

## **Does an athlete's anger differ by sport type and gender?**

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*Anger is an emotion that is frequently associated with a bad reputation. Anger has proven to play an effective role in certain athletic achievements; however, it is unknown which sport and gender have the athletes whose performance is most influenced by anger. In this study, we administered the STAXI-2 to determine relationships between gender and levels of athlete anger in 156 British athletes across a range of contact and non-contact sports and competitive levels (from professional/Olympians to recreational). We investigated differences in levels of anger in relation to the sport they played. Although not statistically significant, the results indicated that male athletes scored higher in trait, expression-out, anger control-out, and overall anger index, but females scored higher in state anger. The findings revealed that athletes in contact sports have higher levels of trait anger, but non-contact athletes have higher levels of state anger. This study's findings imply that anger does not influence all athletes similarly because anger is subjective to persons and sports.*

KEY WORDS: Anger, Gender, Performance, Contact and Non-contact.

### **1. Literature Review**

#### 1.1 INTRODUCTION

The media are saturated with stories of athletes reacting to provocation in angry ways (i.e., rule-breaking, physical violence) because it draws in the audience. Although the literature has suggested that anger has a positive association with aggressiveness and directional antisocial behaviour (Kavussanu et al., 2013; Sofia & Cruz, 2016); it also highlights the adaptive influence anger can have on sports performance (Davis, 2011; Martinent & Ferrand, 2009; Steffgen, 2017), specifically with contact sports, athletes

often interpret their competitive anger as beneficial to their performance (e.g., believing it energises their behaviour (Robazza & Bortoli, 2007; Robazza et al., 2006).

Anger is defined by Lazarus (1991; p122) as a reaction to “demeaning offence against me or mine”, and Novaco (1986) as an effective stress reaction that occurs after frustration (Campo et al., 2012). Anger has been defined as both an emotional state (the result of experienced psychological provocation and its cognitive interpretation; Kassinove & Sukhodolsky, 1995; Steffgen, 2017) and a stable personality trait (reflecting a person’s proclivity to experience anger on a regular or intense basis; Spielberger et al., 1995). Previous research suggests that anger is a multidimensional construct associated with behavioural reactions in the here and now (State, e.g., facial expressions, verbal/behavioural/physical anger expression) and a person’s personality trait, which influences how a person thinks, behaves, and feels on an ongoing basis (trait).

## 1.2 GENDER AND ANGER

Sports, although popular and progressing to a more inclusive, less misogynistic endeavour (Channon et al., 2017), are typically associated with a male-dominance (Hannon et al., 2009; Eitzen, 2005) endeavour. Specific sports have perceived masculine, feminine, or gender-neutral classifications established on outdated stereotypes and gender roles concomitant with sports. For example, some consistently associate gymnastics as feminine because it is an expressive activity, swimming as gender-neutral, and physical contact sports, such as boxing as masculine (Hardin & Greer, 2009; Plaza et al., 2016; Chalabaev et al., 2012).

The relationship between sport and anger may differ between men and women. Gender has been assumed to moderate anger in athletes based on biosocial theories and cultural expectations. For example, the differences are represented by men’s and women’s physical attributes and related behaviour, particularly women’s nursing of small children and men’s greater size, speed, and strength (Wood & Eagly, 2002). This may be learned through social and cultural expectations and physical attributes. Male figures typically develop traits that conform to societal expectations, such as “protector” (E.g., superiority, notoriety, or competition). In contrast, females develop traits that conform to societal expectations of a social role, such as being expressive, caring, and other-orientated (Eagly, 1987). Previous studies (e.g., Monaci and Veronesi, 2017; Bartlett et al., 2018; Champlin & Aldao, 2013) suggest that

