

A Qualitative Investigation of Choking and Clutch Performance under Pressure in Team Sports

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Abstract

This study investigated the subjective experiences of performance under pressure in team sports.

Support was found for both self-focus and distraction theories as the underlying psychological processes behind choking under pressure. The interviews revealed that a positive appraisal of anxiety as well as feelings of control were key for producing clutch performances. Evidence of both the positive and negative effects of emotional contagion during choking and clutch performances was uncovered. The future consequences of choking and clutch performance were found to positively affect confidence, motivation to train and ability to cope with pressurised situations. The study highlights the need to create approach-mastery training environments for team athletes to alleviate choking and enhance performance under pressure.

A qualitative investigation of choking and clutch performance under pressure in team sports

Pressure in sport is defined as any factor that increases the importance of performing well (Baumeister, 1984). It is the catalyst for both choking which is a significant decline in performance in pressurised conditions (Hill et al., 2009) and clutch performance which is defined by Otten (2009) and Swann et al. (2019) as increased performance under pressure. Clutch performance (CP) and choking represent opposite ends of the performance under pressure spectrum so the same theoretical models apply to both: attentional theories (McEwan et al., 2012) distraction theories (Maher et al., 2018) and the self-presentation model (Hill et al., 2017).

Discussed below include the definitional issues that exist for both choking and CP as well as the use of varying psychological processes used to explain the two phenomena. The use of self-focus and distraction models in the context of team sports, including the influence of decision making, range of different stressors and automaticity of movement unique to team sports is also addressed. Finally, the need for exploration of the subjective experiences of these phenomena and the perceived consequences on future performance is explained.

Definitional issues exist when describing CP, according to Hibbs (2010) the performer must face a 'clutch' situation where they are aware of the situation and the possibility of failure, but still appraise the situation as a challenge and care about the outcome whilst experiencing the clutch situation-related stress. This was the first detailed explanation of CP whereas more recent definitions by Swann et al. (2017a) do not address the specific intricacies of how we define a CP from a non-CP. A commonly used definition of CP is an increment or superior performance under pressure (Otten, 2009), although this definition has been critiqued for its ambiguity in what context CP can exist (Mesagno & Hill, 2013). Recall of clutch 'states' in both training and exercise contexts exists (Swann et al., 2019) contradicting the need for a 'clutch situation' as defined by Hibbs (2010). Even with these conceptual differences many studies use Hibbs (2010) and Otten (2009) definitions in combination creating further definitional issues (Cunningham, 2013; Dohme et al., 2017). Schweickle

et al. (2021) study also conflicts Hibbs' (2010) definition as they concluded that CP cannot be considered as a situational variable as it is dependent on the athlete's individual appraisal of pressure, hence why CP may exist within the training or exercise context.

The term 'clutch' has been used inconsistently within the literature, it has been invoked to describe performances across different time windows from an individual's ability (Gray et al., 2013), to a specified period within a performance (Cao et al., 2011), to an entire performance (Hill & Hemmings, 2015). In addition, Schweickle et al. (2021) interviews directly after CP found that the perception of 'clutch' comes and goes suggesting that multiple episodes can occur within a single event. Further in-depth exploration will provide an opportunity to gain knowledge on these fluctuations and their consequences on performance. 'Clutch state'(CS) is reported consistently in the literature (Swann et al., 2017a; Jackman et al., 2020) in an attempt to explain the psychological state underlying CP but whether CS always underlies CP is heavily debated. In addition, Swann et al. (2017b) found that those with fixed and specific goals were more likely to produce CP. Therefore, suggesting that the nature of the individuals' goals influences what state the performer experiences, although further research is needed to test to see how significant this finding is or whether type of goals can cause choking (Schweickle et al., 2017).

In contrast to CP, choking is defined as an acute and considerable decrease in skill performance compared to self-expected standards, which is a result of increased anxiety under perceived pressure (Mesagno & Hill, 2013). Similar to CP, choking also has definitional issues as it remains unclarified to what level of underperformance becomes defined as a choke (Jackson, 2013). Gucciardi and Dimmock (2008) argue that a choke should be defined as a significant deterioration, rather than any deficit under pressure (Hill et al., 2009). The lack of consensus has led to many studies investigating any underperformance following Baumeister and Shower's original (1986, p. 361) definition: 'the occurrence of inferior performance despite striving for superior performance'.

Without a clear definition it is difficult to gain theoretical clarity of the phenomenon, therefore further research shall aid the contextualisation of choking.

Two broad theories dominate the explanation of this phenomenon: self-focus and distraction theory. Self-focus theories suggest an athlete reinvests explicit technical information of a skill when under pressure that they would normally perform automatically, resulting in inefficiency of the movement (Explicit monitoring hypothesis, Gray et al., 2007; Consciousness processing hypothesis, Eysenck, 1992). Distraction models suggest that an athlete chokes when they attempt to process anxiety-related cognitions (Processing efficiency theory, Eysenck & Calvo, 1992; Attentional control theory, Eysenck et al., 2007) or when attention is diverted away from task-relevant information toward sources of threat (Beilock et al., 2004).

The processes associated with self-focus theories are not frequently recalled in qualitative studies of choking, because of the retrospective nature of post choke interviews leading to biased recall. Whether a combination of self-focus and distraction processes cause choking must be explored further (Roberts et al., 2019) as distraction theory suggests that reduced working memory due to focus on worrying thoughts and task irrelevant cues causes choking (Beilock et al., 2004) and reinvestment relies on working memory capacity to store and manipulate information. Evidence suggests that players have reinvestment tendencies, in an examination of whether the Reinvestment Scale predicted skill breakdown it was found that high 'reinvestors' scored significantly worse in high stress conditions (Chell et al., 2003). In team sports the Decision-Specific Reinvestment Scale (DSRS) helps to explain a performer's predisposition to engage in behaviours that will detriment performance under pressure when decision making is prominent. Kinrade, Jackson, Ashford and Bishop (2010) used the DSRS finding further support for both distraction and reinvestment theories as breakdown was found to be determined by decision reinvestment and decision rumination. Although the DSRS must be tested further to validate it as an instrument to measure time constrained and dynamic team sports that require such a wide range of decision making.

