

**PERCEIVED EMOTIONAL COMPETENCE AND COMPETITION
APPRAISALS AS PREDICTORS OF STRESS-RECOVERY BALANCE IN
SPORTS**

Janna-Carla Niemi

Master's Thesis in Sport and Exercise
Psychology
Autumn 2021
Faculty of Sport and Health Sciences
University of Jyväskylä

Abstract

Niemi, Janna-Carla 2021. Perceived emotional competence and competition appraisals as predictors of stress-recovery balance in sports. Master's thesis in Sport and Exercise Psychology, Faculty of Sport and Health Sciences, University of Jyväskylä. 29 p.

Athletes' emotional responses play an important role in sport performance. An athlete's ability to identify, understand, and regulate their feeling states, called emotional competence, can have an influence on their performance related experiences. The way in which athlete appraises a competition situation and their options to deal with the task demands also determines their experiences in that situation. The purpose of this thesis was to examine the relationship among perceived emotional competence, stress-recovery balance, and competition appraisals. Two hundred and two athletes (141 males, 62 females, Mage = 20.92, SD = 6.24) took part in this study. They filled out a multi-scale questionnaire assessing the study variables. Positive correlations were found among emotional competence, challenge appraisal, and recovery (general and specific), and negative correlations were found between threat appraisal and stress (general and specific). A multiple regression analysis was conducted to examine the relationship among perceived emotional competence, competition appraisals, and stress-recovery balance. Results indicated that all three variables were correlated and that perceived emotional competence and competition appraisals were significant predictors of athletes' stress-recovery balance. In the present study 25 % of variance in stress and 28% of variance in recovery was predicted by perceived emotional competence and competition appraisals. The study results were in line with previous research and provided important information in understanding the relationship among athletes' stress-recovery balance, perceived emotional competence, and athletes' competition appraisals. These study results bring to light the importance of appraising situations as challenge for athletes' recovery and the importance of developing athletes' emotional competence skill to help them in handling stress and recovering from it. Additionally, practical implications, study limitations, and future research directions have been discussed.

Keywords: performance-related experiences, athlete wellbeing, competitive sport

TABLE OF CONTENTS

Abstract

1 INTRODUCTION.....	1
2 LITERATURE REVIEW.....	3
2.1 Perceived emotional competence.....	3
2.2 Competition appraisal.....	5
2.3 Stress response and recovery.....	8
3 PURPOSE AND AIM OF STUDY.....	10
4 METHOD.....	11
4.1 Participants.....	11
4.2 Measures.....	11
4.2.1 Emotional competence.....	11
4.2.2 Competition appraisals.....	11
4.2.3 Stress-recovery balance.....	12
4.3 Procedure.....	12
5 DATA ANALYSIS.....	13
6 RESULTS.....	14
6.1 Descriptive statistics and correlations.....	14
6.2 Multiple regression analysis.....	16
7 DISCUSSION.....	17
8 LIMITATIONS AND FUTURE DIRECTIONS.....	21
9 CONCLUSION.....	21
REFERENCES.....	22

1 INTRODUCTION

Emotions have been studied in different environments, from different perspectives, and focusing mostly on the mechanisms and operations that must happen so that we can form, regulate, understand, and express emotions. It can be said that everybody experiences emotions, and they are constantly there even if we do not always pay attention to them. We experience emotions with other people, when we react to an environment, and even when we think of something (Lazarus, 2000; Parkinson, 1996). Lazarus defines emotion as “an organized psychophysiological reaction to ongoing relationship with the environment, most often, but not always, interpersonal or social” (Lazarus, 2000, p. 230). This shows that individuals react to all stimuli with emotions and usually that causes a reaction that has psychological, physiological, and social sides to it. Emotional experiences are fundamental to human adaptation, influencing one’s attention, decision making, memory, and effort as well as behavioural responses (Ruiz et al. 2021). This further supports the importance of research into emotions in psychology and in sport psychology specifically. This study will focus on the investigation of perceived emotional competencies of athletes and their relationships with competition appraisals, and stress-recovery balance.

The ability to regulate one’s emotions and the emotional reactions to different environments, whether that be physiological, social, or psychological, is essential to a successful performance in sport but also in other aspects of life (Ruiz et al., 2021).

Sporting environment can be described as stressful to athletes and they are constantly facing social, mental, and physical stressors (Heidari et al., 2018; Laux et al., 2015; Moore et al., 2013). The way an athlete perceives a certain situation and their ability to cope with demands of the situation impacts the feeling states experienced by the athlete (Folkman, & Lazarus, 1988). Therefore, it is important to understand the processes that exist between emotions and stress. It is also important to understand the factors that come into play in an athletes’ recovery. The way someone experiences and manages stress varies and that can have a significant impact on the options for recovery (Lazarus & Folkman, 1984; Nicholls et al., 2009). Both physical and mental recovery are important to athletes.

Physical recovery helps them recharge their energy levels and helps prevent injuries. Most importantly, adequate physical recovery enables athletes to perform at their best (Laux et al., 2015). The aim of mental recovery is to rest one's mind, and recharge on a mental level to reduce upcoming stress (Loch et al., 2021). Understanding the factors that influence the stress-recovery balance, i.e., the balance between recovery demands and stress stimuli, is important because unbalance between stress and recovery may lead to overtraining syndrome or at its worst burnout in athletes. Burnout might take months or even years of rest to recover from or may even lead to the end of a sporting career (Filho et al, 2015; Grobbelaar et al., 2010; Loch et al., 2021).

Another factor that might influence athletes' experiences of emotions and stressors before, during, and after competition and their ability to recover from the stress, is the way they view competition. Athletes can perceive the situation as a challenge, or they can see it as a threat. Challenge state occurs when an athlete feels that she or he has adequate resources to deal with the demands of a competition and she or he will gain something good from the competition (e.g., win the competition) (Blascovich, & Mendes, 2000). Threat state occurs when an athlete has inadequate resources to deal with the stressors and demands of competition and she or he views the competition as a risk to her/him. For example, there is a high risk of injury or losing the competition (Blascovich, & Mendes, 2000). This distinction between challenge and threat states can impact the emotions and the amount of stress someone experiences (Doron, & Martinent, 2021; Lazarus, 2000; Meijen et al., 2020). When an athlete perceives a competition as threat, this competition then causes them stronger feelings of stress and more dysfunctional emotions and in most cases results in a negative outcome, for example an unsuccessful performance (Jones et al., 2009). In contrast when competition is perceived as challenge, more functional emotions, and more positive interpretation of stress could be experienced by the athlete (Doron, & Martinent, 2021; Meijen et al., 2020). Overall, it is important to acknowledge that there is a dynamic relationship between stress appraisal, coping, emotions, and objective performance within highly demanding sport competitions (Doron, & Martinent, 2021). This thesis will examine the relationships among perceived emotional competence, competition appraisals, and stress-recovery balance.