males and females typically express their anger differently. Lerner (1988) believed that women internalise their anger in a “feminine manner” and are less likely to express it outwardly. Several studies (i.e., Newman et al., 1999); Spielberger et al., 1995 and Milovchevich et al., 2001) have reiterated these findings when looking at anger expression of men and women. Bartlett et al. (2018) study on collegiate athletes, highlighted that female athlete also internalise anger more frequently than males. In comparison, males are typically associated with the outward manifestation of anger in a “Masculine manner” because of being more predisposed to anger (Monaci & Veronesi, 2017; Spielberger et al., 1995; Milovchevich et al., 2001). Studies have shown that if women feel and express more emotions than men (Chaplin & Aldo, 2013), few gender differences exist in subjective feelings (Deng et al., 2016). Gender differences would therefore be related more to how anger was expressed (Brody, 2000; Monaci & Veronesi, 2017). For example, males and females may express anger differently. Instead of striking objects or people, females may talk to friends or family (Fischer & Evers, 2011). Conversely, other studies (Karrenman & Bekker, 2012) found that males and females express anger similarly. Still, females found it more difficult to recognise it because of social and cultural expectations (Wood & Eagly, 2002). In contrast, studies in a non-sporting context have failed to find significant evidence that gender affects the experience and expression of anger (e.g., Deffenbacher et al., 1996; Dubihela & Surujlal, 2012; Milovchevich et al., 2001). Deffenbacher and Makay (2000) suggest anger is only seen by the way it is expressed; feeling angry (internal experiences) and the expression of anger are advocated as two different reactions (Spielberger, 1980). Spielberger et al. (1995) did, however, illustrate that males were found to have significantly higher trait anger scores on the State trait Anger Expression Inventory (STAXI; Spielberger, 1988), but no significant differences in state anger or anger control (Spielberger et al., 1995). Bartlett et al. (2018) emphasised that male collegiate athletes score higher on state anger, anger expression, and overall anger index and lower on the anger control compared to an average population using the State-Trait Anger Expression Inventory-2 (STAXI-2; Spielberger, 1999). In comparison, female collegiate athletes did not differ significantly when scores were compared to an average population, except on the trait anger scale, which they significantly lower than the average population. The study also highlighted that the sporting environment (i.e., being competitive and superior to all others) was related to athletes’ higher state anger and anger expression levels. The sports field is one in which being competitive and skilful is an advantage. Because of cultural and socialisation, men and women are taught to act differently with their emotions; however, besides Debihela and Suruihlal

(2012), few studies have specifically researched gender dissimilarities in anger amongst athletes or what impact it has on their performances.

### 1.3 ANGER AND PERFORMANCE

Anger is no more a good or bad emotion than happiness or sadness, yet attempts to address anger in the sporting domain have typically been to reduce it (Abrams, 2010, 2016). The effects of anger may not be debilitating to performance but may facilitate performance, depending on the type of sport and how the anger is managed (Davis et al., 2010; Hanin, 2007; Lapa et al., 2013; Robazza & Bortoli, 2007). According to Lazarus (1991, 1999, 2000), Cognitive Motivational Relational Theory (CMRT) of emotion, with anger, there is a powerful impulse to counterattack, seek revenge for an affront, or repair wounded self-esteem. This feeling can be used to the advantage of the beholder if the action tendencies of anger align with the sporting task (i.e., strength tasks, combat sports, and sports with fewer technical components; Lazarus, 2000; Martinent & Ferrand, 2009; Oliva-Mendoza & Calleja, 2010; Ruiz & Hanin, 2011). Anger also has the potential to negatively influence performance by disrupting the focus of attention, the ability to process information and decision-making, and implementation and control of actions (Jones, 2003; Martinent et al., 2011; Martinent & Ferrand, 2009).

According to Ruiz and Hanin (2011), 75% of their karate athletes studied found anger facilitated performance. Robazza and Bortoli (2007) reported that rugby players experienced anger, and used it as an “emergency resource” to produce energy; the athletes perceived anger benefited their performance when they remained in control of their anger and directed it towards their task. The experience of anger has been associated with an increase in strength (Abrams, 2010), pain tolerance (Sternback, 2013), and sports performance (Woodman et al., 2009). In contrast, in other sporting situations where strength and pain tolerance methods are not required, anger can lead to ineffective decision-making and athletes losing focus and awareness of control (Jones, 2003; Robazza & Bartoli, 2007).

### 1.4 ANGER IN CONTACT AND NON-CONTACT /SPORTS CHOICE

In contact sports where muscular strength and pain tolerance is likely, suitably accompanying anger can be expected. Athletes in contact sports report higher levels of anger when compared with non-contact sports (Bartlett & Abrams, 2019; Bartlett et al., 2012).