According to the dual processing model, automaticity is the defining feature of optimal performance while control is associated with decrement to motor execution (Masters and Maxwell, 2008). Contrary to this evidence, during CP the performer uses declarative processing to strategically deploy conscious attention such as increasing effort or concentration whilst skill execution remains automatic (Fitts & Posner, 1967; Toner and Moran, 2014). In addition, the experimental data that evidences automaticity of movement in optimal performance lacks real world complexity such as changes in pressure or decision-making during skill execution, therefore the participant would not recall having to supervise the movement (Christensen et al., 2015). Furthermore Bortoli et al. (2012) found that focus on certain core action components such as grip or body stability enhanced performers ability to cope with stress. Therefore, arguing that small amounts of conscious control to supervise action can be beneficial. How those with less expertise in their sport produce CP as they have less attentional resources to dedicate to situational and strategic control must be explored in order to understand how CP is achieved at all levels of experience.

Jackman et al. (2020) and Swann et al. (2019) suggest that CP can be broken down into a series of stages, starting with the player's appraisal of the situation as a 'challenge' as opposed to a 'threat' (Jones et al., 2009). Attentional Control Theory specifically highlights that the emotional significance of the threat is important, as it has a biasing effect on attentional control (Eysenck et al., 2007). In regard to cognitive factors that promote CP, there is good evidence that encouraging performers to interpret anxiety as facilitative and the task as a 'challenge' enhances performance under pressure (Hanton et al., 2008). When exploring the experiences of 6 elite golf players who had experienced both CP and choking Hill and Hemmings (2015) found that approach coping strategies enhanced performance for example, simulated practice, performance routines and cognitive restricting (Maher et al., 2018; Hill et al., 2017). Whereas avoidance coping strategies that preceded/accompanied choking included rushing and denial. Hill and Hemming's (2015) study remains the only exploration of choking and CP qualitatively, therefore exploration of the subjective experiences of performance

under pressure will provide further insight into the perceived causes and mechanisms of the phenomena.

Choking in team sports requires further research as it presents a range of different stressors compared to traditional closed skills (Nichollos et al., 2007). The specific social processes within a team are likely to affect cognitions, emotions and behaviours of the players. For example, researchers show that social support and positive reinforcement from others acts as a buffer to insulate team members from the negative effects of pressure (Eccles & Tenenbaum, 2007; Tamminen & Holt, 2012). Other researchers have found that social support decreased the frequency of choking and even enabled retrieval from a choke (Hill & Shaw, 2013). Although a team environment can bring about a unique feeling of individual responsibility and extra pressure on performance. The fear of negative evaluation from others has been found to cause a threat to ego and heavy self-criticism of errors causing avoidance coping strategies (Baumeister, 1997; Mesagno et al., 2011). In addition, a perceived lack of control over the opponent's ability can negatively affect expectations of success and ability to achieve goals. This can cause a negative psychological momentum of lower self-confidence, poor concentration and debilitating anxiety. Hill and Shaw (2013) remain the only researchers to directly investigate the team effect on choking, therefore this must be explored further to gain information on how teammates can alleviate the frequency of choking under pressure.

Hill and Shaw (2013) utilised semi structured interviews with choking susceptible athletes, although the study took place within a single sport with self-selecting participants they found the most prominent factors when predicting a choke to be perceiving the outcome of the game as important, high expectations and low confidence. The presence of an audience, poor preparation and physiological factors were also described to have a detrimental effect on performance. The associated processes identified included debilitating somatic and cognitive anxiety alongside distraction and self-focus causing a lack of perceived control over performance. Although Otten's

(2009) study created pressure through experimental manipulation it uncovered evidence that perceived control was a strong predictor of performance as well as the individual's appraisal of anxiety (Cheng et al., 2009). Therefore, supporting Mesagno and Hill's (2013) definition that incorporates anxiety as an attribute of choking, but also contests that feelings of control are more important in the athletes perception. In contrast definitions of CP do not share the same need to experience anxiety (Gray et al., 2013; Schweickle et al, 2021) greater clarity is needed about the perception of anxiety during CP from the athlete's perspective and whether it facilitates the phenomenon.

Researchers found that player experience positively predicted propensity to produce CP in important situations (Owens et al., 2017). These players have been marked as 'clutch performers' historically, but studies that have assessed clutch ability have inconsistent benchmarks and measurements such as comparing against projected performance (Deane & Palmer, 2006) vs career averages (Cao et al., 2011). The level of experience of the athlete, its subsequent effect on the frequency of CP must be explored to understand all levels of participation.

Both choking and CP have an impact on immediate and future performances (Hill et al., 2010). Experience of CP is not optimal for continued participation as it can be intense and fatiguing, according to Rhodes and Kates (2015) only positive affective states during exercise are associated with long term engagement (Swann et al., 2019). There is a sense of achievement, pride and satisfaction after CP compared to the immediate negative emotions following a choke. Choking can have a negative effect on future performance as reflection can cause self-critic and create avoidance behaviours (Hibbs & Shaw, 2013). Although conflicting evidence was found by Hill and Shaw (2013) that suggested that choking had a negative impact on the current performance but possibly had a re-energising effect on long term performances. The negative experiences of both choke and CP must be explored to understand the full extent to which these phenomena can affect participation.

There have been several qualitative studies on choking and CP (Hill & Shaw, 2013; Hill et al., 2010; Schweickle et al., 2021); however, researchers have mostly focused on individual sports. Consequently, there is a lack of understanding of how the social processes and dynamic nature of team sports effect on performance under pressure. As discussed above both CP and choking under pressure have definitional issues that cause problems when conceptualising and understanding the underlying psychological processes of each of the phenomenon. A multitude of studies provide evidence of the existence of CP and choking within sport (Schweickle et al., 2020; Decaro et al., 2011), but less is known about the subjective experiences therefore this study will aim to expand the work of Swann et al. (2020) and Hill et al. (2009) by qualitatively exploring these experiences. This study aims to explore the subjective experiences of the influence of the team on performance under pressure including perceived causes, mechanisms, and consequences to build on the understanding of why team players thrive or choke in pressurised situations.

Method

A transcendental phenomenological methodology (Husserl, 1999) was adopted in this study to explore the two phenomena as they appear to those who have experienced it (Giorgi & Giorgi, 2008). An increasing number of sport and exercise psychology studies have employed a phenomenological research design as it can be used to gain a full understanding of phenomena including the meaning attached to those individuals' experiences (Gearity & Murray, 2011; Hassell et al., 2010). This approach will help to build new knowledge on team sport athlete's perceptions of performance under pressure (Landridge, 2007).