2 LITERATURE REVIEW

2.1 Perceived emotional competence

Emotional intelligence is known as the ability to identify and understand one's own emotions as well as the emotions of other individuals (Caruso, 2008; Salovey & Mayer, 1990; Palmer et al., 2008). More specifically, emotional intelligence consists of four different abilities that work together as an approach to leadership, decision-making and judgement. The abilities are recognizing emotions, generating, and using emotion to influence thinking, understanding how emotions work and regulating emotions (Mayer et al., 1999).

Perceived emotional competence, an alternative label for emotional intelligence, refers to the extent to which people handle, process, and make use of their emotions (Laborde et al., 2021). While both emotional competence and emotional intelligence both refer to one's ability to identify, understand and use one's emotions, the difference between emotional competence and emotional intelligence is clear. Emotional competence can be learned and trained while emotional intelligence is stable and something an individual either has or does not have (Brasseur et al., 2013; Mayer et al., 2008). When emotional intelligence is defined in a single construct, it can be deceptively associated with cognitive ability (e.g., traditional intelligence) (Boyatzis et al., 2000). Therefore, emotional competence will be used in the present study instead. Emotional competence can also be learned, and emotional competence is now used more frequently in literature. Emotional competence can also be studied in many perspectives that are the optimal fit for the environment (e.g., sport) (Boyatzis et al., 2000). Individual differences in the emotional competence skills have been found to be a predictors of the individuals' adjustment to the environment (Brasseur et al., 2013; Cherniss, 2010; Laborde et al., 2021).

In sports, emotional competence can be thought about in the perspective of athletes, coaches, spectators, referees, parents, and officials. Information provided by emotional competence is either intrapersonal (emotions experienced by an individual) or interpersonal (perceptions of other people's emotions) (Laborde et al., 2021). In the present study, the perspective of the athletes will be studied.

There are only few studies examining the relationships between perceived emotional competence and competition appraisals (e.g., Cece et al., 2021; Saby et al., 2019). However, the studies that have researched these relationships found correlations between these two variables. Successful emotional regulation, which is a subcategory of emotional competence has been positively associated with challenge appraisal (Cece et al., 2021; Saby et al., 2019). Saby and colleagues (2019) also found threat appraisal and low emotional regulation to be positively correlated.

Because sport is a social environment, it is important for athletes and coaches to understand, react, and regulate their emotions so that they can cope with stressors and demands from the sport environment (Kopp & Jekauc, 2018). Furthermore, athletes with higher perceived emotional competence are more adept in dealing with mistakes, setbacks, and other emotional events and stressors, and they are more likely to maintain their training motivation even when training hard and long periods of time (Jekauc, 2018, as cited in Laborde, 2021). Additionally, emotional control, which is a subcategory of emotional competence, has been found to be associated with lower levels of perceived stress (Kaiseler et al., 2009). Knowledge of one's emotions, another subcategory of emotional competence, has been linked to better stress coping and lower levels of cortisol (the stress hormone) in high stress situations like competitions (Salovey et al., 2002). Furthermore, when emotional control is unsuccessful, it will turn the athlete's attention away from the performance, leave the stress response uncontrolled, and cause additional stress and dysfunctional emotions that will affect the performance negatively (Neil et al., 2011). In general, perceived emotional competence can have a significant role in helping athletes perform at their best (Laborde et al., 2021).

Kopp and Jekauc (2018) found that high emotional intelligence is significantly related to high sport performance. Emotional intelligence has also been linked to faster recovery from acute stress (Lea et al., 2019) and it plays an important positive and protective role in athletes' physiological responses to stress (Laborde et al., 2016). Athletes with high levels of trait emotional intelligence are more adept to deal with acute stress stimuli and in general high levels of trait emotional intelligence has been found to be useful in sport settings (Lea et al., 2019). Additionally, trait emotional intelligence has been found to moderate one's subjective and biological (e.g., neuroendocrine) responses to stress (Mikolajczak, & Luminet, 2008). Trait emotional

intelligence has been defined as constellation of emotional traits and abilities an individual perceives themselves to possess (Petrides et al., 2007; Petrides, & Furnham, 2001).

Sport can be seen as a very stressful environment (Cerin et al., 2000; Moore et al., 2013; Nicholls et al., 2012) and demands of elite sports are constantly increasing (Loch et al., 2021). Therefore, it is important to understand emotional intelligence in the perspective of stress reactivity and stress recovery. For example, low emotional intelligence has been associated with higher levels of perceived stress in male athletes (Malinauskas, & Malinauskiene, 2018). Additionally, individuals with high emotional intelligence are likely to deal better with anticipation of potentially stressful situations (Mikolajczak, & Luminet, 2008). In sporting context, this could mean that athletes with higher emotional intelligence are likely to deal better with stress or even feel less nervous while anticipating and preparing for a competition. Furthermore, Mitic and colleagues (2018) found that athletes with higher levels of emotional intelligence can manage their emotions in a stressful situation and use task-oriented coping methods to deal with the situation. These athletes can change the stressful situation by controlling their emotions, which can be useful in sport context. Additionally, low level of emotional intelligence has been associated with experiences of unpleasant emotions before a dysfunctional performance, whereas high level of emotional intelligence has been associated with experiences of pleasant emotions before a functional performance (Lane et al., 2010).

2.2 Competition appraisal

Cognitive appraisal is the way in which one interprets a situation specific stressor (Meijen et al., 2020). Competition appraisal refers to cognitive appraisals focused specifically on competition. Competition appraisal is divided into two. Athlete can view a competition or even a practice session as a challenge (challenge appraisal) or as a threat (threat appraisal) (Sammy et al., 2021). When an athlete perceives themselves to have adequate resources to deal with the stressors and demands of a competition and when they feel they will have something to gain from the competition (e.g., a win), the athlete will experience a challenge state. (Blascovich, & Mendes, 2000). In turn, when an athlete does not possess the adequate resources to deal with the demands and stressors of a competition and when the athlete feels there to be a high chance of risk,

for example a high chance of injury, or a high chance to lose, the athlete will view the competition as a threat (Blascovich, & Mendes, 2000; Sammy et al., 2021).

The biopsychosocial model of challenge and threat (BPSM; Blascovich & Mendes, 2000) proposes that when individuals are faced with a motivated performance, they ultimately evaluate the situation based on their personal resources to cope with that specific situation in relation to the demands of the performance. Depending on whether the individual interprets the situation as detrimental or beneficial to them, they then adopt either a “threat” or a “challenge” state (Sammy et al., 2021). Challenge state is the result of perceived resources matching or outweighing the perceived demands of a situation whilst threat state results from perceived resources not matching the perceived demands (Sammy et al., 2021). It is important to note that for an athlete to perceive a performance situation as a threat or a challenge, it must be relevant to a goal they have set (Blascovich, 2013; Lazarus, & Folkman, 1984).