Maxwell and Moores (2007) reported the differences between contact (rugby and football) and non-contact sports (tennis and squash) using their Competitive Aggressiveness and Anger Scale (CAAS), with contact sports scoring higher in each of the subscales. Results were replicated in the following up by Maxwell et al. (2009) also suggested that contact sports athletes are more likely to express their anger externally. In contrast, Collins et al. (1995) stated that when using hypothetical anger vignettes (which have been used in previous research to recognise aggressive tendencies in non-sporting participants), there were no differences in anger between contact and non-contact athletes or non-athletic participants. However, several studies have supported this, and few directly compare anger in contact and non-contact athletes. In summary, anger has been shown to enhance sports performance if the task is congruent with anger's action tendency of lashing out, such as increasing strength, speed, and pain tolerance; however, anger is debilitating to performance if the task requires strong decision-making or fine motor movements.

### 1.5 ANGER ASSESSMENT

How anger was historically assessed was based on behavioural observations and projective tests (Spielberger et al., 1995). Through the years, it was discovered that anger, aggression, and hostility were not all the same. The need for distinction was recognised in the 1970s with the development of three anger-specific questionnaires; the Reaction Inventory (Evans & Strangeland, 1971), the Anger Self-Report (Zelin et al., 1972) and the Anger Inventory (Novaco, 1975). Following this, Spielberger created the State -trait Anger Scale (Spielberger, 1980) as he not only believed the previous assessments had questionable psychometrics (Spielberger et al., 1995) but that he could distinguish between State anger and Trait anger. Advancing the assessment to the development of the State-Trait Anger Expression Inventory (STAXI; Spielberger, 1988), where not only does it examine the difference between state and trait anger, but it also differentiates between anger expression and anger control. However, normative data was never created for athletes, as the primary target audience for this assessment was the military, prisoners, and medical patients. With the aspiration to better understand anger, the STAXI was enhanced and improved with additional questions and scales, and the STAXI-2 was created (Spielberger, 1999). The target of this new assessment was to include scales to assess state and trait anger, anger expression and anger control. Like the original STAXI, normative data was not created by Spielberger. Therefore, the STAXI-2 has not been used extensively in sports, with only a few articles

stating the use of the STAXI-2 to assess the anger levels of athletes (e.g., Ruiz & Hanin, 2011; Robazza & Bortoli, 2007; Bartlett et al., 2018). Bartlett et al. (2018) created semi-generic normative data for American collegiate athletes; however, the study did not include athletes of all abilities, sports, or gender equally and advised creating sports-specific normative data for better representation. Although newer sport-specific assessments of anger are available such as the Competitive Aggressiveness and Anger Scale (CAAS; Maxwell & Moores, 2007), this study used the STAXI-2 (Spielberger, 1999) because it gives more anger-specific information, differentiation of types of anger, expression, and control, it also does not remonstrate with other emotions (i.e., aggression). According to Spielberger (1999), the STAXI-2 has an internal consistency reliability value ranging from .73 to .95 for the total scale and .73 to .93 for the subscales. Other studies have supported these values (i.e. Freeman, 1999). More extensive reliability and validity data have been created for the original STAXI, from which the STAXI-2 was established. Critically, the STAXI-2 distinguishes itself from other anger assessment methods because it can assess anger experience, expression and control of anger independently.

## 1.6 PURPOSE

The overall aim of the research presented here was to explore the differences in anger experience between contact and non-contact athletes. First, we evaluated the levels of anger, expression preference, and control by gender to determine which gender of athletes scored the higher on the STAXI 2 anger assessment. It was hypothesised that males would show higher levels of anger, higher levels of outward expression and lower levels of control than female athletes, who would show higher levels of inward expression of anger. Second, we looked at the differences between contact (i.e., taekwondo, boxing, rugby, football) and non-contact sports (i.e., badminton, athletics, dancing, tennis) to establish which category scored higher in each of the scales containing athletes in either contact or non-contact sports. It was hypothesised that contact sports would show higher levels of anger than non-contact sports.

## 2. Method

### 2.1 PARTICIPANTS

Two hundred and forty participants participated in the study, of which one hundred and fifty-six met the inclusion criteria ( $n = 92$  females,  $n = 64$  males,  $Mage = 28.21$ ,  $SD = 8.67$ ).