Participants

Eight participants (19-26 years) took part in the study. Six participants were female alongside two males, and all played a team sport: Football (n=3); Canoe Polo (n=2); Handball (n=2) Basketball (n=1) consistently (training between 6-10 times a week; experience 5-8 years) at a competitive level (club=4, county=2, country=2).

Interview schedule

The semi structured interview schedule (see appendix) was developed to first build rapport with the participant by asking general questions about their sport and then a brief description of what the interview was going to entail including reminding the participant that they may not be able to recall their whole experience of both phenomena. The first section of the interview was led primarily to understand what the perceptions of pressure were by the participants. This then led onto the main section which utilised open ended questions to gain a rich description of the perception of the participant's experiences of choking and CP. Finally the interview was summarised by questions surrounding what the participant perceived the effect of their team mates and coach had on pressure.

Procedure

Participants for the study were recruited through volunteer sampling after the lead researcher approached local clubs in the Leicestershire region and explained what the study entailed. Any athlete that believed that they met the criteria of having experienced both a choke and a CP in their sporting career were asked to an initial interview. As the participants self-identified both a choking experience and a CP a brief initial interview identified if they met the criteria for both phenomena followed by the main interview 5-7 days later. To ensure the correct phenomena were investigated Hill et al. (2009) definition was used to identify a choke experience as it incorporates significant drops in performance rather than just under performance. Hibbs (2010) and Otten's (2009) definitions were used to identify a CP as no clearer definitions currently exist and they are the most commonly cited. Ten participants were invited to initial interview, with two then excluded as they had only met the criteria for 1 of the 2 phenomena. The study was approved by the University's Ethical Committee, with informed consent given by all participants before interviews commenced regarding anonymity and withdrawal from the study at any point.

Data collection

All ten self-selected volunteers for the study completed the preliminary interview, via Teams, with the lead researcher. After the initial interview participants were encouraged to write down any recollection of their experiences and any extra details that they remembered before the main interview. This approach has been used in qualitative sport psychology research to gain more accurate retrospective accounts of experience (Connaughton et al., 2008). As Hill et al. (2010) investigated choking through interviews the same structure was adopted for this study to explore choking and CP. The interview was split into four sections: 1) an exploration of what participants perceived as pressure and coping mechanisms; 2) the participant's perceptions of choking; 3) perceptions of CP; 4) the perceived effect of the team on pressure. The interviews lasted between 45-85 minutes and followed a sequential recall of choking and CP as to gain an understanding of the

perceived causes, moderators and consequences. Probing questions were used with an open-ended approach adopted to allow new themes to emerge (Potter and Hepburn, 2005).

Data analysis

Phenomenological data was analysed via the four steps (Wertz, 2011). Firstly the transcript of the interview was reviewed and compared to the recording to ensure any key information was not missed. The transcripts were then read several times by the lead researcher to gain a clear understanding of the participant's perceptions. The transcripts were organised into basic units. These basic units were then grouped into first order themes for all sections of the interview via the use of NVivo Codes. These were then grouped into second order themes. Finally, all themes were reviewed by the critical peer and then evaluated on levels of agreement.

Trustworthiness

Following the recommendations of Sparkes and Smith (2014) the semi structured interviews were extensive and allowed detailed explanations of both choking and CP as well as their perceptions of pressure and the influence of the team. Transcripts were transcribed verbatim and read several times by the lead researcher and critical friend (Maykut & Morehouse, 2002). Bracketing was used as a means of actively reflecting on conscious acts rather than putting aside judgements, any preconceived judgements were reflected on to reduce the impact of personal bias (for example, perceptions on when a choke could occur). A critical friend with expertise in qualitative methods was used to critique and check themes created as well as the inductive process of new theme creation (Smith & Caddick, [2012](#)).

Table 1:

Data analysis: first order themes and global themes

<u>Pressure</u>	First order themes	Cites	<u>Team sports</u>	First order themes	Cites	<u>Clutch</u>	Global themes	First order themes	Cites	<u>Choke</u>	Global themes	First order themes	Cites		
Tendencies	Beginning of the season	1	Team mate influence	Positive mind-set	5	Before	Building of clutch	Confidence	6	Before	Reason for choke	Playing old team/team mates	2		
	Nervousness	6		Concentrating of others frustrations	4			Excitement	4			Unsuccessful first moments	4		
	Athletic maturity	2		Shared confidence	6			Hunger	4			Observing opponents/bench	4		
	Scholarship	1		Choke unrecognised	3			High expectations	4			Silly mistake	3		
	Challenge appraisal	5		Scared of negative evaluation	3			During	Enjoyment			Momentum	4	Individual responsibility	2
	Enjoyment	5		Reassurance	7			During play	8			Avoidance of failure	1		
Definitions	Importance of result	5		Mistakes contagious	5			Feeling of Invisibility	4			Difference in warm up	1		
	Low confidence	3	Subbing	Coach recognise and remove	2			Not enjoy before	5	During	Getting out of choke	Subbing	3		
	Little control	4		Toll on confidence starting on the bench	3	Controllability	Thrive from initial successful movement	4	Relaxation			3			
Physiological reaction	2	Feeling of invisibility as sub		3	Team control		4	Leader/coach reassurance	3						
Pressure in training	Cycle	3		Not feeling ready to re-enter play after choke	2			Control of mental state	4		Focus	Away from self	1		
	Training partners	1	Coach influence	Reinforce confidence	6		Confidence	Trust in ability	5			Focus on self	6		
	Self-pressure	2		Acceptance of mistakes	7			Coach backing	3		Controllability	Uncontrollable aggressive behaviour	2		
	Coach	1		Heavy criticism	2			Teammate reinforcement	2			Uncontrollable body movements	5		
Influences on pressure	Parents	1			Too much pressure	4			Initial movements success	5			No emotional control	5	
	Playing previous teams	3	Mental strategies	Relaxation	6		Anxiety	Awareness of stake	3		Awareness	After	2		
	Warm up	2		Pre performance routine	5			Positive interpretation	6			During	5		
	Crowd	4		Focus on basic skills	3			Negative interpretation	1			Teammate awareness	3		
	Position on pitch	2		Focus away from worrying thoughts	4	After	Immediately after	Want to recreate	6		Negative anxiety		6		
	Disappointing teammates	3	Goal setting	Team goals priority	7				Relief	2		Cycle of frustration		5	
	Opposition	5		Individual goals	5		Confidence boost	5		Forgetting basic skills		5			
	Coach	3	Position based goals	3		Elation	4	After	Results	Frustration		5			
	Build up to the game	Routine + habits	8		Avoidance goals	1					Team bonding	1			Regret
		Relax before	5					Effect on future performances	Confidence for future	6			Disappointment	6	
Pressure night before		6						Cause future chokes	1		Effect on future performances	Motivation to train	6		
Distract away from thoughts		6						Motivation to train	6			Avoidance behaviour	1		
Focus on basic skills		4						Ability to deal with pressure	4			Confidence in future performances	5		
Settle nerves in first period	5										Negative impact on self confidence	3			

Results

The results of the study will be presented in four sections: the first presents the subjective experience of pressure by team players. The second addresses the unique characteristics of team sports including teammate and coach influence and strategies to overcome pressure. The third and fourth sections detail the sequential breakdown of the experience of a choke and CP.