The theory of challenge and threat states in athletes (TCTSA; Jones et al, 2009; Meijen et al., 2020) draws on Blascovich and Mendes’ (2000) model but it outlines that challenge state is the result of a combination of psychological constructs interacting. Additionally, the TCTSA model proposes that strong negative emotions can be experienced in challenge state as well as in threat state. The TCTSA proposes that achievement goals, perceptions of control and self-efficacy are the determinants of challenge and threat state in response to a competition (Jones et al., 2009). Specifically, Jones and colleagues (2009) state that focus on approach goals, high perception of control and high self-efficacy are the determinants of challenge state. In contrast, focus on avoidance goals, low perception of control and low self-efficacy are associated with threat state.

According to the TCTSA, challenge and threat states affect the effort, attention, decision-making and physical functioning of athletes, and the athletes’ sport performance (Jones et al., 2009). Furthermore, the TCTSA model states that athletes’ readiness for competition and the psychophysiological state of the athlete pre-competition will likely have an impact on the performance even when the psychophysiological state is likely to change during competition.

The revised version of the TCTSA (TCTSA-R; Meijen et al., 2020) proposes some new aspects to the challenge and threat theories. Meijen and colleagues (2020) state that

some predispositions, for example trait challenge and threat, can have an impact on the way an athlete views a competition situation. Furthermore, that TCTSA-R proposes that threat and challenge states are not static and could possibly be experienced at the same time or that individuals could move from one state to the other (Meijen et al., 2020). This consideration is the result of Uphill and colleagues' (2019) suggestion that an individual could experience a situation as a challenge, a threat, both or neither.

Furthermore, Uphill and colleagues (2019) suggested an alternative approach to challenge and threat. The Evaluative Space Approach to Challenge and Threat (ESACT; Uphill et al., 2019) suggests that appraising some sporting situations as both a challenge and a threat, could be helpful to performance. Moreover, in some situations it can be advantageous for athlete to realize that there might be both gains and losses to be held (Uphill et al., 2019). Additionally, the ESACT moves the focus away from just performance and gives space to other times (e.g., transition from active career to retirement), people (e.g., exercisers) and places (e.g., sport high schools and performance academies (Uphill et al., 2019). This gives researchers and practitioners new opportunities and different perspectives to study threat and challenge appraisals in sport environment.

The evaluation of a situation is influenced by not only the stimuli from the situation, but also emotions (Blascovich & Mendes, 2000). For example, if an athlete has experienced a high number of unsuccessful competitions, they are likely to have an overall negative perception of competitions and therefore, they will view competitions as a threat. Another such example is an athlete who has suffered a lot of injuries. This athlete might view any performance situations as a threat, because in the past they have been hurt often, and they might fear new injuries (Sammy et al., 2021).

In general, challenge states have been linked with better and more successful performance (Hase et al, 2018; Moore et al., 2013) and van Rens and colleagues (2021) suggest that high level of challenge and low level of threat appraisal are desirable to athletes. Additionally, Dixon and colleagues (2017) suggest that coaches should be encouraged to obtain a challenge appraisal toward a stressful situation (e.g., a coaching session) over threat appraisal as it will help them behave in a more positive manner. However, there are cases where an athlete who feels threatened by a competition have outperformed athletes who have viewed the situation as a challenge and in this situation,

threat appraisal was better for performance than challenge appraisal (Feinberg, & Aiello, 2010). Therefore, it cannot be said that viewing a situation as a challenge is always the optimal appraisal.

Outside of sport, threat appraisal has been associated with high stress and dysfunctional stress response leading to impaired performance in the medical field. (Harvey et al., 2010). Furthermore, threat appraisal has been associated with avoidance coping strategies (e.g., self-distraction and behavioral disengagement) and emotion-focused coping strategies (denial, self-blame, venting of emotions) (Dias et al., 2012). Avoidance coping strategies can be less effective than problem-focused coping strategies such as planning and positive reframing (Dias et al., 2012). Additionally, research has shown there to be a negative relationship between stressor intensity and coping effectiveness meaning that when one is experiencing high levels of stress, coping effectiveness might be lower (Nicholls et al., 2009). Furthermore, athletes have reported experiencing more stressors in a threat state than in a challenge state. However, the number of coping strategies did not increase with the increased number of stressors resulting in a diminished performance (McGreary et al., 2020).

Gaudino and colleagues (2019) found that primary appraisal (e.g., whether the competition is personally relevant) significantly negatively predicted total and general recovery while significantly positively predicting total, general and sport-specific stress. Research also suggests that secondary appraisal (how much control an individual has over self, and the environment) significantly negatively predicted total and general stress (Gaudino et al., 2019). This can be related to threat and challenge states, but further research into this is necessary. According to Litwic-Kaminska (2020) athletes usually have a good attitude toward competition and they view the competition and the stress caused by the competition as a challenge. However, it is important to remember that not all athletes experience that and therefore further research is needed (Litwic-Kaminska, 2020).

2.3 Stress response and recovery

Stress is the response of one's interaction with their environment (Lazarus, & Folkman, 1984). Everyone reacts to environment differently and their reaction is the result of interaction between two types of appraisals: primary and secondary. Primary appraisals

are one's evaluations of their investment in an encounter. Secondary appraisals are one's perception of whether something can be done to minimize/prevent harm or maximize gain. If one is unable to deal with the demand, the resulting stress can be devastating. The combinations of these two appraisals will determine the type and intensity of emotions experienced by an individual (Lazarus, & Folkman, 1984). When one has a sense of control over a situation, they are more likely to view the situation as challenge rather than a threat (Lazarus, & Folkman, 1984). Furthermore, stress can also affect the way a situation is appraised. For example, athletes who viewed a competition as stressful, experienced the competition to be more threatening (Nicholls et al., 2012).

Both physical and mental recovery are extremely important to athletes as physical recovery helps them recharge their energy levels, helps prevent injuries and enables athletes to perform at their best (Laux et al., 2015) while the aim of mental recovery is to rest one's mind, and recharge on a mental level to reduce upcoming stress (Loch et al., 2021). Understanding the factors that influence the stress-recovery balance, the balance between recovery demands and stress stimuli, is important because when stress and recovery are not in balance, this may lead to overtraining syndrome or at its worst burnout in athletes that might take months or even years of rest to recover from or may even lead to the end of a sporting career (Filho et al., 2015; Grobbelaar et al., 2010; Loch et al., 2021). In high level sports, mastering the stress and recovery balance is essential for maintaining optimal, high-level performance (Filho et al., 2015).