Following ethical approval from the authors' university ethics committee, participants were recruited through sending emails to sports clubs and promoted online via social media channels such as Twitter and Facebook. The author was interviewed on national radio to advertise the study further. Recruited individuals represented forty-six different teams and individual sports including football (n= 26), Taekwondo (n=12), running (n=11) and swimming (n=10). The competitive level of the participants was greatly varied. Although not measured, they were asked about their greatest achievement; the top end of the spectrum was multiple times Olympic champion in swimming, international medallists in taekwondo, league and cup-winning professional footballers, and many international athletes in several sports. For the participants who participated in local competitions, achievements such as gradings in martial arts or winning local competitions were prominent responses. In contrast, for participants who participate in the sport for recreational purposes, the greatest achievement was participating. Participants in this study had participated in their main sport for an average of 11.05 years (SD=9.73). The exclusion criteria included not currently or recently participating in any sport and medically diagnosed anger management conditions. Inclusion criteria were that athletes were at least eighteen years of age and took part in either individual or team sports.

## 2.2 VARIABLES AND INSTRUMENTS

Sport performance variable: Performance accolades, professional and recreational athletes. To assess these factors, several sociodemographic questions were asked. These questions examined aspects related to biological variables (gender and age) and sociological sports variables (Chosen sport, length of time taking part and achievements), "what sport do you most commonly take part in?" "How many years have you taken part in your sport?". The complete set of variable questions was constructed of 5 items, 2 evaluated biological variables and three evaluated sociodemographic and sport performance variables. Most questions were open-ended, but there was also a polytypical question with three categorised answers; With participant's gender ("What is your gender? Options: Male, Female, other").

To assess anger, the self-report (online form), the State-Trait Anger Expression Inventory-2 (STAXI-2; Spielberger, 1999), was administered. The STAXI-2 is a 57-item inventory that is answered on a 4-part Likert scale of 1 ('not at all'/'almost never') to 4 ('very much so'/'almost always'), with six scales (state, trait, expression in, expression out, control in, control out) five subscales (feeling angry, feel like expressing anger verbally, feel like expressing anger physically, angry temperament and angry reaction), and one index score (Anger index score). It assesses the intensity of anger at a particular moment and the frequency of anger experience, its expression and level of control; it is split into three domains: state anger, trait anger and anger expression/control. State- anger assesses the intensity of one's anger at the moment. In contrast, trait anger assesses the frequency of angry feelings and the disposition to experience anger as a personality trait over time. The four-anger expression/ control scales assess four anger-related characteristics and show how a person responds when angry: Anger Expression- out (AX-O) assesses the expression of angry feelings within the environment (e.g., lashing out at someone or something), while Anger Expression-In (AX-I) assesses how often are angry feelings are experienced but suppressed (e.g., being angry at one's actions). Anger control- Out (AC-O) assesses the frequency of a person attempting to control angry feelings by preventing public expression. Anger Control-In (AC-I) assesses the frequency a person attempts to control angry feelings by forcefully remaining calm. Scores from the four previous scales are calculated, anger expression index (AE index) = AX-O +AX-I - (AC-O + AC-I)

+ 48, giving an overall score ranging from 0-96, with higher scores indicating higher levels of anger. Internal consistency reliability has a value ranging from .73 to .95 for the whole assessment scale and .73 to .93 for the subscales (Spielberger, 1999). A previous study involving athletes reported internal consistency from .78 to .88 for the main scales and .67 to .84 for the subscales (Oliva-Mendoza & Calleja, 2010), and internal consistencies of a minimum of .82 for all scales, with the exemption of Trait anger – Reaction, which had a score of .78. Greater reliability and validity data were produced for the predecessor of the STAXI-2, the STAXI of which it was developed to assess components of anger for evaluations of anger and to provide means of measuring the influences of various components of anger (Spielberger, 1999).

## 2.3 PROCEDURE

Participants were obtained in several ways; permission was sought from sports club managers and individual coaches of teams before being distributed to team members. The study also recruited many sporting participants online using sports social media and the researcher's pages, applying suitable octothorpes (e.g., national governing bodies, professional sports teams, high sporting performance universities, and sports media outlets). The participants were presented with a link to a document explaining the study (i.e., aim, purpose, data protection, ethics) and the informed consent process, emphasising that participation in the study would be voluntary with no incentive or payment for their participation. It is paramount to note that these surveys were not facilitated during a competitive situation, for example, before or after a sporting competition or event. The study was conducted during the COVID-19 global pandemic. The surveys were completed in the participant's own time, taking approximately 10 minutes. Sociodemographic information other than age, gender and sport was not collected from the participants. Data collection took place over four months.