Perceptions of pressure within a team sport

Three of the participants recalled choking under pressure in training. Pressure from the coach, team mates and the negativity of the training environment were attributed as the reasons for choking in training. One participant explained *“the people I train with definitely have a negative impact on choking...when their mindsets aren’t positive or encouraging”* it can make me choke more frequently.

All eight participants explained they had routines and habits before a pressurised game, including both individual and team preparation. All participants stressed the importance of these routines and that change either caused performance detriment or enhancement. For example, one participant recalled a change in location of dressing room to stay away from the ground they were playing at to avoid the *“toxic”* environment of the opponents. This adaptation of the routine was beneficial whereas travel disrupting length of time for routine was found to be detrimental to performance. Five participants recalled using individual habits before a game of pressure to calm their thoughts and relax, such as individual shooting or practice of skill execution. Most of the participants explained that they try to distract themselves away from worrying thoughts before a pressurised event, with the most pressure felt the night before the match and not directly before the event.

Team influences on the perception of pressure

The majority of the participants acknowledged that their teammates gave them constant reassurance when playing well as well as giving them helpful words of encouragement when they

had choked. One participant summarised these findings: *“just constantly reassuring teammates if they miss a chance...I'll just give them a few words of encouragement, or if they do something well I will reinforce their confidence”*. This supportive environment was recognised by the participants as a positive team mindset that was as energising and relieved pressure from the performers. Although results showed that five participant's believed mistakes were contagious within the team as they effected the attitude and placed the focus on the performer's frustrations of choking. This was also demonstrated by participants as they recalled a feeling of shared confidence which was affected heavily by the choking of others in their team. One participant noted an experience when taking a penalty after a miss from their teammate: *“that for me automatically takes a hit to my confidence...I observe a lot... I model my teammates so if they're confident, I am confident”*. But three of the participants reported that their choke went unnoticed by their teammates.

The concept of substitution was not directly questioned but evolved as a common theme as a way of coaches removing a player that was choking in a game. Although being subbed after a choke was accepted by participants, starting subbed was reported to take a negative toll on confidence to perform once they entered play. An equal number of participants reported the opposite effect, with being brought on as a sub giving them a feeling of invisibility and fearlessness, they recalled having *“nothing to lose”* and a removal of expectations from the coach allowing them to play optimally.

The coach's greatest influence in team sports was reported by seven of the participants as being supportive and accepting mistakes as part of playing to relieve pressure. Six participants also recalled that coaches reinforced confidence, one participant summarised this *“if they do their best to try and develop a growth mind-set mentality within the team...choking is less likely to happen because the team environment supports learning from your mistakes as part of the process”*. One participant even described a coach that had helped her *‘bounce back’* after a choke as well as agreeing with the other participants that a coach can prevent choking occurring in the first place. Six participants described their experiences with coaches which had a negative effect on performance,

heavy unconstructive criticism and placing too much pressure on the players were highlighted as the most prominent reasons.

Seven participants agreed that their team goals set before pressurised situations were their priority and that they worked hard to serve the team. But one participant reported putting their individual goals above their team goals, only feeling successful when they had achieved their own targets. Four individuals admitted to setting individual goals that were based around positional success, but they were second priority to team goals.

Perceptions of clutch performance

Information about the build up to CP was discussed, the most cited factor by the participants was an increase in confidence, recalled as *"the turning point"* that led to excellent performance under pressure. Five participants recall being confident in their ability: *"I just had so much belief in myself...if I wanted to get that ball, I was going to get it no question"*. Alongside this, excitement to play well and high expectations of performance were described as key factors that facilitated CP. Four participants also recall a *'hunger'* to play well once their first movements of a game had been successful, one participant summarises this: *"I was hungry from more...so we got the first goal, you know, we went onto get two and then three...it was keeping that momentum up"*.

During CP all participants recalled enjoyment during play, with four participants describing the enjoyment building as they were more successful. Although five participants recognised that although they enjoyed the CP, they did not enjoy the build up to the moment: *"its just before the game it is so heightened"*. During CP half of the participant described feelings of control over their movements once they had successfully completed the first initial movements, for example their first shot went in or made a good defensive block. These important first movements triggered an increase in confidence and a calming effect that enabled the performer to produce excellent performance. Half of the participants recalled a feeling of team control over the game and a dominance over the opposition that allowed them to thrive and produce a CP.

Participants described a positive interpretation of the anxiety they felt during CP. One participant summarised this *“it wasn’t debilitating anxiety...it was pleasing anxiousness; it was an excited feeling”*. Although three participants explained feeling anxious because they recognised what was at stake, only one participant described a negative interpretation of anxiety during CP.

Straight after their CP participants recalled elation and happiness as they had achieved or exceeded their goals in a pressurised situation, for many it included winning a major final in their sport or being highest scorer. Most participants described a feeling of wanting to relive or recreate the excellent performance, with immediate benefits from CP being team bonding and confidence boosting. Some of the words used to describe the feeling afterwards included *‘elated, ‘buzzing’, ‘unbelievable’* further demonstrating the positive emotions evoked from CP. Two participants mentioned a feeling of relief after performing well as the pressure had been taken away.

The positive effects of experiencing a CP were explained by most of the participants as an increase in confidence for future games as well as a developed ability to cope better with future highly pressurised situations. In addition, six participants recalled an increased motivation to train as they had a greater belief, they could recreate the excellent performance again. But one participant described a unique scenario whereby CP had caused a choke in the following performance as their expectations were too high: *“the next game I ended up thinking...I need to keep this reputation...it put a higher level of pressure on me”*.

