of the ball's movement. Rugby players need good running technique, be able to adjust speed to the pace of the game, and be able to slow down and increase speed suddenly - either to avoid the opponent or to score a try (Alonso-Aubin, 2021).

Training is one of the systematic processes that have the objective of increasing the level of physical fitness of athletes (Malm et al., 2019). The planning of an exercise is very important for multilateral development, specific physical development, technical, tactical, and psychological aspects, team ability, health, avoiding injury, and further enhancing theoretical knowledge (Mosher et al., 2022). Agility training given by the coach to the athlete or team is used as a guide and also a reflection on the evaluation of performance in their team. Effective agility training can help coaches and athletes improve their performance (Forster et al. 2022). The game of rugby also requires dexterity to change the direction of movement quickly, either to avoid the opponent or to score a goal (Talip et al., 2019).

In general, studies related to tests and training of agility in rugby have existed for several decades; agility is part of physical fitness based on motor actions. Past studies that examine agility testing and training conclude that agility involves changing the direction of movement (change of direction) and has a relationship with speed, muscle strength, power, balance, and coordination (Farley, 2020). According to Ibrahim et al (2022), every coach needs to have the right training techniques to help athletes improve their level of agility and motivate them. The training focuses on agility elements but at the same time can improve physical fitness components based on motor behavior such as speed, power, reaction time, coordination, balance, and so on (Moradi et al., 2019).

An athlete's ability to overcome stress and anxiety is an important factor in competition (Ford et al., 2017). This is because both factors are believed to affect performance. Therefore, the main goal of sports psychologists is to produce an effective mental program for athletes to maximize performance. This goal may not be achieved if there is no basic knowledge of anxiety theories and anxiety situations or conditions that can affect performance. There are several things related to cognitive anxiety caused by fear of failure. Among the things that cause them to fear failure is that their self-esteem will fall due to failure in the competition. Apart from that, Martens et al (1990) in the 'Multidimensional' Theory state that one of the factors that can cause anxiety (including somatic anxiety) is low self-confidence. In relation to that, this article will discuss the relationship between competitive state anxiety and agility performance at the tertiary level, where the focus will be given to rugby athletes at higher education institutions.

Methodology
A cross-sectional survey was adapted for this study to investigate the relationship between competitive state anxiety and agility performance among rugby players. This study included 250 male and female rugby athletes from higher education institutions who represented Beast Rugby Club, Vioba Blues Rugby Club, and Smookies Rugby Club.

Instrument
The Competitive State Anxiety Inventory-2 (CSAI-2) and agility t-test were used to utilize the data from the respondents. CSAI-2 was used to study the level of cognitive anxiety, somatic

anxiety, and self-confidence among rugby players. In addition, agility tests were used to examine the level of agility among rugby players.

Marten et al (1990) describe the CSAI-2 as a self-report questionnaire with 27 items that assess three aspects of anxiety: cognitive anxiety, somatic anxiety, and self-confidence. Cognitive anxiety, somatic anxiety, and self-confidence contain nine items, respectively. Likert scale for CSAI-2 ranged from 1 to 4, with 1 representing "Not At All" and 4 representing "Very Much So" For scoring, to evaluate the CSAI-2, use the scores for each question at face value, except for item 14, which requires a "reverse" score. Each will receive a score between 9 and 36, with 9 indicating low anxiety (confidence) and 36 indicating high anxiety (confidence).