## 2.4 DATA ANALYSIS

The data analysis was performed using SPSS version 26 (IBM corporation, 2019). To investigate the primary hypothesis indicating that male athletes would show higher levels of anger across most scales and subscales. A Multivariate Analysis of Variance (MANOVA) was calculated with gender being the fixed factor and the STAXI-2 scales (State, trait, anger expression -in/out, and anger control in/out). Bonferroni controlled post hoc comparisons were applied to compare between-group differences.

To address the second hypothesis, contact sports athletes experience more anger than non-contact athletes; a second MANOVA was calculated to explore the relationship between contact and non-contact sports and the STAXI-2 scores. The fixed factors were the contact/non-contact nature of their sports, and the STAXI-2 scale scores were the dependent factors.

## 3. Results

Descriptive statistics for each of the anger variables showed that state anger was reported to have a higher mean when compared with trait an-



ger (State -  $n=156$ ,  $M=18.07$ ,  $SD=6.77$ ; Trait -  $n=156$ ,  $M=17.36$ ,  $SD=4.87$ ), showing that anger is more common in short-lasting bursts, rather than a dispositional characteristic and frequent. Anger expression-in ( $n=156$ ,  $M=17.79$ ,  $SD=4.37$ ) is far more prevalent among athletes than Anger expression-out ( $n=156$ ,  $M=14.76$ ,  $SD=3.65$ ), highlighting that collectively athletes typically express more anger internally rather than externally at the environment or others. Last, Anger control-in ( $n=156$ ,  $M = 22.27$ ,  $SD= 4.84$ ) and Anger control-out ( $n=156$ ,  $M=22.73$ ,  $SD=4.9$ ) showed similar results. The higher mean scores highlight that athletes regularly try to control their anger by calming down and controlling any outward expression of anger. The anger expression index score ( $M=35.55$ ,  $SD= 12.29$ ) scored up to 99; a higher index score would indicate more intense angry feelings which may be expressed or suppressed.

### 3.1 DIFFERENTIATION BETWEEN MALE AND FEMALE ATHLETES

The STAXI-2 scores of each scale and subscale were analysed to explore the differences between male and female athletes' anger scores. A one-way between groups MANOVA (gender x 7 scales or subscales) did not yield statistically significant differences between male and female athletes.  $F(6, 149) = .983$ ,  $p = 0.38$ ; Wiks' Lambda = .96; partial eta squared = .38. when the results for the dependent variables were considered separately, there was still no statistical significance; State anger -  $F(1, 154) = .930$ ,  $p = .887$ , partial eta squared = .000; Trait anger -  $F(1, 154) = 4.91$ ,  $p = .651$ , partial eta squared = .001; Anger Expression-out -  $F(1, 154) = 1.37$ ,  $p = .750$ , partial eta squared = .001; Anger Expression-in -  $F(1, 154) = 2.08$ ,  $p = .742$ , partial eta squared = .001; Anger Control-out -  $F(1, 154) = .898$ ,  $p = .848$ , partial eta squared = .000; Anger Control-in -  $F(1, 154) = 45.040$ ,  $p = .166$ , partial eta squared = .012; Anger Expression Index -  $F(1, 154) = 30.122$ ,  $p = .657$ , partial eta squared = .001; Table I illustrates a comparison of means, which indicate that females scored higher on state anger, anger expression in and anger control-in.

To assess if there were differences in levels of anger and sport type (i.e., contact or non-contact), one-way between groups MANOVA (Contact/non-contact x 7 scales or subscales) was implemented. The samples were split into two groups: Athletics, badminton, bowls, cheerleading, chess, cricket, curling, cycling, dance, darts, golf, gymnastics, horse riding, walking, running, powerlifting, snooker, swimming, table tennis, tennis, volleyball ultimate frisbee and yoga participants (Non-contact;  $n=76$ ) and boxing,