Perceptions of choking under pressure

The findings revealed a mix of reasons for the choke each participant described, the most popular reason emerged as observing the opposition before the pressurised situation occurred. This observation of the opposition led to a negative evaluation of own ability compared to their opponent. Another popular reason that choking was attributed to playing ex-team/teammates, the worry of not proving themselves or playing to the greatest of their ability caused self-doubt and distraction. A few participants recalled the same experience of running past the bench of their old

team/coach with this causing further self-doubt and embarrassment: *“where my position is normally I’m playing next to the bench, that was the moment pressure struck and it started to fall apart”*.

Small errors in performance were recognised by three participants as a cause of a larger choke as they focused too heavily on their failure to perform movements that would normally come automatically. Other reasons that were noted as causes of a choke included: avoidance of failure, a difference in pre performance routine and fear of individual responsibility for example taking a penalty for the team.

The participants were asked to recall if they had ever recovered from a choke, only four participants could remember recovering with most suggesting that subbing allowed them to recompose themselves alongside relaxation or coach reassurance to reinstate confidence. *“The leaders and the big voices in the team have to step in and reassure you’* to regain confidence as participants recall being *“too busy concentrating on what you have done badly...rather than the next part of the game”*. This was described as a cycle of choking, as one mistake caused further errors which felt out of the performer’s control. Five participants recall feeling like they had no emotional control whilst the choke occurred with worry taking over their mind. Two participants even recalled uncontrollable aggressive behaviour because of frustration with themselves and little control over their body movements. Five participants explained that errors caused frustration, leading them to increase effort and this led to further breakdown in performance. The majority of participants felt they had little to no control over their body movements/actions, *“it felt like my body didn’t belong to me, it was really slow”*. One participant summarised this feeling: *“in basketball it is very much about the technique you use, like your hand movement even body rotation, once the pressure takes over and the technique breaks down...your self-confidence goes down”*.

Over half the participants recognised during their choke they forgot how to perform basic skills that would normally come ‘naturally’ such as catching, passing and shooting. The majority of the participants remembered recognising the choke as it happened with two participants only becoming

aware of the choke after the performance had taken place. Interestingly only three participants recalled their teammates recognising their choke when it occurred.

Six of the participants attributed the reason for their choke to focusing their attention on themselves either their emotional state or the skill breakdown. One participant summarised skill breakdown: *"I think a lot about the ball hitting my foot. And ive come to realise the more I don't think about those specific things, the better I play"*. One participant described remembering her experience of her choke as everything being *'quiet'*, she recalls only being able to focus on her worrying thoughts and not being able to hear her teammates communicate with her. Six participants recall suffering from debilitating somatic and cognitive anxiety that caused and accompanied their choke.

The main feelings recalled immediately after a choke were disappointment and frustration, with some participants describing feelings of regret on reflection immediately after. One participant summarised these feelings: *"you are annoyed at yourself because you know you can do better...when you have other people counting on you as well in a team sport it can be demoralising"*. Although all participants recognised the immediate negative effects of their choke on their emotions and mood, only three participants described a negative effect on future performances. In fact, six participants recalled a motivating factor from their choke experience that made them want to train harder to prevent severe under performance in future. *"I use it as fuel for training now. I know what that felt like and I don't want to feel like that again"* was commonly recalled. One participant adopted avoidance behaviours after their choke experience but explained that after a long time they had finally overcome the fear of choking: *"I didn't take a penalty for six, seven years after and now ive been able to overcome that and I sort of see penalties as just an opportunity to get another goal"*. This shift was explained by the participant as a growth in athletic maturity and a shift to challenge appraisal.

Discussion

This study identified that subjective feelings of control before and during a pressurised situation as a key predictor of whether a performer went onto choke or produce a CP in team sports. Those who thrived in pressurised situations recall having control over their movements and emotional state as well as a unique feeling of 'team control' over performance. This provides evidence in open skills for Otten's (2009) experimental study that suggested perceived control was a strong predictor of performance. When choking in team sports participants identified having no control over their body movements or emotions consequently causing mistakes and cycle of frustration. This cycle is caused by additional resources being allocated to self-regulation in an attempt to try and stabilise emotional state and refine decision making. But, this depletes resources and can cause further detriment. In addition, the link between threatening stimuli and negative emotional states are strong (Tenenbaum et al., 2009) therefore creating a vicious cycle if the performer has had previous negative experiences of choking. It should be explained to the performer that negative emotions are normal during pressurised situations but can be overcome with a challenge appraisal, as it will increase confidence and perceived control (Hanton et al., 2008)

Further research is warranted to explore these feelings of 'team control' found in this study and whether this must be present for an athlete to produce a CP in a team sport. None of the participants recalled any team coping strategies used to increase confidence or feelings of control, suggesting team control arose naturally from a combination of individual's self-efficacy.

The participants in this study recognised that their teammates could enable them to produce CP through reassurance and a feeling of shared confidence. Eccles and Tenenbaum (2007) emphasise this link between shared affective states, cognitions and behaviours amongst team members, and this study provides further evidence of this finding. It should be noted that emotional contagion can have negative impact, as participants perceived mistakes as contagious within a team. The mechanisms identified include support for distraction theory as other team members focused on the

frustrations of their teammate instead of their own play (Lepine et al., 1997). An emphasis should be placed on each player's responsibility to use approach based coping strategies not only for their own recovery from a choke but also, so their emotional reaction does not distract or spread within the team. Moll et al. (2010) investigated emotional contagion within a penalty shoot-out context, concluding that individual's expression of emotions can enhance but also have a detrimental effect on their team mates and opposition.

Team reassurance whilst performing well and after choking was found to be crucial in team sports, building on the evidence that team support can act as a buffer to the stress of pressure (Tamminen & Holt, 2012) as well as adding that support can help to improve performance once a choke has occurred. This also stresses the need for a greater team awareness so a choke can be identified, and support can be given immediately, as some participants of the study revealed that their choke had gone unnoticed by others.

A prominent implication from this study is the importance of the training environment created by teammates and the coach. Some participants in the study reported choking under pressure and this feeling of lack of control in the training due to unsupportive and over critical teammates or coaches. Although the majority of participants did not recall ever choking in training, it is important that the coach and players create approach-mastery training climates to allow acceptance of mistakes and consequently alleviate choking (Jordet & Hartman, 2008). The coach has a huge influence over athletes within team sports; an ego or performance outcome orientated focus and unconstructive criticism can lead to an increase in the frequency of choking (Hill et al., 2010). The coach should focus particularly on individuals that have a tendency to choke under pressure, as choking in training regularly can strengthen the association between negative emotions and choking instead of an approach based coping strategies.