To conclude, previous research has shown clear links among perceived emotional competence, competition appraisals, and stress and recovery (e.g., Dias, et al., 2012; Jekauc, 2008, as cited in Laborde, 2021; Kaiseler et al., 2009; Lea, 2019; Sammy et al., 2021). Perceived emotional competence has been found to be associated with lower levels of perceived stress (Kaiseler et al., 2009), competition appraisals have been linked to the amount of stress an athlete experiences, and challenge appraisal has been linked to less stress than threat appraisal (Doron, & Martinent, 2021; Lazarus, 2000; Meijen et al., 2020). Additionally, athletes high on emotional competence have been found to have better coping methods to deal with stress (Mitic et al., 2018). While stress and recovery from stress have both been linked to perceived emotional competence and competition appraisals in some ways, more research into this area will be beneficial (e.g., Mitic et al., 2018; Nicholls et al., 2012; Sammy et al., 2021). There are no research studies that have

studied emotional competence, competition appraisals and stress-recovery balance together. This study fills this gap in literature. It is important to understand these relationships as research shows that all of them influence performance and athletes' experiences before, during, and after competition. (e.g., Heidari et al., 2018; Kaiseler et al., 2009; Ruiz et al., 2021). New information on the relationships among these three variables could help athletes, coaches, and practitioners to understand the experiences of athletes and help them develop coping methods to deal with stress associated with sport and interventions to help the athletes reach their optimal level of performance.

3 PURPOSE AND AIM OF STUDY

The purpose of this study was to examine the relationships among athletes' emotional competence, competition appraisal, and their stress-recovery balance.

The present study hypothesizes that:

- 1) Perceived emotional competence was expected to correlate positively with recovery and negatively with stress.
- 2) Challenge appraisal was expected to be positively correlated with perceived emotional competence and recovery and be negatively correlated with stress.
- 3) Threat appraisal was expected to negatively correlate with emotional competence and recovery and positively correlate with stress.
- 4) Challenge appraisal was expected to be negative predictor of stress.
- 5) Threat appraisal was expected to positively predict stress.
- 6) Challenge appraisal was expected to positively predict recovery.

4 METHOD

4.1 Participants

Two hundred and two participants (141 males and 62 females) from 15 different sports (e.g., cycling, cross country skiing, football, ice hockey, and floorball) took part in this study. The participants mean age was 20.92 years ($SD=6.24$). All participants were living in Finland at the time of data collection. All participants were active competitive athletes involved in international competitions ($n = 37$) on a national ($n = 148$) or regional level ($n = 17$) and participating in at least one organized training weekly. The participants trained on average 11.37 hours a week.

4.2 Measures

4.2.1 Emotional competence

Eight items from the Short Profile of Emotional Competence (S-PEC; Mikolajczak et al, 2014) were used to measure the identification, understanding, expression, and regulation of athletes' emotions. Participants rated the extent to which the statement apply to them on a scale from 1 (not at all) to 5 (very often). Examples of items are: "When I'm touched by something, I immediately know what I feel" (identification), "I don't always understand why I respond the way I do" (understanding), "I am good at describing my feelings" (expression), "I find it difficult to handle my emotions" (reversed) (regulation). Cronbach's alpha value for overall emotional competence was .85 (Mikolajczak et al, 2014). The present study collected the data in Finnish.

4.2.2 Competition appraisals

Competitive appraisals were measured on the sport appraisals scale (Adie, et al, 2008). This scale consists of 10 items to measure challenge appraisals (e.g., "I view the competition as a positive challenge") and threat appraisals (e.g., "I think the competition could be threatening to me"). Responses were rated on a 7-point Likert scale 1 (not at all true of me) to 7 (very true of me). Cronbach's alpha values were .78 for challenge appraisal and .73 for threat appraisal (Adie et al., 2008). A Finnish version of this scale (unpublished data) was used in the present study.

4.2.3 Stress-recovery balance.

Athletes' recovery-stress balance was assessed on the short version of the Recovery-Stress Questionnaire for Athletes (RESTQ-Sport-36; Kallus, & Kellmann, 2016). The RESTQ-Sport-36 measures general stress (e.g., I was fed up with everything) and specific stress (i.e., emotional exhaustion, social stress, fatigue, disturbed breaks, and injury) as well as general recovery (e.g., I was in a good mood) and specific recovery (i.e., social recovery, sleep quality, being in shape, personal accomplishment, and self-efficacy). Athletes are asked to rate the frequency they have experienced stress-related and recovery-related activities within the past 3 days on a 7-point Likert scale ranging from 0 (never) to 6 (always). Kallus and Kellmann (2016) reported the Cronbach's alpha values for the long version of the RESTQ-Sport questionnaire to range from .87 (social stress) to .69 (emotional exhaustion) for stress subscales, and from .87 (social recovery) to .74 (sleep quality). The present study used the Finnish version of the RESTQ-Sport questionnaire (Pennanen, 2018).

4.3 Procedure

The Short Profile of Emotional Competence was translated into Finnish for the purposes of the present study. The back translation procedure was used in the translation process. First, a bilingual person translated the scale from English to Finnish, then it was translated back to English. Finally, both English versions and the Finnish version were compared to ensure that the meanings of the original items were kept.

The data was drawn from a broader research project examining the predictors of psychobiosocial states. After ethical approval for the study was granted by the university's ethical committee, participants were recruited by contacting coaches, team leaders, and even athletes themselves. Once a team or an athlete agreed to take part in the study, a convenient meeting date and place was agreed upon with coaches or athletes, usually either before or after practice sessions. All participants were actively involved in competitive sport, but not all participants were on a competitive season at the time of data collection.

Participants were presented a consent form before filling out the questionnaire and made aware that participating in the study was completely voluntary and all answers were

fully anonymous, and that confidentiality was assured. After participants had given their consent, they completed the questionnaires, which took them approximately 15 to 30 minutes. A researcher was present in all the data collection times to clarify any possible misunderstandings and to answer any possible queries about the questionnaires or concerns of the participating athletes.

5 DATA ANALYSIS

Data was screened for missing values, violations of assumptions of normality, and multivariate outliers (Tabachnick & Fidell, 2019). There was one or two items missing from 19 cases and because the number of missing values per case was low, it was concluded that it was random missing data and not for example, a participant deliberately leaving questions unanswered. For that reason, mean imputing was used to deal with the missing data based on Tabachnick and Fidell's (2019) instructions. Using Mahalanobis' distance ($p < .001$), four outliers were identified and deleted from the data analysis.

Preliminary analysis included descriptive statistics, and Pearson correlation coefficients. The strength of the correlations was used instead of the significance of the correlations because the strength gives deeper understanding of the correlations, especially when all correlations are significant (Zhu, 2012). The strength criterion ranges from low to high correlations. Multiple regression analyses using the enter method were conducted to examine the explanatory power of competitive appraisals and emotional competence as predictors of stress-recovery balance.