To evaluate the agility t-test, the respondent was given two attempts during the test, and only the highest score from the two attempts will be taken. Agility t-test procedure: 1. Sprint from A to B. 2. Shuffle left from B to C. 3. Shuffle right from C to D. Shuffle left from D to B. 5. Running back from B to A. The agility T-test figure is shown below
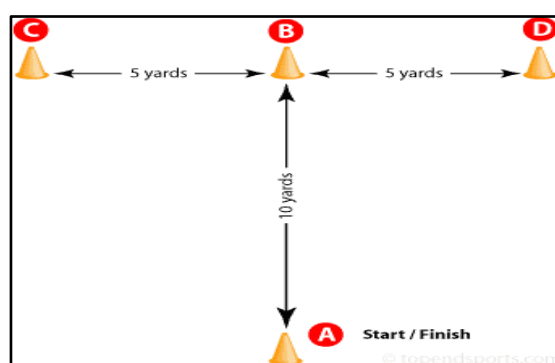

Figure 1. Agility T-test

Validity and Reliability Instrument

The collected data will be analyzed to determine the reliability of several constructs and reliability coefficients in the instrument. In obtaining the reliability index of the instrument, Cronbach's Alpha method will be used. For the Competitive State Anxiety Inventory-2 (CSAI-2) instrument, the internal validity reported by Jones, Hanton, and Swain (1994) was 0.80 for cognitive anxiety, 0.89 for somatic anxiety, and 0.84 for self-confidence (Prapavessis et al., 2003). Martens et al (1990) also reported that the reliability coefficient of the CSAI-2 inventory is between 0.79 and 0.83 for the cognitive dimension, 0.82 and 0.83 for the somatic dimension, and 0.87 and 0.90 for the self-confidence dimension. while the internal validity reported by Morral-Yepes (2022) was 0.98 for agility. Burton (1998) reported that the internal validity for all four dimensions was between 0.76 and 0.98 and concluded that this instrument has high internal validity.

In this research, the reliability of the competitive state anxiety inventory-2 (CSAI-2) instrument was 0.82 for cognitive anxiety, 0.85 for somatic anxiety, and 0.83 for self-confidence. While the agility instrument was 0.96. All of these instruments had acceptable reliability in this study.

Normality test

According to Orcan (2020), the values of Skewness and Kurtosis may also be used to determine the normality of data. As stated by the same researcher, Skewness displays the skewness of the distribution, whereas Kurtosis shows the high or low shape of the distribution. Furthermore, the Skewness and Kurtosis values should be between -1.96 and

+1.96 to identify properly distributed data. It is concluded that the data distribution of this study is normal because both Skewness and Kurtosis values for all dependent variables in the study are within -.220 to 1.498. Accordingly, based on the normality test that has been carried out, the researcher decided to use the parametric test, which is the Pearson Correlation.

Next, the data were analyzed using both descriptive and inferential statistical methods. The data gathered was described in terms of frequency, percentage, and mean using the statistical package for social sciences (SPSS) version 26. Descriptive statistics were used to analyze the first objective, which is the level of cognitive anxiety, somatic anxiety, self-confidence, and agility among rugby players. For inferential statistics, the Pearson correlation was used to examine the second objective, which is the relationship between competitive state anxiety and agility performance among rugby players. The findings were examined using a measured significance level of 0.05 to answer the research questions.

Findings and Discussion
The Level of Cognitive Anxiety, Somatic Anxiety, Self-Confidence, And Agility
According to Chan (2023), mean scale interpretation is determined to be used in the analysis of Likert-type questions. This study presented the weighted mean interpretation as follows: Very low level (1.00–1.74), Low level (1.75 – 2.49), High level (2.50 – 3.24), and Very high level (3.25 – 4.00).

Table 2
Level of Cognitive Anxiety, Somatic Anxiety, Self-Confidence, and Agility

Item	Mean	Level / Interpretation
Cognitive Anxiety	3.33	Very High
Somatic Anxiety	2.35	Low
Self-Confidence	3.05	High
Agility	3.17	High

Table 2 reported the level of cognitive anxiety, somatic anxiety, self-confidence and agility among rugby players. The results revealed that cognitive anxiety was very high, somatic anxiety was low, and self-confidence and agility were high at a similar level. This is supported by Mercader-Rubio et al (2023) research that shows cognitive anxiety is at a high level. This is due to the situation and experience of the competition. According to Ford et al (2017), competition situations and a lack of experience participating in competitions can cause increased anxiety. As an example, the MASUM sports competition is a competition that is considered 'competitive' by university-level athletes, as well as selected university athletes who are new teams in the MASUM competition.