TABLE I  
*Comparison of Means – Gender*

STAXI-2 Scales	Gender	Mean	Std. Deviation	N
State Anger	Female	18.14	7.52	92
	Male	17.98	5.57	64
	Total	18.07	6.77	156
Trait Anger	Female	17.22	5.08	92
	Male	17.58	4.58	64
	Total	17.36	4.87	156
Anger Expression-Out	Female	14.68	3.70	92
	Male	14.87	3.60	64
	Total	14.76	3.65	156
Anger Expression-In	Female	17.89	4.32	92
	Male	17.66	4.47	64
	Total	17.79	4.37	156
Anger Control- Out	Female	22.67	4.73	92
	Male	22.83	5.17	64
	Total	22.74	4.90	156
Anger Control-In	Female	22.72	4.80	92
	Male	21.62	4.86	64
	Total	22.27	4.84	156
Anger Expression Index	Female	35.18	12.44	92
	Male	36.08	12.14	64
	Total	35.55	12.29	156

Brazilian Jiu-jitsu, capoeira, fencing, football, Gaelic football, hockey, ice hockey, karate, kung fu, netball, rugby union/league, and taekwondo (Contact; n=80). The subdivision was based on elements pertaining to the sport and its level of contact with the opposition. For example, most martial arts aspects rely on physical contact with an opponent; therefore, it is classed as a contact sport.

### 3.2 DIFFERENTIATION BETWEEN CONTACT AND NON-CONTACT SPORTS

The STAXI-2 scores of each scale and subscale were analysed to explore the differences between contact and non-contact sports groups. A one-way

between groups MANOVA (contact/non-contact x 7 scales or subscales) did not yield statistically significant differences between contact and non-contact sports.  $F(6, 149)$ ,  $p=.243$  Wilks' Lambda=.949, partial Eta squared =.051. when the results for the dependent variables were considered separately, there was still no statistical significance; State anger –  $F(1, 154) = 24.90$ ,  $p=.463$ , partial Eta squared =.004; Trait anger –  $F(1, 154) = 19.78$ ,  $p = .363$ , partial Eta squared = .005; Anger Expression- out –  $F(1, 154) = 10.224$ ,  $p=.383$ , partial Eta squared=.005; Anger expression-in -  $F(1, 154) = 2.88$ ,  $p=.699$ , partial Eta squared =.001; Anger control-out –  $F(1, 154) = 16.03$ ,  $p = .415$ , partial Eta squared = .004; Anger control-in –  $F(1, 154) = 1.84$ ,  $p = .780$ , partial Eta squared = .001; Anger expression index –  $F(1, 154) = 14.90$ ,  $p= .754$ , partial Eta squared =.001. Table II compares means, which

TABLE II  
Descriptive Statistics - Comparison of Means Contact and non-contact

STAXI-2 Scales	Contact or non-contact	Mean	Std. Deviation	N
State Anger	Contact	17.69	6.45	80
	Non-contact	18.49	7.10	76
	Total	18.08	6.77	156
Trait Anger	Contact	17.71	5.15	80
	Non-contact	17.00	4.57	76
	Total	17.36	4.87	156
Anger Expression-Out	Contact	15.01	4.14	80
	Non-contact	14.50	3.06	76
	Total	14.76	3.65	156
Anger Expression-In	Contact	17.66	4.22	80
	Non-contact	17.93	4.55	76
	Total	17.79	4.37	156
Anger Control- Out	Contact	23.05	5.05	80
	Non-contact	22.40	4.75	76
	Total	22.74	4.90	156
Anger Control-In	Contact	22.37	5.07	80
	Non-contact	22.16	4.62	76
	Total	22.27	4.84	156
Anger Expression Index	Contact	35.25	13.45	80
	Non-contact	35.87	11.01	76
	Total	35.55	12.29	156

indicates that non-contact sports scored higher within: state anger, anger expression-in, and anger expression index.

#### 4. Discussion

In this study, we explored the differences in levels of anger between male and female athletes of varying abilities and sports. Using the subscales of the STAXI, we explored differences among athletes' levels of anger in contact and non-contact sports to determine which sports presented with athletes displaying more anger