6 RESULTS

6.1 Descriptive statistics and correlations

Descriptive statistics and alpha coefficients are presented in Table 1. As the table shows, the participants reported higher scores for perceived emotional competence, challenge appraisal, both recovery variables. Lower scores were reported for threat appraisal and both stress variables. The Cronbach's alpha coefficients of all measures were deemed adequate.

Table 1. Descriptive statistics and internal reliability for the study variables ($N = 198$)

	<i>M</i>	<i>SD</i>	<i>SK</i>	<i>K</i>	α
Perceived emotional competence	3.6	0.58	-0.42	0.29	.691
Challenge appraisal	5.80	0.90	-0.86	0.73	.784
Threat appraisal	2.46	0.95	0.72	-0.33	.748
General stress	1.48	0.97	0.78	0.37	.847
Specific stress	1.74	0.90	0.56	0.02	.797
General recovery	4.02	0.84	-0.39	-0.21	.770
Specific recovery	3.59	0.84	-0.28	-0.04	.775

Pearson's correlations are reported in Table 2. As expected, challenge appraisal was positively correlated with both recovery variables and negatively correlated with both stress variables. Also, threat appraisal was negatively correlated with both recovery variables and positively correlated with both stress variables as expected. Additionally, perceived emotional competence was positively correlated with both recovery variables and negatively correlated with both stress variables. Perceived emotional competence was also positively correlated with challenge appraisal and negatively correlated with threat appraisal as hypothesized.

Table 2. Bivariate correlations between study variables ($N = 198$)

	1	2	3	4	5	6
1. Perceived emotional competence	-					
2. Challenge appraisal	.240*	-				
3. Threat appraisal	-.214*	-.407**	-			
4. General stress	-.362*	-.433**	.458**	-		
5. Specific stress	-.166	-.272*	.376*	.766***	-	
6. General recovery	.342*	.340*	-.217*	-.527**	-.370*	-
7. Specific recovery	.434**	.319*	-.239*	-.396*	-.294*	.578**

Note. *Low correlation, **Moderate correlation *** moderately high correlation, **** High correlation

6.2 Multiple regression analysis

As the correlation between the two stress variables was moderately high and the correlation between the two recovery variables was moderate, it was decided to calculate one stress and one recovery variable to use in the multiple regression analysis. As Table 3 shows, challenge appraisal, threat appraisal, and perceived emotional competence predicted 25% of variance in the stress variable. Challenge appraisal and perceived emotional competence negatively predicted stress. Threat appraisal was a positive predictor of stress. In the recovery variable 28% of the variance was predicted by challenge appraisal, threat appraisal, and perceived emotional competence. Challenge appraisal and perceived emotional competence positively predicted recovery while threat appraisal was a negative predictor.

Table 3. Multiple regression for the prediction of stress and recovery

		β	T	F change	R ²
Stress	(Constant)		6.39	21.41**	.25*
	Challenge	-.24	-3.54		
	Threat	.26	3.83		
	Perceived emotional competence	-.18	-2.73		
Recovery	(Constant)		2.41	25.17**	.28*
	Challenge	.26	3.84		
	Threat	-.09	-1.43		
	Perceived emotional competence	.35	5.57		

Note. * $p < .01$ ** $p < .001$

7 DISCUSSION

The purpose of the present study was to examine the relationship among perceived emotional competence, competition appraisals, and athletes' stress-recovery balance. Specifically, competition appraisals and perceived emotional competence were examined as predictors of the stress and recovery variables.

Firstly, it was hypothesized that perceived emotional competence would be positively correlated with the recovery variables and negatively with stress variables. The present study found a low positive correlation between general recovery and perceived emotional competence and a moderate positive correlation between perceived emotional competence and specific recovery. Similar findings have been found in previous research on emotional intelligence, emotional competence and coping with and recovery from stress (e.g., Kopp & Jekauc, 2018; Lea et al., 2019). The negative correlation between perceived emotional competence and stress is in line with previous research (e.g., Kaiseler et al., 2009; Neil et al., 2011) which found athletes who have high perceived emotional competence to have low levels of stress (Kaiseler et al., 2009). Low levels of emotional competence have been associated with additional stress and uncontrolled stress response (Neil et al., 2011). Based on the above findings, athletes should try to develop their emotional competence skill as it could help them deal with stress and recover from it better and by recovering adeptly also deal with the constant stressors of sport better.

There was a low positive correlation among perceived emotional competence and both recovery measures. Challenge appraisal was also moderately negatively correlated with general stress and lowly negatively correlated with specific stress. This is in line with hypothesis two. Similar findings have been found in previous research on competition and cognitive appraisals (Doron, & Martinent, 2021; Meijen et al., 2020), indicating that viewing competition as a challenge usually results in more positive interpretations of stress (Doron. & Martinent, 2021; Meijen et al., 2020). Interpreting stress positively usually means that the demands for recovery and coping are lower as well. The findings from this study provide additional support to the claim that challenge appraisal is more beneficial for athletes than threat appraisal (van Rens et al., 2021).

The TCTSA model (Jones et al., 2009) suggests that while an athlete is experiencing challenge state, they are more likely to interpret both pleasant and unpleasant emotions as helpful for their performance, whereas in threat state the athlete might only experience unpleasant emotions and are likely to interpret those emotions as detrimental to their performance. This suggestion from Jones and colleagues (2009) gives support to the idea that challenge state is better than threat state for athletes and the present study supports this as well. Although, challenge appraisal has been associated with better performance before (e.g., Hase et al, 2018), it is also important to understand the link among other variables that might influence performance. In this case, understanding that challenge appraisal and stress are negatively correlated is important because it is known that athletes work constantly under pressure (Heidari et al., 2018; Moore et al., 2013). For example, in professional sports, an athlete's income may depend on whether they win or lose a competition. This can cause the athlete immense stress. It is important to understand that adopting a challenge state toward competition could lower the perceived stress and lower stress would lead to less need for recovery from stress. The negative correlation between challenge appraisal and stress gives a reason for athletes to try and pursue a challenge appraisal over threat appraisal. Litwick-Kaminska (2020) suggested that athletes usually view stress caused by competition and the competition situation itself as a challenge. This could be one reason for the negative correlation between stress and challenge appraisal. From an athlete's point of view, challenge appraisal could be a good thing as research suggest that viewing competition as a threat is usually harmful for the performance (McGreary et al., 2020).