The extent to which choking within a team can cause the phenomenon of team collapse is yet to be explored in the extant literature. Team collapse is described as when a majority of players in a

team sport suddenly perform below expected level in a match of great importance (Apitzch, 2006). The cause of team collapse is a critical event for example, key player collapse or an unforced error. This critical event then leads to negative emotional and behavioural contagion that in turn causes perceived loss of control of the game situation. Further exploration should investigate if one key player choking can cause team collapse as this study provides evidence of negative emotional contagion (Barsade, 2002) and how it can cause individual and team underperformance.

Gray et al. (2013) and Schweickle et al. (2021) do not mention anxiety as a part of clutch performances or 'clutch states', whereas this study found support that cognitive and somatic anxiety was felt during both CP and choking, but the important factor was how it was appraised by the individual. Whether anxiety is key to CP is yet to be classified, the benefits of anxiety can be seen in this study as it can increase alertness to crucial environmental cues and promote appropriate solutions (Carver & Scheier, 1988). The participants remarked an acceptance that anxiety was always part of pressurised situations, and demonstrated that with external support and high self-efficacy (Bandura, 1997) they could control their emotional state and subsequently perform optimally. This study supports Mesagno & Hill (2013) definition that a choke occurs as a consequence of anxiety but also evidences Gucciardi et al. (2010) and Hill et al. (2010) direction that perception of anxiety, not the intensity, is key to choking under pressure.

The findings of this study provide evidence of both self-focus and distraction theories as the underlying processes behind choking under pressure in team sports, recreating similar results to Hill and Shaw (2013) but in the general population rather than those who identified themselves as choking susceptible. Although previous qualitative studies have found the self-focus processes recalled less frequently, the majority of the participants in this study described concentrating on the breakdown of their movements leading to inefficiency or mistakes. These mistakes led to a negative psychological momentum of lower self-confidence, poor concentration and anxiety (Jones & Harwood, 2008) which as discussed previously which was spread via emotional contagion in the

team. This contagion effect seems especially stronger when the initial mistakes are made by a key player as it may cause a decrease in perceived self-efficacy (Bandura, 1977). Although consideration should be given that this study cannot be conclusive about the psychological processes behind choking and CP, this study provides further evidence of both self-focus and distraction theories.

Observation of the opposition was recalled as a prominent cause for choking in team sports, although some suggested that it had a positive effect on performance as they could predetermine tactics and approach to their opponents. Observation with a negative evaluation of ability caused a negative appraisal of anxiety, and this was further heightened by the feeling of individual responsibility within the team. This focus on negative appraisal of anxiety and fear of negative evaluation from teammates gives further evidence to self-presentation explanations of choking (Mesagno et al., 2012). The focus for teams should be on creating high individual self-efficacy and appraising strong opponents as a positive challenge for the team and an opportunity to thrive under the pressure.

Arguably a unique finding of this study was that during the warm up/pre performance routine stage before a pressurised situation team athletes found it useful to focus on the breakdown of basic skills such as shooting or passing. Although it could be argued that this was used as an aid to distract away from worrying thoughts and nervousness. This finding suggests that in team sports the importance of performance routines and individual warm up habits away from the team can encourage CP, as well as the utility of self-focus to distract away from worrying thoughts. The differing habits of individuals to calm themselves before a pressurised event as well as the range of opinions on retrieval from a choke does highlight the need for coaches and team mates to learn how each other functions specifically to make sure the correct approach is used.

The unique factor of substitution in team sports on the perceptions of pressure has yet to be considered in the extant literature. Hill and Shaw (2013) discuss briefly that substitution was an ineffective avoidance coping strategy once a player had choked and suggested instead self-

regulatory approach coping strategies should be adopted. Whereas participants in this study emphasised the utility of substitution after a choke to relax and recover to then re-enter play. The importance of the coach recognising an individual player choking was noted by the participants, as well as the need for reassuring comments if mistakes were made to prevent the player from going onto choke. Coaches should also have an awareness of those who react negatively to starting on the bench as it was a common source of low self confidence in ability and subsequently a choke.

This study highlighted the prioritisation of team goals to achieve clutch performance, although type of goal was not discussed, participants noted they did have individual goals but these took second priority. But importantly the feelings of success of producing a CP prominently came from individual achievement such as scoring the highest amount of goals. The participants were highly motivated to achieve team goals and felt after producing a CP they had contributed to the team success, therefore should guide goal setting when trying to produce future CP. Type of goals (process/outcome) and their consequences on performance under pressure requires further investigation so goal setting can be optimal within team sports.

The long-term positive consequences of CP found in this study contradict Rhodes and Kates (2015) suggestion that CP may not be optimal for continued participation. Experience of CP increased motivation to train, promoted team bonding and increased confidence in ability to cope with pressurised situations. Only one participant recalled a negative effect of their CP, as too higher expectations were set for the subsequent game causing a choke under the pressure of a major final. This study found a mix of consequences of choking under pressure, although all immediate feelings were negative: frustration, regret and disappointment. Many recalled a motivating factor to train in the long term to try and prevent choking occurring again. This supports the reenergising effect Hill and Shaw (2013) noted after a choke, athletes should be guided towards a positive evaluation of their choke and reinforcement of confidence when reproaching future pressurised situations.

This qualitative study offers an insight into the subjective experiences of performance under pressure in team sports. It offers knowledge about the perceived causes, psychological processes and consequences of choking and CP from the perspective of a team athlete. It provides evidence for the need for coaches to build mastery environments where athletes are not fearful of making mistakes, and use approach based coping strategies when they do. This will help alleviate choking incidents and increase the frequency of CP under pressure. This study provides evidence for self-focus and distraction theory's explanations of choking and CP in the team sport context as well as highlighting the importance of control and anxiety in both phenomena. Although further research is critical to explore these experiences in a range of different team sports and with a larger sample size. The qualitative nature of the study should be considered as there is a vulnerability to biased recall due to the retrospective nature of the interviews as well as the complex nature of both phenomena (Beilock et al., 2003).