The Relationship Between Competitive State Anxiety And Agility Performance
In this study, the researcher utilized Pearson Correlation to examine null hypotheses 1 (Ho1) and 3 (Ho3). The value of r ranges between -1 and 1. A correlation of -1 indicates a perfect negative correlation, while a correlation of 1 indicates a perfect positive correlation. A correlation of 0 indicates no relationship between the movements of the two variables (Akoglu, 2018).

Ho1:   There is no relationship between cognitive anxiety and agility performance among rugby players.

Table 4

Correlations between cognitive anxiety and agility

		Agility
Cognitive Anxiety	Pearson Correlation	-.644[**]
	Sig. (2-tailed)	.000
	n	250

**. Correlation is significant at the 0.01 level (2-tailed).

Based on Table 4, a Pearson correlation coefficient was computed to assess the linear relationship between cognitive anxiety and agility performance among rugby players. There was a moderate negative correlation between the two variables, r (250) = -.644, p = 0.000. So, the null hypothesis was rejected. This is supported by Ren et al (2022), who found that cognitive anxiety significantly affects agility performance. It is possible that this happens because physiological symptoms such as sweating, high pulse rate, and others are less common in the participating university athletes, instead, the reaction and response to feelings of worry are more significant. However, this study contradicts Mercader-Rubio (2023), who found no relationship between cognitive anxiety. This means that if these athletes perceive teamwork, value learning, define themselves as competent according to self-referential criteria, and do not lack the intention to practice, they will present fewer symptoms of increased nervous system activation (e.g., sweaty hands, muscle tension, increased heart rate) before a competition.

Ho2:   There is no relationship between somatic anxiety and agility performance among rugby players.

Table 5

Correlations Somatic Anxiety and Agility

		Agility
Somatic Anxiety	Pearson Correlation	-.310[**]
	Sig. (2-tailed)	.000
	n	250

**. Correlation is significant at the 0.01 level (2-tailed).

Based on Table 5, a Pearson correlation coefficient was computed to assess the linear relationship between somatic anxiety and agility performance among rugby players. There was a low negative correlation between the two variables, r (250) = -.310, p = 0.000. So, the null hypothesis was rejected. This study, supported by Hong (2022), shows that somatic anxiety affects agility performance. Somatic anxiety will affect the performance of rugby athletes. According to Hardy et al (1996), low somatic anxiety will affect performance. But Usher and Huseyin (2019) found differently, namely, that there was no significant relationship between somatic anxiety and performance in competition. According to the drive theory, the presence of an audience will raise the level of somatic anxiety in low-skilled athletes. Somatic anxiety refers to physiological changes in athletes, such as increased sweat, trouble breathing, increased heart rate, changes in brain waves, elevated blood pressure, increased urine, butterflies in the stomach, less saliva in the mouth, and muscle tightness. Fear perception in the cerebral cortex activates the sympathetic nervous system, resulting in an acute stress

reaction. Athletes who are adept at anxiety management skills often respond more strongly to anxiety symptoms but return to their resting rate faster than athletes who have not been trained in anxiety management.

Ho3: There is no relationship between self-confidence and agility performance among rugby players

Table 6
Correlations Self-Confidence and Agility

		Agility
Self-Confidence	Pearson Correlation	.543**
	Sig. (2-tailed)	.000
	n	250

**. Correlation is significant at the 0.01 level (2-tailed).

Based on Table 6, a Pearson correlation coefficient was computed to assess the linear relationship between self-confidence and agility performance among rugby players. There was a moderate positive correlation between the two variables, r (250) = .543, p = 0.000. So, the null hypothesis was rejected. This is in line with Hong (2022) finding that self-confidence has a significant direct influence on the agility performance of the athlete. This finding is reinforced by the results of a study by (Kurniawan, 2018). The results of the analysis show that there is a positive relationship between confidence and agility performance. This means that the better the athlete's confidence, the better the player's agility skills. Based on the description of the definition of confidence, it can be seen that self-confidence can improve a person's performance, especially among athletes (Lochbaum et al., 2022).