In line with the hypothesis three, threat appraisal was moderately positively correlated with both stress variables. This is contrary to hypothesis two and therefore expected. Previous research on competence appraisal and stress reactivity (McGreary et al., 2020) also support this finding. As stress has been associated with threat appraisal in previous research as well, the present study gives support to the findings from Nicholls and colleagues (2012). This also supports the claim that athletes should try to avoid threat appraisal (van Rens et al., 2021). In hypothesis three, it was also expected that threat appraisal was negatively correlated with recovery. The present study found negative correlations between threat appraisal and both general and specific recovery. This supports previous research (Blascovich, & Mendes, 2000; Dias et al., 2012; McGreary et al., 2020; Nicholls et al., 2012), which found threat to be associated with more

stressors and inadequate resources to deal with stress. Furthermore, threat appraisal has been associated with avoidance coping methods and inadequate recovery from stress (Dias et al., 2012). Additionally, McCreary and colleagues (2020) found that in threat state, athletes experience more stressors, but they have the same number of coping strategies to deal with the increased number of stressors. This shows clear relationships between threat state and recovery and explains why the relationship is usually negative.

The present study found that perceived emotional competence and challenge and threat appraisal significantly predicted both stress and recovery. In the stress variable 25% of the variance was predicted by perceived emotional competence and competition appraisals. Challenge appraisal and perceived emotional competence negatively predicted stress. This finding confirms hypothesis four. Threat appraisal was a positive predictor of stress. This finding confirms hypothesis five. This was expected based on results from previous research (e.g., Gaudino et al., 2019; Nicholls et al., 2012). These findings support the importance of emotional competence training and the claim that challenge appraisal might be more beneficial for athletes than threat appraisal (Hase et al., 2018; Moore et al., 2013). Research has also shown emotional intelligence to have a protective role toward responses to stress (Laborde et al., 2016), which could help explain the findings from the present study.

In the recovery variable 28% of variance was predicted by perceived emotional competence and challenge and threat appraisal. Furthermore, challenge appraisal was a positive predictor of recovery, which confirms hypothesis six. This finding also relates well with the BPSM model (Blascovich, & Mendes, 2000) in which challenge appraisal is associated with adequate resources to deal with stressors and demands of a high stress situation (e.g., a competition).

The unbalance between stress and recovery can have serious consequences for athletes, such as overtraining syndrome or burnout (Grobbelaar et al., 2010; Filho et al., 2015). For all athletes, burnout could mean months or even years of rest and time away from training or even the end of a career (Loch et al., 2021). While competitive athletes might lose a hobby, professional athletes could lose an income. Therefore, the knowledge on the factors impacting stress and recovery from stress is important for athletes as well as coaches, sport psychologists, and anyone who might be involved in an athlete's career.

This knowledge will help them create training programs and interventions to further develop the skills that can help them to react and to deal with stress in the most ideal way. Additionally, the knowledge on the factors impacting stress and recovery from stress can help athletes perform at their best when they have the needed skills and abilities to handle different stressors and when the athletes have the right skills and coping methods that help them recover efficiently. The findings from the present study could also encourage athletes to find ways to turn competitions into a challenge rather than a threat. Maybe this would even influence coaches to try and create a training and competition atmospheres where feeling challenged rather than threatened by the sport situation is the primary reaction from athletes.

Some practical implications can be drawn from the present study. The findings from the present study suggest that athletes should develop their emotional competence skills and try to adapt a challenge state over a threat state when dealing with high stress situations. Coaches and practitioners should try to create interventions and promote these skills and appraisals in their sessions. Developing emotional competence and adapting a challenge state are likely to help athletes deal better with the demands and stressors of training and competition. These suggestions are in line with previous research that have highlighted the importance of emotional competence training and promoting challenge over threat appraisal (Hase et al., 2018; Kopp, & Jekauc, 2018; Lea et al., 2019; McCreary et al., 2020; Nicholls et al., 2012).

8 LIMITATIONS AND FUTURE DIRECTIONS

While this study provides important information into understanding the relationships among emotions, competition appraisals, and stress-recovery balance in sport, the study has some limitations that must be stated. First, the sample size is relatively small, and this made it impossible to further investigate, for example, the differences between team and individual sports. In future research, a larger sample should be included.

The cross-sectional design of the study did not allow for the researcher to make assumptions of causality. Future research could examine the causality in emotions, stress-recovery balance, and competition appraisals with a longitudinal research study.

9 CONCLUSION

As emerged from the present study, athletes' perceived emotional competence, competition appraisals, and stress-recovery balance are all correlated. Specifically, stress and threat appraisal were positively correlated with each other, stress was negatively correlated with challenge appraisal, and athletes' perceived emotional competence was positively correlated with recovery. Additionally, athletes' recovery was positively correlated with challenge appraisal and negatively correlated with threat appraisal. Furthermore, perceived emotional competence and competition appraisals were found to be significant predictors of stress and recovery in athletes. The study findings are all in line with results from previous research.

REFERENCES

- Adie, J. W., Duda, J. L., & Ntoumanis, N. (2008). Achievement goals, competition appraisals, and the psychological and emotional welfare of sport participants. *Journal of Sport & Exercise Psychology, 30*, 302-322. doi:10.1123/jsep.30.3.302
- Blascovich, J. (2013). Challenge and threat. In A.J. Elliot (Ed.), *Handbook of approach and avoidance motivation* (pp. 431-444). Psychology Press.
- Blascovich, J., & Mendes, W. B. (2000). Challenge and threat appraisals: The role of affective cues. In J. P. Forgas (Ed.), *Studies in emotion and social interaction, second series. Feeling and thinking: The role of affect in social cognition* (pp. 59–82). Cambridge University Press. doi:10.1080/02701367.2006.10599371
- Boyatzis, R.E., Goleman, D., & Rhee, K. (2000). Clustering competence in emotional intelligence: Insights from the emotional compitencie inventory (ECI). In R. Bar-On & J.D.A. Parker (Eds.) *Handbook of emotional intelligence* (pp. 343-362). Jossey-Bass.
- Brasseur, S., Grégoire, J., Bourdu, R., & Mikolajczak, M. (2013). The profile of emotional competence (PEC): Development and validation of a self-reported measure that fits dimensions of emotional competence theory. *PloS one, 8*(5), doi:10.1371/journal.pone.0062635
- Caruso, D.R. (2008). A comprehensive framework for emotional intelligence. In R.J. Emmerling, V.K. Shanwal and M.K. Mandal (eds.), *Emotional intelligence: Theoretical and cultural perspectives*. (pp. 1-16). Nova Science Publishers.
- Cece, V., Guillet-Descas, E., Brenas, M., & Martinent G. (2021). The role of dispositional emotion regulation strategies on the longitudinal emotional process and subjective performance during a competition season. *European Journal of Sport Science, 21*(10), 1448-1458. doi:10.1080/17461391.2020.1862304
- Cerin, E., Szapo, A., Hunt, N., & Williams, C. (2000). Temporal patterning of competitive emotions: A critical review. *Journal of Sport Science, 18*, 605-626. doi:10.1080/02640410050082314
- Cherniss, C. (2010). Emotional intelligence: Toward clarification of a concept. *Industrial and Organizational Psychology, 3*(2), 110-126. doi:10.1111/j.1754-9434.2010.01231.x
- Dias, C., Cruz, J.F., & Fonseca, A. M. (2012). The relationship between multidimensional competitive anxiety, cognitive threat appraisal, and coping