Anger has been viewed as a negatively-toned emotion that is detrimental to performance in various contexts, such as social, academic, business and sports (Robazza & Bortoli, 2007; Isberg, 2000). All athletes reported a relative frequency of anger symptoms associated with their respective sports. The results of the STAXI-2 demonstrate similar scores and distribution to those presented by Bartlett et al. (2018) for collegiate athletes and Spielberger (1999) for non-athletes. The male participants showed higher trait anger levels, anger expression-out, anger control-out, and overall anger index. In contrast to these previous studies, the female participants scored higher on the State anger scale, highlighting that female athlete experience a higher frequency of temporary, short-lasting periods of anger than males. The results from this study did not differ significantly from the normative data created for the STAXI-2 by Spielberger (1999). The results show that females in this study scored in the 75<sup>th</sup> percentile for state anger and anger expression-out—the other elements of the STAXI-2 scale range between the 40<sup>th</sup> and 60<sup>th</sup> percentile. Similar to Lerner (1988), the female athletes in this study also reported higher inward-directed anger and inward-directed anger control levels. The male's percentile data ranged from 40<sup>th</sup> to 60<sup>th</sup> percentile with no exceptions and supported previous research showing that males traditionally have higher levels of trait anger.

Although the gender analysis results were not statistically significant when analysed, the results show the importance of the study. Emphasising that not all athletes are the same, and data collected previously does not relate to every athlete worldwide. They further re-emphasise the need to create normative data for sports (Bartlett et al., 2018) for male and female athletes to give a more unambiguous interpretation and comparison of results.

##### 4.1 CONTACT VS NON-CONTACT

Anger is contentious in whether it is beneficial to performance regardless of the sport (Abrams, 2010), with most commentators believing that an-

ger is only beneficial depending on the sport context and how well anger is managed (Robazza & Bortoli, 2007; Davis et al., 2010). All athletes have reported a variation of anger in all studies that have measured anger. There has never been a score of 0 on the subscales reported when being assessed with the STAXI-2; deemed the “Gold Standard” of anger assessments (Abrams, 2010); this data would suggest that state and trait anger or a combination of both may exist in every athlete. Anger has been associated with higher levels of strength, pain tolerance, and enhanced sports performance (Abrams, 2010; Sternback, 2013; Woodman, 2009), all of which are significant traits of contact sports, such as Rugby, Taekwondo, and Hockey. Previous studies by Bartlett et al. (2012) and Bartlett and Abrams (2019) showed that higher levels of anger were present in contact sports athletes, supporting the previous works of Maxwell & Moores (2007) and Maxwell et al. (2009), who also reported that contact sports reported higher levels of anger and aggression compared to non-contact sports, Maxwell and Moores (2007) did not use the STAXI-2 and instead used the CAAS which also assesses for aggression in athletes. This study supports these previous works in all but two subscales.

In contrast, this study found that non-contact athletes scored higher in state anger and overall anger expression index. However, our study does not outline if this higher frequency of anger leads to ineffective decision-making, affecting the athlete's focus and awareness of control (Jones, 2003; Robazza & Bortoli, 2007). These findings also support the purpose of this study, showing that not all athletes will acknowledge anger in the same way because of interpretation (Robazza & Bortoli, 2007) or because of the lack of influence they feel it is having on their performance.

When comparing the data from this study to normative data created by Spielberger (1999) and the use of percentiles; which have a distinct advantage over alternative presentation scores because it allows one to gauge how “normal” a score is compared to the rest of a normative group (Crawford et al., 2009). All results were compared to normative data for mixed gender, normal adults over the age of 16 (Similar criteria for participants of this study). The contact sports athletes scored between the 40<sup>th</sup> and 60<sup>th</sup> percentiles. In contrast, the non-contact sports scored between 40<sup>th</sup> and 70<sup>th</sup> percentiles, with only State anger receiving a higher percentile score than the normative data set. Looking at the age-old question, “are athletes angrier than non-athletes?” (Bartlett et al., 2018). The results of this study show that predominantly athletes score above the 50<sup>th</sup> percentile for State anger. However, for trait anger, both groups scored in the 45<sup>th</sup> percentile. Anger expression- out, the contact group scored precisely the 50<sup>th</sup> percentile while non-contact scored in the 40<sup>th</sup> percentile. Thus, it shows that in externally expressing anger, contact athletes do not experience it more than the average

person, and non-contact athletes experience it less than an average person. This is again shown with the anger control-out, with the contact athletes scoring in the 45<sup>th</sup> percentile and non-contact athletes in the 40<sup>th</sup> percentile and anger control in both scoring in the 45<sup>th</sup> percentile. As Stipulated by Spielberger & Reheiser (2009), people who score in the 75<sup>th</sup> percentile or above are more likely to be debilitated by their anger. No group in this study scored at that level or above. Similar to Bartlett et al. (2018), this study shows that athletes had a lower trait anger scale score than the average population but are experiencing more anger, as shown with the higher state anger scale scores.