Further, most of the respondents in this study are national-level athletes and had to be involved in the daily physical training performed by the athletes, especially in agility. This follows the daily activities involved in school and causes the athlete to have a good level of physical fitness. The conclusion that can be drawn based on the results of the study on the rugby player is that competitive state anxiety affects agility performance. Whether the correlation between anxiety and performance is high or low depends on how well the athlete copes with it. This is because not all feelings of worry affect performance; for example, it was found that optimal performance will be produced when the level of cognitive anxiety and somatic anxiety is low in a study by (Ford et al., 2017). Although cognitive anxiety and somatic anxiety affect performance, attention should also be paid to the extent to which anxiety affects performance.

Extreme anxiety can affect an athlete's performance and cause them to fail to achieve the goals of the competition. To get optimal performance, physical training and the right strategy alone are not able to influence the athlete's performance on competition day. Coaches, managers, and athletes, themselves need to realize how important psychological aspects are in getting the best results from an athlete, especially on competition day. Therefore, this study is expected to help managers and coaches of rugby teams, in particular, organize training strategies and appropriate approaches to help each athlete control the level of anxiety when facing competition at various levels. In the meantime, apart from the training approach arranged by the coaching staff, athletes are also able to identify their own weaknesses in order to get the best performance in the competition. They need to know the best way to control their level of anxiety before and during competition.

However, more studies need to be conducted to support and strengthen the findings of this study. Among the studies that need to be carried out is one to identify the factors of concern. With such knowledge, coaches and sports administrators can help athletes deal with the problems they face and subsequently improve their performance. Coaches can play a more effective role if they are able to learn and master various methods that can be used to reduce athletes' anxiety. The athletes involved need to be exposed to psychological skills training, especially skills that allow them to overcome and adapt to pressure when participating in a competition. Mental exercises such as 'relaxation', meditation, breathing control, and imagery should be encouraged.

Apart from that, this study is also expected to lead to a more detailed study related to the concerns of the sports environment, especially with a larger sample and diversified types of sports. The comparison between individual and team sports can also enable the study of the extent to which the environment plays a role in reducing the anxiety of sports competition in order to obtain optimal performance from an athlete. Apart from that, research involving the anxiety of sports competitions between male and female athletes can also be done considering the level of anxiety between the genders of athletes to see to what extent the gender of the athlete determines the level of anxiety of an athlete's own sports competition. Research involving the concern of sports competitions also needs to be held on a larger scale and aimed at the extent to which it affects the performance and achievements of elite athletes in this country. Studies like this can help the National Sports Institute (ISN) organize counseling and psychological sessions to help national athletes get the best performance at major international tournaments.

Conclusion

Physical fitness needs to be enhanced more deeply at the university level, in addition to being able to alleviate anxiety in students who participate in rugby. By doing training in the proper manner, future success can be assured. Each player will be brought up with high discipline, and they need to focus when on the field because it is very important in the game of rugby. The results of this study are expected to help rugby managers and coaches at the tertiary level, formulate appropriate strategies to get the best results from their athletes. As seen from the results of this study, athletes at this level are more easily distracted by their level of anxiety as well as their level of cognitive anxiety. Managers and coaches need to find a way to help their athletes overcome their anxiety about facing competition by using sports psychology approaches such as imagery, self-talk, visualization, and other ways that are deemed appropriate to get the best results from these young athletes. A variety of methods or programs can be used to improve the quality of rugby athletes in the future. Finally, the hope of the researcher is that rugby sports will become more prominent, whether it is male or female rugby, and will be able to rank among the best in the world one day.

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