- strategies: A multi-sport study. *International Journal of Sport and Exercise Psychology*, 10, 52-65. doi:10.1080/1612197X.2012.645131
- Dixon, M., Turner, M.J., & Gillman, J. (2017). Examining the relationships between challenge and threat cognitive appraisals and coaching behaviors in football coaches. *Journal of Sport Sciences*, 35(24), 2446-2452. doi:10.1080/02640414.2016.1273538
- Doron, J., & Martinent, G. (2021). Dealing with elite sport competition demands: an exploration of the dynamic relationships between stress appraisal, coping, emotion, and performance during fencing matches. *Cognition and Emotion*, 36(7), 1365-1381. doi:10.1080/02699931.2021.1960800
- Feinberg, J. M., & Aiello, J. R. (2010). The effect of challenge and threat appraisals under evaluative presence. *Journal of Applied Social Psychology*, 40, 2071–2104. doi:10.1111/j.1559-1816.2010.00651.x.
- Filho, E., Di Fronso, S., Forzini, F., Mugia, M., Agostini, T., Bortoli, L., Robazza, C., & Bertollo, M. (2015). Athletic performance and recovery-stress factors in cycling: An ever-changing balance. *European Journal of Sport Science*, 15(8), 671-680. doi:10.1080/17461391.2015.1048746
- Folkman, S., & Lazarus, R.S. (1988). The relationship between coping and emotion: Implications for theory and research. *Social Science and Medicine*, 26(3), 309-317. doi:10.1016/0277-9536(88)90395-4
- Gaudino, M., Martinent, G., Millet, G.Y., & Nicolas, M. (2019). The time courses of runners' recovery-stress responses after a mountain ultra-marathon: Do appraisals matter? *European Journal of Sport Science*, 19(7), 876-884. doi:10.1080/17461391.2018.1560507
- Grobbelaar, H.W., Malan, D.J., Steyn, B.J.M., & Ellis, S.M. (2010). Factors affecting the recovery-stress, burnout, and mood state scores of elite student rugby players. *South African Journal for Research in Sport, Physical Education and Recreation*, 32(2), 41-54. doi:10.4314/sajrs.v32i2.59296
- Harvey, A., Nathens, A.B., Bandiera, G., & LeBlanc, V.R. (2010). Threat and challenge: cognitive appraisal and stress responses in simulated trauma resuscitations. *Medical Education*, 44(6), 587-594. doi:10.1111/j.1365-2923.2010.03634.x

- Heidari, J., Kölling, S., Pelka, M., & Kellmann, M. (2018). Monitoring the recovery-stress state in athletes. In M. Kellmann & J. Beckmann (Eds.), *Sport, recovery and performance: Interdisciplinary insights* (pp. 3-18). Routledge.
- Jones, M.V. (2003). Controlling emotions in Sport. *The Sport Psychologist*, 17(4), 471-486. doi:10.1123/tsp.17.4.471
- Jones, M.V., Lane, A. M., Bray, S.R., Uphill, M., & Caitlin, J. (2005). Development and validation of the sport emotion questionnaire. *Journal of Sports and Exercise Psychology*, 27(4), 407-431. doi:10.1123/jsep.27.4.407
- Jones, M., Meijen, C., McCarthy P.J., & Sheffield, D. (2009). A theory of challenge and threat states in athletes. *International Review of Sport and Exercise Psychology*, 2(2), 161-180. doi:10.1080/17509840902829331
- Kaiseler, M., Polman, R., & Nicholls, A. (2009). Mental toughness, stress, stress appraisal, coping and coping effectiveness in sport. *Personality and Individual Differences*, 47(7), 728-733. doi:10.1016/j.paid.2009.06.012
- Kallus, K.W., & Kellmann, M. (2016). *The Recovery-Stress Questionnaires: User manual*. Pearson.
- Kopp, A., & Jekauc, D. (2018). The influence of emotional intelligence on performance in competitive sport: A meta-analytical investigation. *Sports (Basel)*, 6(4), 175. doi:10.3390/sports6040175
- Laborde, S., Dosseville, F., & Allen, M.S. (2016). Emotional intelligence in sport and exercise: A systematic review. *Scandinavian Journal of Medicine & Science in Sports*, 26(8), 862-874. doi:10.1111/sms.12510
- Laborde, S., Eyre, J., Akpeton, J., Engler, A-C., Hofmann, F., Klanderman, J., Klein, Y., Martins, V., Reinhard, M.L., Zajonz, P., & Mosley, E. (2021). Emotional competences training. In M.C. Ruiz and C. Robazza (Eds.) *Feelings in sport: Theory, research, and practical implications for performance and well-being* (pp. 18-26). Routledge.
- Lane, A.M., Devonport, T.J., Soos, I., Karsai, I., Leibinger, E., & Hamar, P. (2010). Emotional intelligence and emotions associated with optimal and dysfunctional athletic performance. *Journal of Sports Science and Medicine*, 9(3), 388-392.
- Laux, P., Krumm, B., Diers, M., & Flor, H. (2015). Recovery-stress balance and injury risk in professional football players: A prospective study. *Journal of Sport Sciences*, 33(20), 2140-2148. doi:10.1080/02640414.2015.1064538

- Lazarus, R.S. (2000). How Emotions Influence Performance in Competitive Sports. *Sport Psychologist*, 14(3), 229.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer Publishing Company
- Lea, R.G., Davis, S.K., Mahoney, B., & Qualter, P. (2019). Does emotional intelligence buffer the effect of acute stress? A systematic review. *Frontiers in Psychology*, 10, 810. doi:10.3389/fpsyg.2019.00810
- Litwic-Kaminska, K. (2020). Types of cognitive appraisal and undertaken coping strategies during sport competitions. *International Journal of Environmental Research and Public Health*, 17(18), 6522, doi:10.3390/ijerph17186522
- Loch, F., Hof zum Berge, A., Kölling, S. & Kellman, M. (2021). Stress states, mental fatigue, and the concept of mental recovery in sports. In M.C. Ruiz, and C. Robazza (Eds.), *Feelings in sport: Theory, research, and practical implications for performance and well-being*. (pp. 235-245). Routledge.
- Malinauskis, R., & Malinauskiene, V. (2018). The mediation effect of perceived social support and perceived stress on the relationship between emotional intelligence and psychological wellbeing in male athletes. *Journal of Human Kinetics*, 65, 291-303. doi:10.2478/hukin-2018-0017
- Martinent, G., Gareau, A., Lienhart, N., Nicaise, V., Gullet-Descas, E. (2018). Emotion profile and their motivational antecedents among adolescent athletes in intensive training settings. *Psychology of Sport and Exercise*, 35, 198-206. doi:10.1016/j.psychsport.2018.01.001
- Mayer, J. D., Caruso, D. R., & Salovey, P. (1999). Emotional intelligence meets traditional standards for an intelligence. *Intelligence*, 27, 267-298.
- Mayer, J.D., Salovey, P., & Caruso, D.R. (2008). Emotional intelligence: new ability or eclectic traits? *The American Psychologist*, 63(6), 503-517. doi:10.1037/0003-066X.63.6.503
- McGreary, M., Eubank, M., Morris, R., & Whitehead, A. (2020). Thinking aloud: Stress and coping in junior cricket batsmen during challenge and threat states. *Perceptual and Motor Skills*, 127(6), 1095-1117. doi:10.1177/0031512520938911
- Meijen., C., Turner, M., Jones, M.V., Sheffield, D., & McCarthy, P. (2020). A theory of challenge and threat states in athletes: A revised conceptualization. *Frontiers in Psychology*, 11, 1-17. doi:10.3389/fpsyg.2020.00126