In addition, objective measures of performance were not used, participants self-identified on the belief that they had experienced a choke and CP; therefore their experiences could not be verified. Future study of both phenomena should adopt mixed methods, so that more information can be generated about the experiences of team sports players and for confirmation that the correct phenomenon is being measured. Although the next challenge remains in the conflict of the definition of choking and CP, as to what level of underperformance and excellent performance must be achieved remains undefined.

This study provides findings of the positive consequences of both choking and CP, but it should be considered that the participants were self-selecting therefore may not reflect the experience of all team sports players, for example those who have had very negative reactions to a choke and unwilling to talk about their experience. Nevertheless, this study provides an insight into how approach-based coping and challenge appraisal can reframe negative emotions during and after performance to therefore increase the frequency of CP in team sports.

References

- Apitzsch, E. (2009). Coaches' and elite team players perception and experiencing of collective collapse. *Athletic Insight*, 1(2), 57-74.
- Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological review*, 84(2), 191.
- Barsade, S. G. (2002). The ripple effect: Emotional contagion and its influence on group behavior. *Administrative science quarterly*, 47(4), 644-675.
- Baumeister, R. F. (1984). Choking under pressure: self-consciousness and paradoxical effects of incentives on skillful performance. *Journal of personality and social psychology*, 46(3), 610.
- Baumeister, R. F., & Showers, C. J. (1986). A review of paradoxical performance effects: Choking under pressure in sports and mental tests. *European Journal of Social Psychology*, 16(4), 361-383.
- Beilock, S. L., Bertenthal, B. I., McCoy, A. M., & Carr, T. H. (2004). Haste does not always make waste: Expertise, direction of attention, and speed versus accuracy in performing sensorimotor skills. *Psychonomic bulletin & review*, 11(2), 373-379.
- Birnbaum, M. H. (2008). New paradoxes of risky decision making. *Psychological review*, 115(2), 463.
- Bortoli, L., Bertollo, M., Hanin, Y., & Robazza, C. (2012). Striving for excellence: A multi-action plan intervention model for shooters. *Psychology of sport and exercise*, 13(5), 693-701.
- Cao, Z., Price, J., & Stone, D. F. (2011). Performance under pressure in the NBA. *Journal of Sports Economics*, 12(3), 231-252.
- Carver, C. S., & Scheier, M. F. (1988). A control-process perspective on anxiety. *Anxiety Research*, 1(1), 17-22.
- Chell, B. J., Graydon, J. K., Crowley, P. L., & Child, M. (2003). Manipulated stress and dispositional reinvestment in a wall-volley task: an investigation into controlled processing. *Perceptual and Motor Skills*, 97(2), 435-448.
- Cheng, W. N. K., Hardy, L., & Markland, D. (2009). Toward a three-dimensional conceptualization of performance anxiety: Rationale and initial measurement development. *Psychology of Sport and Exercise*, 10(2), 271-278.
- Christensen, W., Sutton, J., & McIlwain, D. (2015). Putting pressure on theories of choking: Towards an expanded perspective on breakdown in skilled performance. *Phenomenology and the Cognitive Sciences*, 14(2), 253-293.

- Connaughton, D., Wadey, R., Hanton, S., & Jones, G. (2008). The development and maintenance of mental toughness: Perceptions of elite performers. *Journal of sports sciences, 26*(1), 83-95.
- Cunningham, G. B. (2013). Theory and theory development in sport management. *Sport management review, 16*(1), 1-4.
- DeCaro, M. S., Thomas, R. D., Albert, N. B., & Beilock, S. L. (2011). Choking under pressure: Multiple routes to skill failure. *Journal of experimental psychology: general, 140*(3), 390.
- Dohme, L. C., Backhouse, S., Piggott, D., & Morgan, G. (2017). Categorising and defining popular psychological terms used within the youth athlete talent development literature: a systematic review. *International Review of Sport and Exercise Psychology, 10*(1), 134-163.
- Eccles, D. W., & Tenenbaum, G. (2007). A social-cognitive perspective on team functioning in sport. *Handbook of sport psychology, 3*, 264-286.
- Eysenck, M. W. (1992). *Anxiety: The cognitive perspective*. Psychology Press.
- Eysenck, M. W., & Calvo, M. G. (1992). Anxiety and performance: The processing efficiency theory. *Cognition & emotion, 6*(6), 409-434.
- Eysenck, M. W., Derakshan, N., Santos, R., & Calvo, M. G. (2007). Anxiety and cognitive performance: attentional control theory. *Emotion, 7*(2), 336.
- Fitts, P. M., & Posner, M. I. (1967). Human performance.
- Gearity, B. T., & Murray, M. A. (2011). Athletes' experiences of the psychological effects of poor coaching. *Psychology of sport and exercise, 12*(3), 213-221.
- Giorgi, A. P., & Giorgi, B. (2008). Phenomenological psychology. *The SAGE handbook of qualitative research in psychology, 165-178*.
- Gray, R., Allsop, J., & Williams, S. (2013). Changes in putting kinematics associated with choking and excelling under pressure. *International Journal of Sport Psychology, 44*(4), 387-407.
- Gray, R., Beilock, S. L., & Carr, T. H. (2007). "As soon as the bat met the ball, I knew it was gone": Outcome prediction, hindsight bias, and the representation and control of action in expert and novice baseball players. *Psychonomic Bulletin & Review, 14*(4), 669-675.
- Gucciardi, D. F., & Dimmock, J. A. (2008). Choking under pressure in sensorimotor skills: Conscious processing or depleted attentional resources?. *Psychology of Sport and Exercise, 9*(1), 45-59.