Further, in support of Spielberger (1999) and Bartlett et al. (2018), the higher levels of state anger show that the anger that the athlete experience is typically situational and most likely because of their sport or the environment. The lower than average levels of trait anger across both contact and non-contact athletes show that athletes are less likely to be angry people that experience high levels of anger over a longer duration.

These findings could lead us to question why non-contact athletes are experiencing more bouts of state anger. Is it because of the rules of their sport (i.e., tennis) as they expect athletes to be courteous or face admonishments (Gonzalez-Garcia et al., 2019).

#### 4.2 LIMITATIONS AND FUTURE DIRECTION

This study helped address a shortage of applicable studies on anger in sports, explicitly comparing male and female athletes in levels of anger, highlighting that there are many dissimilarities concerning these two groups on several anger-related constructs. This study also addressed contact vs non-contact sports in levels of anger, demonstrating several differences (some of which were unpredicted) between these two groups concerning anger-related constructs. Therefore, although not significant, the value of this data is evident in providing a nuanced understanding of anger and the frequency with which it is experienced.

The study's findings are limited by the relatively small sample of athletes (who did not prove a sporting ability to show they were athletes). They were also not asked about their interpretation of anger, thus raising the questions about understanding anger and its impact on the individual and sports performance. Second, the participants of this study were grouped to have larger sample sizes (for adequate statistical vigour). Preferably, a sample could be sought that contained enough participants from each sport to provide a sports-specific answer, not only for gender but also age or experience (nei-

ther of which were looked at in this study). Although collected, age was not explored in this study concerning anger, performance, or frequency of experiencing anger. It is possible that life experience, age and cultural differences could affect the athlete's interpretation of anger and their frequency of experiencing the emotion. Third, there is the possibility of reporting bias within the study, as athletes are not monitored when carrying out the self-report questionnaire and may not want to be perceived as excessively angry. Finally, the recruitment process may have presented some bias among athletes; for example, some athletes may not have competed recently because of the COVID-19 global pandemic, whereas professionals who took part were still training and competing as usual further, whether they answered the questions during a live season or their off-season. Both points may lead athletes to under or over-report their anger levels and experiences when, in reality, the results may have been different if there was not a global pandemic or if they were during a competition phase.

In line with other research (e.g., Bartlett et al., 2018; Bartlett et al., 2012; Newby & Simpson, 1991), the creation of normative data for all contact and non-contact sports to give a better reference and comparison for athletes, but also a breakdown of sports positions and the type of sports that both male and female athletes participate. Further, as anger is typically associated with one gender and one group of sports, often with negative connotations, perhaps a better understanding of the antecedents and consequences of anger on athletes and their performance would help establish its impact on performance. Finally, anger is seen by many to have a positive effect on performance by previous researchers (Abrams, 2010; Davis et al., 2010; Lapa et al., 2013; Robazza & Bortoli, 2007; Sternback, 2013; Woodman et al., 2009;), establishing what the optimum level of anger is to influence performance positively. It would not only be beneficial to applied sports psychologists to improve the performance levels of their athletes and help them realise the facilitative effects of anger, but also in research to show that with correct application and control, anger can be beneficial to athletic performance.

#### 4.3 CONCLUSION

The participants in this study revealed that not all athletes conform to the assumed social stereotype that male athletes are always angrier than females and that contact sports athletes experience more anger than non-contact. Brief bursts of in-the-moment anger (state anger) were experienced by female athletes more frequently than by males; however, confirming societal

expectations, male athletes experience more frequent episodes of trait anger. Although this study was to establish a difference between contact and non-contact sports, the results regarding gender should not be ignored. They could be developed into programming for athletes' benefit. Instead of the common misconception of anger, "Anger is bad, we must reduce it", it would be a valuable move to change perceptions towards "anger is normal, how can we control it and use it to benefit our performance". Anger is an everyday emotion most people, including athletes, have, and how it is used can create an impact. "With great power comes great responsibility" (Lee & Ditko, 1962). Ultimately, anger levels in athletes are subjective to the individuals in the sport.

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