- Mikolajczak, M., & Luminet, O. (2008). Trait emotional intelligence and the cognitive appraisal of stressful events. An exploratory study. *Personality and Individual Differences, 44*(7), 1445-1453. doi:10.1016/j.paid.2007.12.012
- Mikolajczak M, Brasseur S., & Fantini-Hauwel C. (2014). Measuring intrapersonal and interpersonal EQ: The Short Profile of Emotional Competence (S-PEC). *Personality and Individual Differences 65*, 42–46. doi:10.1016/J.PAID.2014.01.023
- Mitic, P., Nedeljkovic, J., Taksic, V., Sporis, G., Stojiljkovic, N., & Milcic, L. (2020). Sports performance as a moderator of the relationship between coping strategy and emotional intelligence. *Kinesiology, 52*(2), 281. doi:10.26582/k.52.2.15
- Moore, L. J., & Freeman, P. (2018). The relationship between challenge and threat states and performance. A systematic review. *Sport, Exercise, and Performance Psychology, 8*, 123-144. doi:10.1037/spy0000132
- Moore, L.J., Wilson, M.R., Vine, S.J., Coussens, A.H., & Freeman, P. (2013). Champ or chump?: Challenge and threat states during pressurized competition. *Journal of Sport & Exercise Psychology, 35*(6), 551-562. doi:10.1123/jsep.35.6.551
- Neil, R., Hanton, S., Mellalieu, & Fletcher, D. (2011). Competition stress and emotions in sport performers: The role of further appraisal. *Psychology of Sport and Exercise, 12*(4), 460-470. doi:10.1016/j.psychsport.2011.02.001
- Nicholls, A.R., Levy, A.R., Grice, A., & Polman, R.C.J. (2009). Stress appraisals, coping, and coping effectiveness among international cross-country runners during training and competition. *European Journal of Sport Science, 9*(5), 285-293. doi:10.1080/17461390902836049
- Nicholls, A.R., Polman, R.C.J., & Levy, A.R. (2012). A path analysis of stress appraisal, emotions, coping, and performance satisfaction among athletes. *Psychology of Sport and Exercise, 13*, 263-270. doi:10.1016/j.psychsport.2011.12.003
- Nicolas, M., Vacher, P., Martinent, G., & Mourot, L. (2019). Monitoring stress and recovery states: Structural and external stages of the short version of the RESTQ sport in elite swimmers before championships. *Journal of Sport and Health Science, 8*, 77-88. doi:10.1016/j.jshs.2016.03.007
- Palmer, B.R., Gignac, G., Ekermans, G., & Stough, C. (2008). A comprehensive framework for emotional intelligence. In R.J. Emmerling, V.K. Shanwal and

- M.K. Mandal (eds.), *Emotional intelligence: Theoretical and cultural perspectives*. (pp. 17-38). Nova Science Publishers.
- Parkinson, B. (1996). Emotions are social. *British Journal of Psychology*, 87(4), 663-683.
- Pennanen, F. (2018). Adaptation and evaluation of the Finnish version of the recovery-stress questionnaire for athletes. [Master's thesis, University of Jyväskylä]. Semantic Scholar.
- Petrides, K.V., & Furnham, A. (2001). Trait emotional intelligence: Psychometric investigation with reference to established trait taxonomies. *European Journal of Personality*, 15, 425-448. doi:10.1002/per.416
- Petrides, K.V., Pérez-Conzález, J.C., Furnham, A. (2007). On the criterion and incremental validity of trait emotional intelligence. *Cognition and emotion*, 21, 26-55. doi:10.1080/02699930601038912
- Ruiz, M.C., Bortoli, L., & Robazza, C. (2021). The multi-states (MuSt) theory for emotion – and action-regulation in sport. In M.C. Ruiz, and C. Robazza (Eds.), *Feelings in sport: Theory, research, and practical implications for performance and well-being*. (pp. 3-17). Routledge.
- Saby, Y., Pupier, Y., Guillet-Descas, E., Nicolas, M., & Martinent, G. (2019). Longitudinal emotional process among adolescent soccer player in intensive training centre. *Journal of Sport Sciences*, 38(11-12), 1368-1379. doi:10.1080/02640414.2019.1662538
- Salovey, P. & Mayer, J. D. (1990). Emotional intelligence. *Imagination, Cognition and Personality*, 9, 185-211.
- Salovey, P., Stroud, L.R., Woolery, A., & Epel, E.S. (2002). Perceived emotional intelligence, stress reactivity, and symptom reports: Further explorations using the trait meta-mood scale. *Psychology and Health*, 17(5), 611-627. doi:10.1080/08870440290025812
- Sammy, N., Harris, D., & Vine, S. (2021). Challenge and threat states, and emotions. In M.C. Ruiz, & C. Robazza (Eds.), *Feelings in sport: Theory, research, and practical implications for performance and well-being* (pp. 18-26). Routledge.
- Tabachnick, B.G., & Fidell, L.S. (2019). *Using multivariate statistics*. (7th ed.) Pearson.
- Uphill, M.A., Rossato, C.J.L., Swain, J., & O'Driscoll, J. (2019). Challenge and threat: A critical review of the literature and an alternative conceptualization. *Frontiers in Psychology*, 10, 1255. doi:10.3389/fpsyg.2019.01255

- van Rens, F.E.C.A., Burgin, M., & Morris-Binelli, K. (2021). Implementing a pressure inurement training program to optimize cognitive appraisal, emotion regulation, and sport self-confidence in a women's state cricket team. *Journal of Applied Sport Psychology*, 33(4), 402-419. doi:10.1080/10413200.2019.1706664
- Zhu, W. (2012). Sadly, the earth is still round ($p < 0.05$). *Journal of Sport and Health*, 1, 9-11. doi:10.1016/j.jshs.2012.02.002