- Hanton, S., Wadey, R., & Mellalieu, S. D. (2008). Advanced psychological strategies and anxiety responses in sport. *The Sport Psychologist, 22*(4), 472-490.
- Hibbs, D. (2010). A conceptual analysis of clutch performances in competitive sports. *Journal of the Philosophy of Sport, 37*(1), 47-59.
- Hill, D. M., & Hemmings, B. (2015). A phenomenological exploration of coping responses associated with choking in sport. *Qualitative research in sport, exercise and health, 7*(4), 521-538.
- Hill, D. M., & Hemmings, B. (2015). A phenomenological exploration of coping responses associated with choking in sport. *Qualitative research in sport, exercise and health, 7*(4), 521-538.
- Hill, D. M., Carvell, S., Matthews, N., Weston, N. J., & Thelwell, R. R. (2017). Exploring choking experiences in elite sport: The role of self-presentation. *Psychology of Sport and Exercise, 33*, 141-149.
- Hill, D. M., Hanton, S., Fleming, S., & Matthews, N. (2009). A re-examination of choking in sport. *European Journal of Sport Science, 9*(4), 203-212.
- Husserl, E. (1999). *The essential Husserl: Basic writings in transcendental phenomenology*. Indiana University Press.
- Jackman, P., Crust, L., & Swann, C. (2020). The role of mental toughness in the occurrence of flow and clutch states in sport. *International Journal of Sport Psychology*.
- Jackson, R. C. (2013). Babies and bathwater: commentary on Mesagno and Hill's proposed re-definition of 'choking'. *International Journal of Sport Psychology, 44*(4), 281-284.
- Jackson, S. A. (1995). Factors influencing the occurrence of flow state in elite athletes. *Journal of applied sport psychology, 7*(2), 138-166.
- Jones, M. I., & Harwood, C. (2008). Psychological momentum within competitive soccer: Players' perspectives. *Journal of Applied Sport Psychology, 20*(1), 57-72.
- 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.
- Jordet, G., & Hartman, E. (2008). Avoidance motivation and choking under pressure in soccer penalty shootouts. *Journal of sport and exercise psychology, 30*(4), 450-457.
- Kinrade, N. P., Jackson, R. C., & Ashford, K. J. (2015). Reinvestment, task complexity and decision making under pressure in basketball. *Psychology of Sport and Exercise, 20*, 11-19.

- Kinrade, N. P., Jackson, R. C., Ashford, K. J., & Bishop, D. T. (2010). Development and validation of the decision-specific reinvestment scale. *Journal of Sports Sciences, 28*(10), 1127-1135.
- Langdridge, D. (2007). *Phenomenological psychology: Theory, research and method*. Pearson education.
- Lépine, J. P., Gastpar, M., Mendlewicz, J., & Tylee, A. (1997). Depression in the community: the first pan-European study DEPRES (Depression Research in European Society). *International clinical psychopharmacology*.
- Maher, R. (2018). *New Perspectives on Choking at the Free-throw Line* (Doctoral dissertation, Victoria University).
- Masters, R., & Maxwell, J. (2008). The theory of reinvestment. *International Review of Sport and Exercise Psychology, 1*(2), 160-183.
- Maykut, P., & Morehouse, R. (2002). *Beginning qualitative research: A philosophical and practical guide*. Routledge.
- Mesagno, C., & Hill, D. M. (2013). Definition of choking in sport: re-conceptualization and debate. *International journal of sport psychology*.
- Mesagno, C., Harvey, J. T., & Janelle, C. M. (2011). Self-presentation origins of choking: Evidence from separate pressure manipulations. *Journal of sport and exercise psychology, 33*(3), 441-459.
- Moll, T., Jordet, G., & Pepping, G. J. (2010). Emotional contagion in soccer penalty shootouts: Celebration of individual success is associated with ultimate team success. *Journal of sports sciences, 28*(9), 983-992.
- Nicholls, A. R., Polman, R., Levy, A. R., Taylor, J., & Cobley, S. (2007). Stressors, coping, and coping effectiveness: Gender, type of sport, and skill differences. *Journal of sports sciences, 25*(13), 1521-1530.
- Otten, M. (2009). Choking vs. clutch performance: A study of sport performance under pressure. *Journal of sport and exercise psychology, 31*(5), 583-601.
- Rhodes, R. E., & Kates, A. (2015). Can the affective response to exercise predict future motives and physical activity behavior? A systematic review of published evidence. *Annals of Behavioral medicine, 49*(5), 715-731.
- Roberts, L. J., Jackson, M. S., & Grundy, I. H. (2019). Choking under pressure: Illuminating the role of distraction and self-focus. *International Review of Sport and Exercise Psychology, 12*(1), 49-69.

- Schweickle, M. J., Swann, C., Jackman, P. C., & Vella, S. A. (2020). Clutch performance in sport and exercise: a systematic review. *International Review of Sport and Exercise Psychology*, 1-28.
- Schweickle, M. J., Vella, S. A., & Swann, C. (2021). Exploring the “clutch” in clutch performance: A qualitative investigation of the experience of pressure in successful performance. *Psychology of Sport and Exercise*, 54, 101889.
- Schweickle, M., Groves, S., Vella, S. A., & Swann, C. (2017). The effects of open vs. specific goals on flow and clutch states in a cognitive task. *Psychology of Sport and Exercise*, 33, 45-54.
- Smith, B., & Caddick, N. (2012). Qualitative methods in sport: A concise overview for guiding social scientific sport research. *Asia Pacific journal of sport and social science*, 1(1), 60-73.
- (a) Swann, C., Crust, L., Jackman, P., Vella, S. A., Allen, M. S., & Keegan, R. (2017). Psychological states underlying excellent performance in sport: Toward an integrated model of flow and clutch states. *Journal of Applied Sport Psychology*, 29(4), 375-401.
- (b) Swann, C., Crust, L., & Vella, S. A. (2017). New directions in the psychology of optimal performance in sport: flow and clutch states. *Current opinion in psychology*, 16, 48-53.
- Swann, C., Jackman, P. C., Schweickle, M. J., & Vella, S. A. (2019). Optimal experiences in exercise: A qualitative investigation of flow and clutch states. *Psychology of Sport and Exercise*, 40, 87-98.
- Tamminen, K. A., & Holt, N. L. (2012). Adolescent athletes’ learning about coping and the roles of parents and coaches. *Psychology of sport and exercise*, 13(1), 69-79.
- Toner, J., & Moran, A. (2014). In praise of conscious awareness: A new framework for the investigation of “continuous improvement” in expert athletes. *Frontiers in psychology*, 5, 769.
- Wertz, F. J. (2011). *Five ways of doing qualitative analysis: Phenomenological psychology, grounded theory, discourse analysis, narrative research, and intuitive inquiry*. Guilford Press.
- Wilson, M. (2008). From processing efficiency to attentional control: a mechanistic account of the anxiety–performance relationship. *International Review of Sport and Exercise Psychology*, 1(2), 184-201.
- Worthy, D. A., Markman, A. B., & Maddox, W. T. (2009). What is pressure? Evidence for social pressure as a type of regulatory focus. *Psychonomic bulletin & review*, 16(2), 344-349.
- Yu, R. (2015). Choking under pressure: the neuropsychological mechanisms of incentive-induced performance decrements. *Frontiers in behavioral neuroscience*, 9, 19.